

Date:

To,
The Director
Regional Office (Central Region)
Ministry of Environment, Forest & Climate Change
5th Floor, Kendriya Bhawan, Sector-H,
Aliganj, Lucknow-260224, UP

Subject: Submission of six-monthly EC Compliance Report for 1st Oct 2024 to 31st March 2025 of IT Project "HCL Technology Hub" located at Gajaria Farms, Sultanpur Road, Lucknow of M/s HCL IT City Lucknow Pvt Ltd.

Reference: EC Lr. No.: 580/Parya/SEAC/2803/2014/DDY, Dated: 09/07/2015

Dear Sir,

This is with reference to the above-mentioned subject, we are herewith submitting six monthly EC Compliance Report for 1st Oct 2024 to 31st March 2025 IT Project "HCL Technology Hub" located at Gajaria Farms, Sultanpur Road, Lucknow M/s HCL IT City Lucknow Pvt Ltd. along with the necessary annexures for your kind perusal.

We understand that the above is in line with requirement of Ministry of Environment, Forest and Climate Change, GOI.

Thanking You,

Yours Sincerely,

For M/s HCL IT City Lucknow Pvt. Ltd.



(Authorized Signatory)

Enclosure: Compliance Report; Soft copy of Report in C.D.

Copy to: 1. Member Secretary, U.P. Pollution Control Board, 3rd Floor, PICUP Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow (UP) - 226010.
2. Chairman, SEIAA, Directorate of Environment, Lucknow (UP) - 226010.

HCL

HCL TECHNOLOGY HUB

COMPLIANCE REPORT

**HCL Technology Hub, Chack Ganjaria Farms,
Sultanpur Road, Lucknow, Uttar Pradesh**



Submitted By:

**HCL Technology Hub, Chack Ganjaria
Farms, Sultanpur Road, Lucknow,
Uttar Pradesh**

June 2025

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EC COMPLIANCE REPORT

Specific and General Conditions as per Environmental Clearance issue vide letter no. 580/661/Parya/SEAC/2803/2014/DDY dated: 09/07/2015 attached as Annexure-I.

S. No.	Conditions	Compliance
Specific Conditions		
I. Construction Phase		
1.	Digging of basement shall be undertaken in view of structural safety of adjacent building under information/ consultation with District Administration/ Mining Department.	Digging of basement has been undertaken in view of structural safety of adjacent building. As of now, there is no building adjacent to the project site. Mining permission had been taken and same as attached as Annexure-II .
2.	Sprinkler to be used for curing and quenching during construction phase. No ground water to be used for construction.	STP treated water was used for curing and quenching during construction phase.
3.	Structural safety certificate from qualified structural engineer should be obtained. The same should get vetted from IIT Delhi as discussed with project proponent.	Structural Safety certificate by structural Engineer vetted by Mr. Ganesh Juneja, IIT Bombay, is attached as Annexure-III .
4.	Environmental Corporate Responsibility (ECR) plan along with budgetary provision amounting to 2% of total project cost shall be submitted (within three months) on need base assessment study in the study area. Income generating measures which can help in up-liftment of weaker section of society consistent with the traditional skills of the people identified. The program can be including activities such as old age homes, rain water harvesting provision in nearby areas, development of fodder farm, fruit bearing orchards, vocational training etc. In addition, vocational training for individuals shall be imparted so that poor section of society can take up self-employment and jobs. Separate budget for community development activities and income generating programmers shall be specified.	HCL Foundation launches "Harit- The Green Spaces Initiative" with the overriding objective to combat climate change through ecosystem conservation and restoration, to conserve, restore and enhance local ecosystems and respond to climate change in a sustainable manner through community engagement in HCL Uday districts. We have done the activities are mentioned below: ▢ Afforestation activities. ▢ Development of Nursery for 20,000 plants. Till date more than 70 species have planted in the 'Atal Uday Upvan'. ▢ There are 10 water storage pits, an external trench has been constructed to collect rainwater and run-off water from the nearby fields, the internal trench constructed for water storage and one big pond across 1.5 acres. Details and Photographs showing CER activity is attached as Annexure-IV .
5.	Consent to Establishment shall be obtained from UP State Pollution Control Board under Air & Water Act and a copy shall be submitted to Ministry before start	Copy of Consent to Establishment Vide Letter No. F64353 C-5/NOC-806/15 Dated: 07/07/2015 is attached as Annexure-V . Currently, the IT Block of project is in

Information Technology Project "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh.

S. No.	Conditions	Compliance
	of any construction work at site.	operational phase. Consent to Operate has been obtained for Project vide Order No. 146617/UPPCB/ Lucknow (UPPCBRO)/CTO/air/LUCKNOW/2021 and 146606/UPPCB/Lucknow (UPPCBRO)/CTO/ water/ LUCKNOW/2021 dated on 05/05/2022 valid till 31/12/2026. Copy of current CTO has been enclosed as Annexure VI.
6.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Provision for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, etc. are already provided at project site. The housing is in the form of temporary structures will be removed after the completion of the project. Photographs showing mobile toilets at construction site, drinking water facility, canteen facility, etc are attached as Annexure-VII. Photographs of the First Aid Facility and health care facility are attached as Annexure-VIII.
7.	A First Aid Room will be provided in the project both during construction and operation of the project.	1. Construction Phase: First aid room was provided at the site during the construction. 2. Operation Phase: First Aid facility has been provided in the hotel. Photographs of the First Aid facilities provided is attached in Annexure-VIII.
8.	All the topsoil excavated during construction activities should be stored for use in horticulture/ landscape development within the project site.	Top soil of the project site was preserved at the site and same was utilized for the landscape development at the project site.
9.	Disposal of muck during construction phase should not create any adverse effect on the neighboring communities and be disposed taking the necessary precaution for general safety and health aspects of people, only in approved sites with the approval of competent authority.	During construction phase muck was generated in the form of excavated soil from the basement excavation. Excavated soil was sent for the utilization in road construction and filling of low-lying area. Trucks used for transportation of the excavated soil was duly covered during its transportation. Mask was provided to the labor involved in the loading and unloading of the excavated soil. For dust suppression water sprinkling was done at the project site.
10.	Soil and ground water samples will be	We have monitored the Soil samples during the

S. No.	Conditions	Compliance
	tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants.	Construction phase to check the possibility of contamination of the soil. NABL Approved laboratory was engaged for monitoring of the soil quality. There is borewell at the site, so we have collected the ground water sample from the project site. However, at the site there was no source of contamination of soil and ground water. It was also ensured by regular inspection of the project site. Soil Quality Monitoring report and ground water monitoring report submitted quarterly along with the six-monthly compliance report. Monitoring report of soil and ground water sample is attached as Annexure-X .
11.	Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water.	During the construction phase, all construction soil were dumped at the designated site and monitoring was in place
12.	Any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approvals of the UP-State Pollution Control Board.	During the construction phase Used oil from DG sets, Air Filters and used Batteries are the only source of Hazardous waste in the premises and it is being disposed off as rules and norms. The copy of HWA is attached as Annexure-XI .
13.	The diesel generator sets to be used during construction phase should be low Sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.	Low Sulphur diesel is being used in the DG sets during construction and operation phase. Photographs of the DG Set and HSD bill are attached as Annexure-XII .
14.	The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of Explosives shall be taken. DG set shall meet the CPCB norms.	During the construction phase, approx. 600 ltrs diesel was stored at a time. The total amount of diesel stored at the site does not exceed 1000 liters thus, there is no requirement of permission from chief controller of explosives for storage of diesel as per Petroleum Act 1934, Chapter-1, Section 7. For operational phase, Permission has been obtained for storage of 40 KL HSD with License No. P/CC/UP/15/2447(P382561) dated 4 th November 2020. Permission is attached as Annexure-XIII .
15.	Vehicles hires for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform and	The vehicles are being hired for bringing construction material to the site are in good condition and regularly checked for pollution check certificate and are operated only during

S. No.	Conditions	Compliance
	to applicable air and noise emission standards and should be operated only during non-peak hours.	non-peak hours to avoid traffic congestion.
16.	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/UPPCB.	We conducted the ambient noise monitoring for 24 hrs. The Ambient noise level is found under permissible limit. Ambient noise levels would be conformed to residential standards both during day and night. Heavy Vehicular movement will be avoided during the peak hours and at night. Additionally, Green belt will be developed which will act as Noise barrier. Photographs of the Green belt development are attached as Annexure-IX . Environmental Monitoring Report is attached as Annexure-X .
17.	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on 27 th August, 2003.	Fly ash bricks had been used as construction material during construction phase.
18.	Read mixed concrete must be used in building construction.	Agreed, Ready mixed concrete had been used in building construction.
19.	Storm water control and its re-use as per CGWB and BIS standards for various applications.	Storm water control and its re-use would be done as per CGWB and BIS standards for various applications.
20.	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.	Water demand is being reduced by using pre-mixed concrete, curing agents. Ready mixed concrete was used and also being used in building construction.
21.	Permission to draw ground water shall be obtained from the competent Authority prior to construction/operation of the project.	NOC from Ground Water Department has been obtained. Copy of Borewell NOC is attached as Annexure-XV .
22.	Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.	We have use dual plumbing plan for separation of grey and black water.
23.	Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor-based control.	Low flow fixtures are being used for showers and dual flush cistern is used to conserve water during the operational phase of the project.
24.	Use of glass may be reduced by up-to 40% to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special	U Value is 2.2 and R-Value is 0.45 of the glass used in project.

S. No.	Conditions	Compliance
	reflective coating in windows.	
25.	Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement.	Noted the condition. The Energy Conservation measures report as per Bureau of Energy Efficiency has been prepared. Energy audit report is attached as Annexure-XXIX
26.	Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code which is proposed to be mandatory for all air-conditioned spaces while it is aspirational for non-air-conditioned spaces by use of appropriate thermal insulation material to fulfill requirement.	Opaque wall is meeting prescriptive requirement as per Energy Conservation Building Code.
27.	Explore options for use of dual pipe plumbing for use of water with different qualities such as municipal supply, recycled water, ground water etc.	Dual Plumbing system is used for use of water with different qualities such as municipal supply, recycled water. Separate lines for treated water and municipal water supply have been provided.
28.	Ensure use of measures for reducing water demand for landscaping and using xeriscaping, efficient irrigation equipment's and controlled watering systems.	Adaptive local species as per CPCB guidelines have been preferred for landscaping to reduce water requirement. Treated water from the STP is used for meeting the landscape water requirement. Drip irrigation & water sprinkling is done for watering of the lawns and other green area. Plants with similar water requirements are grouped on common zones to match precipitation heads and emitters, use of low-angle sprinklers for lawn areas as a measure to reduce water requirement for landscaping. Photographs showing greenbelt development have been attached as Annexure-IX .
29.	Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.	Environmental Clearance has been obtained vide letter no. 580/Parya/SEAC/2803/2014/DDY dated: 09/07/2015 attached as Annexure-I .
OPERATION PHASE		
1.	Details of E-waste should be submitted.	Agreed and Noted. We have submitted Form 3 E-waste return in June 2024. Receiving of E-waste is attached as Annexure-XVIII .
2.	The installation of the Sewage Treatment plant (STP) should be certified by an	STP has been installed for the treatment of sewage.

S. No.	Conditions	Compliance
	independent expert and a report in this regard should be submitted to the Ministry before the project is commissioned for operation. Treated effluent emanating from STP shall be recycled/ reused to the maximum extent possible. Treatment of 100% grey water by decentralized treatment should be done. Discharge of unused treated effluent shall conform to the norms and standards of the UP-State Pollution Control Board. Necessary measures should be made to mitigate the odour problem from STP.	Copy of Logbook of STP showing treated water consumption is attached as Annexure XIX . Sewage Treatment plant (STP) is being operated in the operational phase of IT Block. Treated water is being recycled and reused for flushing, cooling purposes and landscaping during the operational phase of the project. Photographs of STP are attached as Annexure-XX .
3.	The solid waste generated should be properly collected and segregated. Wet garbage should be composted and dry / inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.	The solid waste generated is properly collected and segregated. Organic waste is being processed in automatic organic waste converter of capacity 150 kg/day. Photograph of OWC and Logbook is attached as Annexure-XXVII . Logbook of Solid Waste Generation (Wet & Dry) is attached as Annexure XXII .
4.	Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low Sulphur diesel. The location of the DG sets may be decided with in consultation with UP State Pollution Control Board.	Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase is of enclosed type and conforms to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets is provided as per CPCB guidelines. We are using low sulphur diesel. The location of the DG sets is decided with in consultation with UP State Pollution Control Board.
5.	Criteria/ norms provided by competent Authority regarding the seismic zone be followed for construction work. Provision of alarm system, to timely notify the residents, in case of occurrence of earthquake/ other natural disasters/fire should be provided. A well-defined evacuation plan should also be prepared and regular mock drills should be arranged for the residents. Rise of stairs should be constructed in a way, so that it should be arranged for the residents. Rise	All the construction work has been done as per the approved site layout plan and norms provided by competent authority. Copy of Fire NOC of all building blocks are attached as Annexure-XVI .

S. No.	Conditions	Compliance
	of stairs should be constructed in a way, so that it should provide smooth movement.	
6.	Noise should be controlled to ensure that it does not exceed the prescribed standards. During night time the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations.	Noise would be controlled to ensure that it does not exceed the prescribed standards. Construction work had been done only in day time. Noise monitoring reports are attached as Annexure-X .
7.	The green belt of the adequate width and density preferable with local species along the periphery of the plot shall be raised so as to provide protection against particulates and noise.	The green belt of the adequate width and density preferable local species along the periphery of the plot has been raised so as to provide protection against particulates and noise. Photographs of the green belt development are attached as Annexure-IX . List of Tree species are attached as Annexure-XXIII .
8.	Weep holes in the compound walls shall be provided to ensure natural drainage of rain water in the catchment area during the monsoon period.	For the natural drainage of rain water in the catchment area we provided weep holes for natural drainage.
9.	Rain water harvesting for roof run-off and surface run-off, as plan submitted should be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The borewell for rainwater recharging should be kept at least 5 mts, above the highest ground water table.	Rain water harvesting for roof run-off and surface run-off, as per plan submitted. Approved Storm water Plan is already submitted.
10.	The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.	The ground water quality has been monitored regularly twice in a year by the NABL/MOEF&CC approved Laboratory and for your reference report is attached as Annexure-X
11.	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.	Parking is fully internalized no public space has been utilized. Photograph showing parking area is attached as Annexure-XXIV .
12.	A Report on the energy conservation measures confirming to energy conservation norms finalize by Bureau of energy Efficiency should be prepared incorporating details about building materials and technology, R & U Factors	The Energy Conservation measures report as per Bureau of Energy Efficiency has been prepared. Energy audit report is attached as Annexure-XXIX .

Information Technology Project "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh.

S. No.	Conditions	Compliance
	etc. and submit to the Ministry in three months' time.	
13.	Energy conservation measures like installation of CFLs/LED for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Use CFLs and LED should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible.	We have installed the LED within the project area and LEDs will be provided outside the project once would be in place before project commissioning. Used LED would be properly collected and disposed off as per E-waste Management Rule 2016 with authorized recycler Bharat Oil Company (India). Use of solar panels would be done to the extent possible. Solar water heater is being used. Photographs of solar water heater is attached as Annexure-XXI . Copy of Electricity bills are attached as Annexure-XXVIII .
14.	Adequate measures should be taken to prevent odour problem from solid waste processing plant and STP.	As the sewage treatment plant is located at the basement hence there will be no Odour problem from it. Photographs of STP are attached as Annexure-XX .
15.	The building Should have adequate distance between them to allow movement of fresh air and passage of natural light, air and ventilation.	The construction of the building has been done as per the approved plans.
16.	Waste segregation shall be carried-out at source and organic shall be composted. Adequate space shall be provided within the complex.	The waste segregation is being carried out at the source. Organic waste is being processed in automatic organic waste converter of capacity 150 kg/day. Photograph of OWC and log book is attached as Annexure-XXVII . Logbook of Solid Waste Generation (Wet & Dry) is attached as Annexure XXII
General Condition		
1.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective regional office of MoEF, the respective Zonal office of CPCB and the UPPCB.	Six monthly compliances of the stipulated EC conditions are being regularly submitted to respective regional office of MoEF, the respective Zonal office of CPCB and the UPPCB. Receiving of EC Compliance submitted in December 2024 is attached as Annexure- XXV .
2.	Officials from the Regional Office of MoEF, Lucknow who would be monitoring the implementation of environmental safeguards should be given full co-operation, facilities and documents/data by the project proponents during their inspection. A complete set of	Agreed and this condition will be complied.

Information Technology Project "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh.

S. No.	Conditions	Compliance
	all the documents submitted to SEIAA should be forwarded to the CCF, Regional office of MoEF, Lucknow.	
3.	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by the Ministry	Agreed.
4.	The Ministry reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environment (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Agreed.
5.	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Permission has been obtained for storage of 40 KL HSD with License No. P/CC/UP/15/2447(P382561) dated 4 th November 2020. Permission is attached as Annexure-XIII . Copy of Fire NOC attached as Annexure-XVI . Copy of Height Clearance from Airport Authority of India Vide Letter No. AAI/RHQ/NR/ATM/NOC/2015/169/2728-31 Dated: 20/05/2015 attached as Annexure-XVII .
6.	These stipulations would be enforced among other under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and control of Pollution act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.	Agreed
7.	The project proponent should advertise in at least two local Newspapers widely circulated in the region, on of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letters are available with the UP Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in . The advertisement should be made within 10	Environmental Clearance letter of project is already published in two newspapers: (1.) The Times of India, Lucknow dated 14 August' 2015 (2.) Navbharat Times, New Delhi/Lucknow Dated:-14 August' 2015. Copies of same are attached as Annexure-XXVI .

Information Technology Project "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh.

S. No.	Conditions	Compliance
	days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Lucknow.	
8.	A copy of the clearance letter shall be sent by the proponent to concerned panchayat, zila parishad /Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Agreed
9.	The proponent shall upload the status of compliance of the stipulates EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the regional office of MoEF, the respective Zonal office of CPCB and the UPPCB. The criteria pollutant levels namely, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x (ambient levels as well as stack emissions) or critical sectorial parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Agreed, we are regularly submitting the six-monthly compliance report to the regional office of MoEF&CC, the Uttar Pradesh Pollution Control Board and the state level Environment Impact Assessment Authority, Uttar Pradesh. Receiving of EC compliance submitted in December 2024 is attached as Annexure- XXV . We ensure that the criteria pollutant levels namely, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , (ambient air levels as well as stack emissions) or critical sectorial parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.
10.	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF, Lucknow by e-mail.	We are regularly submitting the Form V- and Six-monthly EC compliance report. E-mail submission copy of Form-V (Environmental Statement) is attached as Annexure-II . Receiving Six-monthly EC compliance submitted in December 2024 are attached as Annexure-XXV .

State Level Environment Impact Assessment Authority, Uttar Pradesh

Uploaded on
www.seiaaup.in

Directorate of Environment, U.P.

Vineet Khand- I, Gomti Nagar, Lucknow- 226 010

Phone: 91-522-2300 541, Fax: 91-522-2300 543

E-mail: docupfo@yasho.com

Website: www.seiaaup.in, www.seiaaup.com

To,

Mr. Tarun Goel,
Dy. General Manager,
M/s HCL IT City Lucknow Pvt. Ltd.,
Corporate Tower, HCL Technology Hub,
Sector-126, Noida, U.P.-201304

Ref. No. 580 /Parya/SEAC/2803/2014/DDYDate: 09 July, 2015

Sub: Environmental Clearance for Proposed Information Technology Project "HCL Technology Hub",
Chack Ganjaria Farms, Sultanpur Road, Lucknow, U.P. M/s HCL IT City Lucknow Pvt. Ltd.

Dear Sir,

Please refer to your application/letter dated 27/01/2015, 06/05/2015 and 21/05/2015 addressed to the Secretary, SEAC, Directorate of Environment, U.P., Lucknow on the subject as above. The matter was considered by the State Level Expert Appraisal Committee in its meetings held on dated 23/03/2015, 29/04/2015 & 25/05/2015.

A presentation was made by Shri Sanjeev Shukla, project proponent along with their consultant M/s Ascenso Enviro Pvt. Ltd. The proponents through the documents submitted and presentation made, informed the Committee that:-

1. The environmental clearance is sought for Information Technology Project "HCL Technology Hub" at Chack Ganjaria Farms, Sultanpur Road, Lucknow, U.P. M/s HCL IT City Lucknow Pvt. Ltd.
2. Area details of the project is as follows:

S. N.	Particulars	Area in Sq.m.	In percentage(%)
1	Plot area	4,04,685.60 (100 Acres)	-----
2	Permissible Ground coverage	1,61,874.24	40% of Plot Area
3	Permissible FAR @ 2.5	10,11,714.00	250% of Plot Area
4	Green Area Required	40,468.56	10% of Plot Area
5	Area for Current Development	68,796.55 (17 Acres)	
6	Proposed Ground coverage (Development Area)	25,953.68	37.72% of Development area
	• IT Block	15,378.53	59.25 % of Proposed Gr. Coverage
	• Skill Development Centre	2,528.16	9.74 % of Proposed Gr. Coverage
	• Hostel	3,141.52	12.10 % of Proposed Gr. Coverage
	• Housing	847.06	3.26 % of Proposed Gr. Coverage
	• DG Plant room, AC Plant room, Guard rooms	4,058.40	15.63 % of Proposed Gr. Coverage
7	Proposed FAR (Development Area)	1,34,821.69	196% of Development Area
	• IT Block FAR	41,939.24	31.10 % of Proposed FAR
	• Skill Development Centre FAR	12,410.20	9.20 % of Proposed FAR
	• Hostel FAR	17,979.82	13.33% of Proposed FAR
	• Housing FAR	58,433.66	43.34% of Proposed FAR
	• DG Plant room, AC Plant room, Guard rooms	4,058.00	3.01% of Proposed FAR
8	Basement Area	14,500.00	-----
9	Green area provided	48,562.27	12% of Plot Area
10	Built up area	1,49,321.69	-----

3. Land use details is as follows:

S. No.	Description	Area (in Acres)
Care Area		
1.	IT Block	50
2.	Skill Development Area & Hostel	10
Non-Care Area		
1.	Housing Development	14
2.	Mixed Landuse	16

3.	Institutional	5
4.	Services Use	5
Total Area		100

4. Salient features of the project is as follows:

Name and Location of the Project	Proposed Information Technology Project "HCL Technology Hub" at Chuck Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh.
Developers of the Project	M/s HCL IT City Lucknow Pvt. Ltd.
Total Plot Area	4,64,685.60 m ²
Built-up Area (Proposed FAR + Basement area + Services area)	1,49,321.69 m ²
Total Water Consumption	774 KLD
Total Freshwater Requirement	294 KLD Source: Municipal Supply
Power Requirement	7,000 KVA Source: Uttar Pradesh State Electricity Board (UPSEB)
Power Backup	5 DG Sets of total capacity of 10,000 KVA
Total Parking provided	2,021 ECS
Solid Waste generation	1,678.5 kg / day

5. Population details are as follows:

S. No.	Type	No. of unit / Area in sq.m.	Person Per Unit	Population
1	Dwelling Units	496 nos.	5	2,480
2	Hotel	500 rooms	2 person / room	1,000
3	IT Park	41,445.49 sq.m	1 person/8 sq.m. of FAR	5,000
4	Skill Development Centre	12,410.22 sq.m	1 person/5 sq.m. of FAR	2,500
Total Population				10,980

6. Water requirement details are as follows:

S. No.	Description	Population / Area	Unit water consumption (litres)	Total water required (KLD)	water requirement for domestic use (KLD)	Flushing / Recycled water (KLD)
1	Residential Population					
	Housing	2,480	86	213.28	161.20	52.08
	Hotel	1,000	86	86.00	65.00	21.00
2	IT Park and Skill Development					
	IT Park	5,000	30	150.00	45.00	105.00
	Skill Development Centre	2,500	30	75.00	22.50	52.50
3	Horticulture	48,562.27	1.5 ltrs./sq.m	72.69	—	—
4	HAVC Cooling Towers	1,700 TR	8 ltrs./tr/hr	163.20	—	—
5	Fire Fighting Tank		15% of total water requirement	8.90	—	—
Total Water Requirement				774.0796	293.700	230.580
SAY				774	294	230

7. Waste water details are as follows:

Details	Water (KLD)
Water requirement for domestic purpose	294
Wastewater to be generated from domestic use (@ 80% of domestic water requirement)	235
Water requirement for Flushing Purpose	230
Wastewater to be generated from Flushing (@ 100% of flushing requirement)	230
Water requirement for HVAC Cooling	163
Wastewater to be generated from HVAC Cooling (@ 75% of cooling water requirement)	122
Total Wastewater generated	122+230+235=587 KLD

8. The project proposals are covered under category 8"a" of EIA Notification, 2006.

Based on the recommendations of the State Level Expert Appraisal Committee (meeting held on 25/05/2015), the State Level Environment Impact Assessment Authority (meeting held on 29/06/2015) has decided to grant the Environmental Clearance to the project subject to the effective implementation of the following specific and general conditions:

SPECIFIC CONDITIONS

I. Construction Phase:

1. Digging of basement shall be undertaken in view of structural safety of adjacent buildings under information/consultation with District Administration/Mining Department.
2. Sprinkler to be used for curing and quenching during construction phase. No ground water to be used for construction.
3. Structural safety certificate from qualified structural engineer should be obtained. The same should get vetted from IIT, Delhi as discussed with project proponent.
4. Environmental Corporate Responsibility (ECR) plan along with budgetary provision amounting to 2% of total project cost shall be submitted (within three month) on need base assessment study in the study area. Income generating measures which can help in up-liftment of weaker section of society consistent with the traditional skills of the people identified. The program can include activities such as old age homes, rain water harvesting provisions in nearby areas, development of fodder farm, fruit bearing orchards, vocational training etc. In addition, vocational training for individuals shall be imparted so that poor section of society can take up self employment and jobs. Separate budget for community development activities and income generating programmes shall be specified.
5. Consent for Establishment shall be obtained from UP State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.
6. Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
7. A First Aid Room will be provided in the project both during construction and operation of the project.
8. All the topsoil excavated during construction activities should be stored for use in horticulture/landscape development within the project site.
9. Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.
10. Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants.
11. Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water.
12. Any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approvals of the UP State Pollution Control Board.
13. The diesel generator sets to be used during construction phase should be low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.
14. The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of Explosives shall be taken. DG set shall meet the CPCB norms.
15. Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.
16. Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/UPPCB.
17. Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on 27th August, 2003.
18. Ready mixed concrete must be used in building construction.
19. Storm water control and its re-use as per CGWB and BIS standards for various applications.

20. Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.
21. Permission to draw ground water shall be obtained from the competent Authority prior to construction/operation of the project.
22. Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.
23. Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor based control.
24. Use of glass may be reduced by up-to 40% to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows.
25. Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement.
26. Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code which is proposed to be mandatory for all air conditioned spaces while it is aspirational for non-air conditioned spaces by use of appropriate thermal insulation material to fulfill requirement.
27. The approval of the competent authority shall be obtained for structural safety of the buildings due to earthquake, adequacy of fire fighting equipments, etc. as per National Building Code including protection measures from lightning etc.
28. Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings.
29. Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.

II. Operation Phase:

1. Details of E-waste should be submitted.
2. The installation of the Sewage Treatment Plant (STP) should be certified by an independent expert and a report in this regard should be submitted to the Ministry before the project is commissioned for operation. Treated effluent emanating from STP shall be recycled/ reused to the maximum extent possible. Treatment of 100% grey water by decentralised treatment should be done. Discharge of unused treated effluent shall conform to the norms and standards of the UP State Pollution Control Board. Necessary measures should be made to mitigate the odour problem from STP.
3. The solid waste generated should be properly collected and segregated. Wet garbage should be composted and dry / inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.
4. Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low sulphur diesel. The location of the DG sets may be decided with in consultation with UP State Pollution Control Board.
5. Criteria/ norms provided by competent Authority regarding the seismic zone be followed for construction work. Provision of alarm system, to timely notify the residents, in case of occurrence of earthquake/other natural disasters/fire should be provided. A well defined evacuation plan should also be prepared and regular mock drills should be arranged for the residents. Rise of stairs should be constructed in a way, so that it should provide smooth movement.
6. Noise should be controlled to ensure that it does not exceed the prescribed standards. During night time the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations.
7. The green belt of the adequate width and density preferably with local species along the periphery of the plot shall be raised so as to provide protection against particulates and noise.
8. Weep holes in the compound walls shall be provided to ensure natural drainage of rain water in the catchment area during the monsoon period.
9. Rain water harvesting for roof run- off and surface run- off, as plan submitted should be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The borewell for rainwater recharging should be kept at least 5 mts. above the highest ground water table.

10. The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.
11. Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.
12. A Report on the energy conservation measures conforming to energy conservation norms finalized by Bureau of Energy Efficiency should be prepared incorporating details about building materials & technology, R & U Factors etc and submit to the Ministry in three months time.
13. Energy conservation measures like installation of CFLs/LED for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Use CFLs and LED should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible.
14. Adequate measures should be taken to prevent odour problem from solid waste processing plant and STP.
15. The building should have adequate distance between them to allow movement of fresh air and passage of natural light, air and ventilation.
16. Water segregation shall be carried-out at source and organic shall be composted. Adequate space shall be provided within the complex.

PART-B: GENERAL CONDITIONS:

1. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the UPPCB.
2. Officials from the Regional Office of MOEF, Lucknow who would be monitoring the implementation of environmental safeguards should be given full cooperation, facilities and documents/data by the project proponents during their inspection. A complete set of all the documents submitted to SEIAA should be forwarded to the CCE, Regional office of MOEF, Lucknow.
3. In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry.
4. The Ministry reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.
5. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.
6. These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and control of Pollution) act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.
7. The project proponent should advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letters are available with the U' Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at <http://www.envfor.nic.in>. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Lucknow.
8. A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.

9. The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the UPPCB. The criteria pollutant levels namely; PM₁₀, PM_{2.5}, SO₂, NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.
10. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF, Lucknow by e-mail.

This environmental clearance is subject to ownership of the site by the project proponents in confirmation with approved Master Plan for Lucknow by the competent Authority. In case of violation, it would not be effective and would automatically stand cancelled.

The project proponent will have to submit approved plans and proposals incorporating the conditions specified in the Environmental Clearance within 03 months of issue of the clearance. The SEIAA/MoEF reserves the right to revoke the environmental clearance, if conditions stipulated are not implemented to the satisfaction of SEIAA/MoEF. SEIAA may impose additional environmental conditions or modify the existing ones, if necessary. Necessary statutory clearances should be obtained.

You are also directed to ensure that the proposed site is not a part of any no-development zone as required/prescribed/identified under law. In case of violation, this permission shall automatically deem to be cancelled. Also, in the event of any dispute on ownership or land use of the proposed site, this clearance shall automatically deem to be cancelled.

These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006 including the amendments and rules made thereafter.

This is to request you to take further necessary action in the matter as per provision of Gazette Notification No. S.O. 1533(E) dated 14.9.2006 (as amended) and send regular compliance reports to the authority as prescribed in the aforesaid notification.

(J.S. Yadav)

Member Secretary, SEIAA

No. SEIAA/SEAC/2803/2015/DD(V) Dated: As above
Copy for information and necessary action to:

1. The Principal Secretary, Environment, U.P. Govt., Lucknow.
2. Advisor, IA Division, Ministry of Environment, Forests & Climate Change, Govt. of India, Indira Paryavaran Bhawan, Jor Bagh Road, Aligarj, New Delhi.
3. Chief Conservator, Ministry of Environment & Forests, Regional Office (Central Region), Kendriya Bhawan, 5th Floor, Sector-H, Aligarj, Lucknow.
4. The Member Secretary, U.P. Pollution Control Board, TC-12V, Paryavaran Bhawan, Vibhuti Khurd, Gomti Nagar, Lucknow.
5. District Magistrate, Lucknow, U.P.
6. Copy for Web Master/Guard file.

(Dr. A. A. Khan)

Nodal Officer, SEIAA, UP,
Directorate of Environment, U.P.

9/3/24, 1:21 PM

AMC Group Mail - Submission of Environment statement Form-V for IT Project "HCL Technology Hub" at Chak Gajaria Farms, S...



Eia Team <eia.team@amcgroup.co.in>

Submission of Environment statement Form-V for IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow as per rules 14 of Environment (Protection) Rules, 1986 and its subsequent amendments up to date.

Eia Team <eia.team@amcgroup.co.in>

Tue, Sep 3, 2024 at 1:20 PM

To: ms@uppcb.in

Cc: rolucknow@uppcb.in

Dear Sir,

This is with reference to the above-mentioned subject, we would like to inform you that Our unit, IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow of M/s HCL IT City Lucknow Pvt Ltd. is an operational unit and consent to operate has been granted from UPPCB. Further, we are hereby submitting Environment statement on the Environment management activities executed at our site during the period of April 2023 to March 2024 in the prescribed Form-V as per rule 14 of Environment (Protection) Rules, 1986 and its subsequent amendments for the financial year ending on 31st March 2024.

We understand this is the line with regulatory requirement.

Thanking You,
Sincerely Yours

For M/s HCL IT City Lucknow Pvt. Ltd.



HCL IT_Form 5_Final_2024_compressed.pdf
13457K

HCL IT CITY LUCKNOW PRIVATE LIMITED

IT/ITES Special Economic Zone,

Village Kanjehat & Mastehat,

Chak Gajaria Farms, Sultanpur Road, Lucknow, U.P. 226 002

Registered Office: 30E, Siddharth, SE, Nehru Place,

New Delhi - 110019

Tel: 011-26444512 / 26282778

CIN: U74140DL2014PTC264397

Date: 27/08/2024

To,
The Member Secretary
Uttar Pradesh Pollution Control Board,
Building No. TC-12 V, Vibhuti Khand,
Gomti Nagar, Lucknow,
Uttar Pradesh- 226010

Subject: Submission of Environment statement Form-V for IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow as per rules 14 of Environment (Protection) Rules, 1986 and its subsequent amendments up to date.

Ref: CTO issued to M/s HCL IT City Lucknow Pvt Ltd vide CTO No. 146606/UPPCB/Lucknow (UPPCBBRO)/CTO/water/Lucknow/2021, Dated: 05/05/2022 and CTO No. 46617/UPPCB/Lucknow(UPPCB)/CTO/air/Lucknow/2021, Dated: 05/05/2022

Dear Sir,

This is with reference to the above-mentioned subject, we would like to inform you that Our unit, IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road,

Lucknow of M/s HCL IT City Lucknow Pvt Ltd. is an operational unit and consent to operate has been granted from UPPCB. Further, we are hereby submitting Environment statement on the Environment management activities executed at our site during the period of April 2023 to March 2024 in the prescribed Form-V as per rule 14 of Environment (Protection) Rules, 1986 and its subsequent amendments for the financial year ending on 31st March 2024.

We understand this is the line with regulatory requirement.

Thanking you,
Sincerely Yours,

For M/s HCL IT City Lucknow Pvt. Ltd.



(Authorized Signatory)

Enclosure: Environment Statement [Form-V]
CTO attached in Annexure I

CC: Regional Office UPPCB, Picup Bhawan B-Block, 4th Floor, Vibhuti Khand, Gomti Nagar, Lucknow-226010.



FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March, 2024

PART-A

- i. **Name and address of the owner / occupier of the industry operation or process.**
Mr. Rizwan Hafiz Authorized representative of IT Project "HCL Technology Hub"
at Chack Gajaria Farms, Sultanpur Road, Lucknow.
- ii. **Industry category Primary- (SIC Code) Secondary- (SIC Code):** IT Project.
- iii. **Production category – Unit-** It is an IT project.
- iv. **Year of establishment-** 07/07/2015
- v. **Date of the last environmental statement submitted:** 19th Sep 2023

PART -B

Water and Raw Material Consumption:

- i. **Water consumption**
 Process : Not Applicable
 Cooling : 14072 KL
 Domestic : 30357 KL

Name of Products	Process water consumption per unit of product output	
	During the previous Financial year from April 2022 to March 2023	During the current Financial Year from April 2023 to March 2024
As this is an IT Project, there is no production. However, there is water consumption in following areas:		
Domestic	47273 KL for period of April 2022 to March 2023	30357 KL for period of April 2023 to March 2024

ii. Raw material consumption

Name of raw materials ⁴	Name of Products	Consumption of raw material per unit of output	
		During the previous Financial year from April 2022 to March 2023	During the current Financial Year from April 2023 to March 2024
It is an IT Project therefore, there is no raw material/chemical is used. However, Food, Furniture and stationary items are being used.			

*Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C

**Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)**

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged(mass/volume)	Percentage of Variation from prescribed standards with reasons.
(a)Water	No Pollutant Discharge into the Environment as sewage is treated in STP and recycled 1 No of STP – Capacity 830KLD	Analysis of pH, TSS, TDS, BOD, COD in water.	Under permissible limits. STP outlet reports are attached as Annexure II
(b)Air	Emission from DG sets 7 No of DG Sets (4*1500KVA, 2*1010KVA, 1*380KVA)	Analysis of Particulate Matter, NOx, Sox, CO in Air.	Under permissible limits. Air Analysis reports are attached as Annexure II

PART-D
HAZARDOUS WASTES
(As specified under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016)

Hazardous Wastes	Total Quantity(Kg)	
	During the previous Financial year from April 2022 to March 2023	During the current Financial Year from April 2023 to March 2024
1. From Process		
(a) Used Oil from DG sets & Waste Kitchen Oil	Used Oil from DG 600 (SEZ), 200 (NSEZ)liter Waste Kitchen Oil is Nil	Used Oil from DG 520 liters Waste Kitchen Oil is Nil
(b) E-Waste	Nil	Nil
2.From Pollution Control Facilities		
(a) ETP Sludge	Nil	Nil

PART-E
SOLID WASTES:

Solid Wastes	Total Quantity (Kg)	
	During the previous Financial year from April 2022 to March 2023	During the current Financial Year from April 2023 to March 2024
a. From process		
i. Municipal Solid Waste	17324.3 Kg of organic waste is processed in Organic waste Converter. 554 kg of recyclable waste is generated which is given to recycler. - Nil Kg solid waste is sent to MSW Landfill site through MCF.	15554 Kg of organic waste is processed in Organic waste Converter. 66 kg of recyclable waste is generated which is given to recycler. - Nil Kg solid waste is sent to MSW Landfill site through MCF.
b. From Pollution Control Facility		
i. STP Sludge	144Kg	95 Kg
c. Quantity recycled or re-utilized within the unit.	17,468.3 Kg	15,649 Kg

PART-F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

- Solid waste: 66 kg of Solid waste disposed through recycler.
- In the current financial year, the hazardous waste spent oil is 520 liter from April 2023 to March 2024 has been disposed through authorized recycler. For Hazardous waste disposal HCL IT City Lucknow has made an agreement with M/s Bharat Oil Company (India) Registered (BOC). Copy of Agreement is enclosed as Annexure-III.

PART - G

Impact of the pollution control measures taken on conservation of natural resources and on the cost of production.

- By installation of STP of 830 KLD capacity, the wastewater generated during the project is treated and the treated water is being reused in horticulture, flushing and cooling towers, thereby reducing water pollution and the cost incurred in fresh water consumption.
- Installation of energy efficient CFL and LED lights have reduced power consumption and thereby, the cost of electricity.
- DG sets are equipped with acoustic enclosures to reduce noise level.

PART-H

Additional measures / investment proposal for environmental protection including abatement of pollution, prevention of pollution.

- Treated water from STP is being used within the premises and achieving zero discharge of wastewater.

PART -I

Any other particulars for improving the quality of the environment.

- Segregation of solid waste is being done into dry and wet waste.

CERTIFICATE

(उपविधि संख्या - 13.3)

(To be submitted with the application for obtaining partial completion certificate)

1. Certified that the Building for which partial completion plan has been submitted for approval, conforms to the requirements of relevant Indian Standard Codes and National Building Code as referred in Annexure-I of Building Bye-Laws in respect of Structural Safety in general and National Hazards including earthquake in particular.
2. It is also certified that the Building has been constructed as per approved foundation and structural designs provided by the Structural Engineer which are certified to be based on relevant Indian Standard Code and National Building Code as referred above and the building is safe for occupancy.

3. Location/Address of Building - Building (F-02) & Convention Shopping

Plot No. - HCL IT CITY, HITEC Special Economic Zone, VII Kanchan & Mainman,

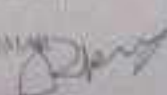
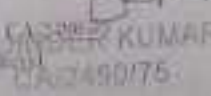
Scheme/Colony - C. G. City, Chak Gajra Vihar,

Town - Lucknow

District - Lucknow, U.P.

4. Particulars of Buildings -

	F-02	Convention Shopping
1. Ground Coverage (Sq M)	1137.21	864.35
2. Total Covered Area (Sq M)	13088.747	416.219
3. Maximum numbers of floors above ground	4	NIL

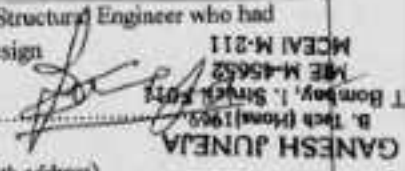
Signature of Owner with date  Name (Block) HCL IT CITY LUCKNOW PVT LTD Address: VII, MAINMAN & CHAK KANCHAN, CG City, CHAK GAJRA VIHAR ROAD, LUCKNOW, U.P. 226 002	Signature of the Structural Engineer who had prepared the Design  Name (Block) JUNEJA TECHNOCONSULTANTS B. Tech (Hons) 1989 IT Bombay, Fellow I, Struct. Engg. Inst. of India MIE M-45652 CHARTERED ENGG. (INDIA) 50945621 Legible Seal (with address)
Signature of the Architect who had Supervised the construction  Name (Block) RAJENDRA KUMAR ASSOCIATES UDA Registration No. CA-2200 Legible Seal (with address) 	Signature of the Engineer who had supervised the Construction  Name (Block) O P Sharma Legible Seal (with address) 

CERTIFICATE

(उपविधि संख्या - 13.4)

(To be submitted with the application for obtaining partial completion certificate)

1. Certified that the Building for which partial completion plan has been submitted for approval, conforms to the requirements of relevant Indian Standard Codes and National Building Code as referred in Annexure-1 of Building Bye-Laws in respect of Structural Safety in general and National hazards including earthquake in particular.
2. It is also certified that the Building has been constructed as per approved foundation and structural designs provided by the Structural Engineer which are certified to be based on relevant Indian Standard Code and National Building Code as referred above and the building is safe for occupancy.
3. Location/Address of Building - Building IT-01
Plot No - HCL IT CITY, IT/TES Special Economic Zone, Vill Kanjehara & Mastema,
Scheme/Colony - C. G. City, Chak Gajaria Farms,
Town - Lucknow
District - Lucknow, U.P.
4. Particulars of Building
 1. Ground Coverage (sq mt) 5071.121
 2. Total covered area (sq mt) 24626.282
 3. Maximum Numbers of Floors above ground. 6+4

Signature of Owner with date Name (Block)..... Address: 	Signature of the Structural Engineer who had prepared the Design Name (Block)..... Legible Seal: (with address) 
Signature of the Architect who had Supervised the construction Name (Block)..... COA Registration No. Legible Seal: (with address) 	Signature of the Engineer who had Supervised the Construction Name (Block)..... Legible Seal: (with address) 

5 - A, DDA Flats, Sarai Juliana, New Delhi - 110025

Phone number: 26922672, 26842493; Email: jtc625@gmail.com & juneja5a@gmail.com

Date - 22nd Sep, 2016

STRUCTURAL STABILITY CERTIFICATE

This is to certify that the buildings IT-03 and SDC-01 along with other supportive service buildings are planned by M/s HCL IT City Lucknow Pvt Ltd at ChakGajaria Farms, Sultanpur Road, Lucknow is designed conforming to the below stated Indian standards and the design basis report which was submitted. The building foundation and the building structure will be safe for the purpose for which it is intended to the best of our knowledge.

- IT-03 & SDC-01 superstructure
- STP, WTP and Utility buildings

DESIGN DETAILS -

Structure	-	RCC framed structure as per IS 456:2000
Foundation Type	-	Pile foundation
Wind Speed	-	47 m/sec as per IS 875(Part 3): 1987
Seismic Loading	-	Zone IV as per IS 1893(Part1): 2002

For Juneja Techno Consultants Pvt Ltd

For Juneja Techno Consultants (P) Ltd.


Director/Authorized Signatory

CERTIFICATE

(उपबिधि संख्या - 13.4)

(To be submitted with the application for obtaining partial completion certificate)

1. Certified that the Building for which partial completion plan has been submitted for approval, conforms to the requirements of relevant Indian Standard Codes and National Building Code as referred in Annexure-I of Building Bye-Laws in respect of Structural Safety in general and National hazards including earthquake in particular.
2. It is also certified that the Building has been constructed as per approved foundation and structural designs provided by the Structural Engineer which are certified to be based on relevant Indian Standard Code and National Building Code as referred above and the building is safe for occupancy.
3. Location/Address of Building - Building SDC-02

Plot No - HCL IT CITY, IT/ITES Special Economic Zone, Vill Kanjehara & Masterna,

Scheme/Colony - C. G. City, Chak Gajaria Farm,

Town - Lucknow

District - Lucknow, U.P.

4. Particulars of Building

1. Ground Coverage (sq mt) – 1585.11 SQM
2. Total covered area (sq mt) – 10138.869 SQM
3. Maximum Numbers of Floors above ground. 7 Floors

Signature of Owner with date Name (Block) Address:	Signature of the Structural Engineer who had prepared the Design Name (Block) Legible Seal: (with address)
Signature of the Architect who had Supervised the construction Name (Block) COA Registration No. Legible Seal (with address)	Signature of the Engineer who had Supervised the Construction Name (Block) Legible Seal: (with address)

GANESH JUNEJA

B. Tech (Hons) 1969

IIT Bombay, I. Struct. F011

MIE M-45652

MCEAI M-211

RAJINDER KUMAR

COA Registration No. CA/2490/75

RAJINDER KUMAR & ASSOCIATES

B-6/17, Shopping Centre,

Exatung Enclave,

New Delhi-110029

O.M. PRAKASH SHARMA

CERTIFICATE

(उपविधि संख्या - 13.4)

(To be submitted with the application for obtaining partial completion certificate)

1. Certified that the Building for which partial completion plan has been submitted for approval, conforms to the requirements of relevant Indian Standard Codes and National Building Code as referred in Annexure-I of Building Bye-Laws in respect of Structural Safety in general and National hazards including earthquake in particular.
2. It is also certified that the Building has been constructed as per approved foundation and structural designs provided by the Structural Engineer which are certified to be based on relevant Indian Standard Code and National Building Code as referred above and the building is safe for occupancy.

3. Location/Address of Building - Building Hostel Tower 02 (Basement+Ground+8 Floors)

Plot No—HCL IT CITY, II/ITES Special Economic Zone, Vill Kanjehara & Masteman,

Scheme/Colony - C. G. City, Chak Gajaria Farms,

Town - Lucknow

District - Lucknow, U.P.

4. Particulars of Building - Hostel Tower A2

1	Ground Coverage (sq mt)	830.092 sq mt
2	Total covered area (sq mt)	7267.350 sq mt
3	Maximum Numbers of Floors above ground.	G+8

Signature of the Owner with date Name (Block) HCL IT CITY LUCKNOW PVT LTD Address: VIII, MASTEMAU & CHAK KAJEHRA, CG City, SULTANPUR ROAD, LUCKNOW, U.P., 226 002	Signature of the Structural Engineer who had prepared the Design Name (Block) JUNEJA TECHNICAL Legible Seal: (with address)
Signature of the Architect who had Supervised the construction Name (Block) RAJINDER KUMAR ASSOCIATES COA Registration No. RAJINDER KUMAR Legible Seal: (with address) - GA/2490/75	Signature of the Engineer who had Supervised the Construction Name (Block) NIPUN BHALLA (NIPUN BHALLA) Legible Seal: (with address) CBRE.

RAJINDER KUMAR AND ASSOCIATES
 B-6/17, Shopping Centre
 Safdarjung Enclave, New Delhi-29

Annexure IV

Details and Photographs showing CER
Activity

HARIT- The Green Spaces Initiative



To conserve, restore and enhance local ecosystems and respond to climate change in a sustainable manner through community engagement in WCL U.S. States

5 Team Member

25 Partners

139 HR deployed across projects

Partners



Outcome / Impact

Increased Water Holding Capacity

2017 (Mar 20)	2018 (Mar 20)
~ 2,000 mn liters	~ 40 mn liters

Less Litter Afforestation

2017 (Mar 20)	2018 (Mar 20)
125.3 Acres	22.1 Acres

CO₂e Sequestered Emissions Reduced

2017 (Mar 20)	2018 (Mar 20)
~ 120,000 kg	~ 14,000 kg

Saplings Planted

2017 (Mar 20)	2018 (Mar 20)
103,284	57,451

Waterbodies Rejuvenated

2017 (Mar 20)	2018 (Mar 20)
31	6

Animal Lives Impacted

2017 (Mar 20)	2018 (Mar 20)
9,046	2,234

Outreach

19,781
SOCIAL MEDIA

7
WEBINARS

Partnership

4
ON-GOING GOVERNMENT
MOUs

Pre plantation activities

RFPs, MoUs, Planning meetings, Land demarcation, Fencing, Topographic and contour survey plan, Soil-bed Mapping, Soil testing, Visibility boards

Site preparation

Digging of the area, Spreading of the material and mixing, Land levelling, Treaching, Soil Conditioning, Digging of Compost Pits

Material Sourcing

Selection of Plants species & Transportation Procurement of mulching material, manure, organic liquid, Cocopeat

Plantation activities

Placing of Saplings, Digging pits for saplings, support sticks, Plantation, Watering

Post plantation activities

Watering of saplings, Maintenance, Mulching, De-weeding, Replacement of Saplings (if required)

Community engagement

Plantation drive involving students, Involving local community, Involving HCL Volunteers



Mixing of Material by JCB



Land preparation



Digging of pit



Plantation



Watering



Plantation



From L-R : Dr. Indra Mani Tripathi – Municipal Commissioner; Smt. Sanyukta Bhatia – Hon'ble Mayor, Lucknow; Dr. Archana Dwivedi – Additional Municipal Commissioner; Ms. Nidhi Pandhir – Director, HCL Foundation; Kirti Karamchandani, Head Govt. Relations, HCL.

Lucknow Nagar Nigam
assigned 5 ha land 'Atal
Uday Upvan' &
technical assistance

60,700

Saplings planted



5 ha

Afforestation Area

1

NGO Partner



1

Government MoU

70,000

Plants in Nursery



2,000 tons

CO₂e

Carbon sequestered



'Harit' – The Green Spaces Initiative

Tree Plantation Count:

- On October 2, 2019, 200 native tree saplings were planted in Atal Uday Upvan, Lucknow.
- By December 2020 a total of 30,000 saplings were planted at the site.
- From January to March 2021, 30,000 saplings were planted at the site as part of World Forestry Day 2021.
- On June 5, 2021, 200 saplings were planted as part of World Environment Day 2021.
Mayor Sanyukta Bhatia and team were present during the plantation activity.
- Till date, 60,200 saplings have been planted consisting of 70+ species.

Nursery Development:

- Between October 2019 and December 2020, a total of 20,000 sapling bags were created at the Harit Nursery in Atal Uday Upvan, Lucknow.
- As part of our 'no plastics' objective for FY 21-22, instead of plastic poly bags, new saplings are being created on raised beds.
- 'Raised beds' and 'green bamboo structures' have been created to grow saplings for the Harit nursery.
- The raised beds are almost 1.5 km in length in total and each bed is 1.5 ft wide, these beds are used to grow saplings.
- There is a 140 ft long green structure made out of bamboo and green netting that is used to shelter the young seedlings and saplings from rain and harsh sun, till they are ready to be planted.
- Currently, 5,000 saplings are growing in these raised beds which will be ready for plantation in the next quarter (July & August) and another 10,000 will be ready to be planted in September.

Water bodies/storage pits:

- There **10 water storage pits** with dimensions of 20ft X 10ft and 5ft in depth.
- An **external trench**, 960m in length and 5 ft wide, has been constructed to collect rainwater and run-off water from the nearby fields.
- The **internal trench** constructed for water storage is 1 km in length and 5 ft wide.
- Apart from that, there is **one big pond** spread across 1.5-acre.

Activities/Sessions/Nature Education:

- **8 workshops** have been conducted for CMS schools, Lucknow Connection Worldwide (*Facebook group*), and with other local communities in 2021, with more than 300 participants in total.
- Villagers and volunteers regularly visit the site.
- Volunteers also participate in tree plantation and maintenance activities.
- Local government officials have been visiting the site regularly to conduct nature walks and plantations.

Till date we have planted more than 70 species in the Atal Uday Upvan few of the native species are listed below:-

- Banyan
- Mango
- Peepal
- Goolar
- Pilkhan
- Shehtoot
- Lemon
- Mausami
- Shisham
- Ber
- Karaunda
- Papaya
- Jaamun
- Tamarind
- Jack fruit
- Amlatas
- Kanak champa
- Palaash
- Semal
- Kari Patta
- Tota
- Gauva



SHISHAM (DALMANIA DIELIS)



BER (FICUS BERNARDIANA)



JAAMUN (SYZYGIA JAMBHIN)



PEEPAL (FICUS RELIGIOSA)



KARI PATTI (FICUS VERNICATA)



BER (FICUS BERNARDIANA)



BER (FICUS BERNARDIANA)



BER (FICUS BERNARDIANA)





Nursery of 20,000 Plants



Rain Water Harvesting









Birds & Insects Zone



Official Visits



HCL Employee Driven Plantation Drive





उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड,
टी.सी. - १२, वी, विभूति खण्ड विभूति खण्ड,
गोमती नगर, लखनऊ

वैधता अवधि-०३ वर्ष हेतु मान्य

54353

संदर्भ संख्या

सी-५/एन०डी०सी०-८०६/१५

दिनांक ०७-३-१५

सेवा में,

श्री ० एच०सी०एल० आई०टी० सिटी लखनऊ प्रकृति,
एक मंजूरिया काम, सुल्तानपुर रोड,
जिला-लखनऊ।

विषय: पर्यावरणीय प्रदूषण की दृष्टि से नई इकाई की स्थापना हेतु अनापत्ति प्रमाण पत्र निर्माण।

महोदय,

कृपया उपरोक्त विषयक अपने अनापत्ति प्रमाण हेतु आवेदन पत्र दिनांक ०८.०५.१५ का संदर्भ लें।
उद्योग को पर्यावरणीय प्रदूषण के दृष्टिकोण से निम्नलिखित विशिष्ट जल एवं सामान्य जल (संलग्नक) के
स्वीकृत अनुपातन के साथ सहाई अनापत्ति प्रमाण पत्र स्वीकृत किया जाता है।

१. अनापत्ति प्रमाण पत्र निम्नलिखित विशिष्ट विवरणों के लिए ही निर्मित किया जा रहा है।

(क) स्थल:

एक मंजूरिया काम, सुल्तानपुर रोड, जिला-लखनऊ

(ख) उत्पादन:

इनफ्रारेडमेशन टेक्नालाजी (एच०सी०एल० टेक्नालाजी इय)
बिल्डअप एरिया १४३२१.६९ वर्ग मीटर है।

(ग) मुख्य कच्चे माल:

ईट, बीरंग, सरीसृप इत्यादि भवन निर्माण से सम्बंधित

(घ) औद्योगिक उत्प्रेषण की मात्रा:

८३० के०एल०डी०

(ङ) प्रयुक्त ईंधन:

२००० के०वी०एल० क्षमता के ५ डी०डी० सैट
डीजल आवश्यकतानुसार।

वे। एच।सी।एल। आई।टी। सिटी लखनऊ प्रकल्प। बक मजरीया कर्म, कुलामपुर सेड, जिला-लखनऊ।

उपरोक्त विषय वस्तु में से किसी भी प्रकार से परिवर्तन करने पर पुनः अनापत्ति प्रमाण-पत्र प्राप्त करना आवश्यक होगा।

1. इकाई का संघालन तब तक प्रारम्भ नहीं किया जायेगा जब तक कि यह राज्य बोर्ड से जल एवं वायु अधिनियमों के अन्तर्गत सहमति प्राप्त न कर ले। जल एवं वायु सहमति प्राप्त करने हेतु इकाई में संघालन प्रारम्भ करने की तिथि से कम से कम 02 माह पहले निर्धारित सहमति आवेदन पत्रों को संघालन पूर्व प्रथम आवेदन का उल्लेख करते हुए इस कार्यालय में अवश्य जमा कर दिया जाये।
2. इकाई द्वारा दिये गये प्रस्ताव के अनुसार 830 बी०एल०मी० क्षमता के एस०टी०पी० की स्थापना की जाये तथा एस०टी०पी० के विभिन्न इकाईयों की भाषे आदि का पूर्ण विवरण डिजाइन/डिटेल्स सहित विवरण एक माह में प्रेषित करें। एस०टी०पी० द्वारा जनित उत्पन्न को शोषित कर सिचार्ड/फ्लशिंग एवं कूलिंग इत्यादि में प्रयोग किया जाये तथा अतिरिक्त शोषित उत्पन्न को संबंधित विभाग के रखन अधिकारी की अनुमति की परवाह बिना सीपर लाइन की माध्यम से निस्तारित किया जायेगा।
3. परियोजना में प्रस्तावित नलकूपों द्वारा जल दोहन के सम्बन्ध में सम्बन्धित विभाग का अनापत्ति प्रमाण पत्र प्राप्त किया जाये।
4. इकाई द्वारा पारिद्विक कलस, 2011 एवं हैजार्डस वेस्ट कलस आदि का समुचित अनुपालन करना अनिवार्य होगा।
5. इकाई द्वारा नगरीय ठोस अपशिष्ट का एकत्रण, भण्डारण एवं निस्तारण व्यवस्था म्युनिसिपल सॉलिड वेस्ट कलस-2000 के अनुसार किया जाये।
6. इकाई में प्रस्तावानुसार तथा आवश्यकता के अनुरूप रैन वाटर हार्डनिंग एवं घातपड वाटर रिचार्जिंग की स्थापना आवश्यकता के अनुरूप किया जाये।
7. प्रस्तावित स्थल पर परियोजना की स्थापना हेतु रखन अभिकरण से स्वीकृत मानचित्र प्राप्त किया जाये।
8. एस०टी०पी० से जनित ठोस अपशिष्ट का प्रयोग बायोक्मोस्टिन् के तहत किया जायेगा।
9. परियोजना परिसर में सीर कजों वालित प्रवेश व्यवस्था का वैकल्पिक प्रयोग अधिकाधिक स्वच्छता पर किया जाना सुनिश्चित किया जाये।
10. एस०टी०पी० के संघालन की अवस्था को सुनिश्चित किये जाने हेतु पृथक एनजी मीटर स्थापित करें तथा उसकी तारीख नियमित रखी जाये।
11. परियोजना में प्रस्तावित टी०पी० सेंट पर प्रस्तावानुसार बोर्ड मानकों के अनुरूप ध्वनि/वायु प्रदूषण नियंत्रण व्यवस्था स्थापित करें।
12. इकाई से जनित हैजार्डस वेस्ट, सॉलिड वेस्ट, ई-वेस्ट आदि का रेगिमेंशन स्रोत पर ही किया जाये तथा भण्डारण एवं निस्तारण हैजार्डस वेस्ट कलस, म्युनिसिपल सॉलिड वेस्ट कलस एवं ई-वेस्ट कलस के अनुसार ही किया जायेगा।
13. इकाई में निर्माण के दौरान जनित उत्सर्जकों के नियंत्रण हेतु तथा घरेलू उत्पन्न को निस्तारण हेतु उचित प्रबंध करना अनिवार्य होगा।
14. परियोजना में प्रस्तावानुसार एवं यथा संभव खाती स्वच्छता पर हरिवाटिका का विकास किया जाना अनिवार्य है।
15. टी०पी० सेंट से जनित मिथेनोजेन्य (ड्रिफ्टिंग ऑयल को बोर्ड से अधिकृत (प्रधिकृत प्रभु) रिहाइकलर को देना सुनिश्चित करें।
16. आकस्मिक दुर्घटना से बचाव हेतु सुरक्षा के समुचित प्रबंध करें एवं उक्त के सम्बन्ध में रखन विभाग की अनापत्ति प्रमाण पत्र प्राप्त करना अनिवार्य है।
17. निर्माण के दौरान घृत उत्सर्जकों से प्रदूषण के रोकथाम हेतु वाटर रिचार्जिंग की उचित व्यवस्था तथा ध्वनि प्रदूषण के रोकथाम हेतु आवश्यक उपाय किये जायें तथा निर्माण के दौरान प्रस्तावानुसार उचित पर्यावरण प्रबंध सुनिश्चित किया जाये।

के। एचसीएचआईटी) लिमिटेड (उत्खनक प्रभुत्व) का मुख्यालय कार्गु, गुडगांवपुर रोड, जिला-उत्खनक।

18. परियोजना हेतु राज्य बोर्ड से पूर्वक से अनपत्ति प्रमाण पत्र प्राप्त किये बिना हाट मिक्स/रेडी मिक्स/डेट मिक्स प्लांट की स्थापना नहीं की जायेगी।
19. परियोजना में सम्मिलित वाणिज्यिक प्रयोग में प्लास्टिक डेरी बैग्स का प्रयोग न्यूनतम से न्यूनतम रखा जाये।
20. पर्यावरण एवं वन मंत्रालय भारत सरकार, नई दिल्ली के नोटिफिकेशन दिनांक 14.09.2006 को अनुपालन में पर्यावरणीय स्वीकृति प्राप्त किया जाये।

उपरोक्त शर्तों का अनुपालन न किये जाने की दशा में उद्योग द्वारा प्रेषित बैंक गारन्टी सख्या 00220100022052 Rs. 10,00,000/- बोर्ड के पक्ष में जफ्त की जा सकती है।

कृपया ध्यान दें कि उपर्युक्त विहित विशिष्ट शर्तों एवं सामान्य शर्तों का प्रभावी एवं सतोषजनक अनुपालन न करने पर बोर्ड द्वारा निर्मित अनपत्ति प्रमाण पत्र निरस्त कर दिया जाएगा। बोर्ड का अधिकार सुरक्षित है कि अनपत्ति की शर्तों में संशोधन किया जाय अथवा निरस्त कर दिया जाय। उपर्युक्त विशिष्ट एवं सामान्य शर्तों के सम्बन्ध में उद्योग द्वारा इस कार्यालय में दिनांक 31.07.2015 तक प्रथम अनुपालन अथवा अवश्य प्रेषित की जाए। अनुपालन अथवा विधमित प्रेषित की जाए अथवा अनपत्ति प्रमाण पत्र निरस्त भी किया जा सकता है।

भवदीय,


सदस्य सचिव

पृष्ठांकन सं०

/एन. जी. सी.

तद दिनांक

प्रतिनिधि

क्षेत्रीय अधिकारी, उ० प्र० प्रदूषण नियंत्रण बोर्ड, उत्खनक।


मुख्य पर्यावरण अधिकारी
(सर्विल-5)



UTTAR PRADESH POLLUTION CONTROL BOARD

Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010

Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.com, Website: www.uppcb.com

CONSENT ORDER

Ref No. -
146606/UPPCB/Lucknow(UPPCBRO)/CTO/water/LUCKNOW/2021

Dated : 05/05/2022

To ,

Shri VENUGOPAL RAJESH
M/s HCL IT CITY LUCKNOW PVT LTD
HCL Technology Hub, Chak Gajariya Farms, Sultanpur Road, IT City
Lucknow,LUCKNOW,226002
LUCKNOW

Sub : Consent under Section 25/26 of The Water (Prevention and control of Pollution) Act, 1974 (as amended) for discharge of effluent to M/s. HCL IT CITY LUCKNOW PVT LTD

Reference Application No :14624453

Dated :05/05/2022

1. For disposal of effluent into water body or drain or land under The Water (Prevention and control of Pollution) Act,1974 as amended (here in after referred as the act) M/s. HCL IT CITY LUCKNOW PVT LTD is hereby authorized by the board for discharge of their industrial effluent generated through ETP for irrigation/river through drain and disposal of domestic effluent through septic tank/soak pit subject to general and special conditions mentioned in the annexure ,in refrence to their foresaid application .
2. This consent is valid for the period from 01/01/2022 to 31/12/2026 .
3. In spite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 27(2) of the Water (Previntion and Controt of Pollution) Act, 1974 as amended .

This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

Chief Environmental Officer, Circle-5, UPPCB.

Enclosed : As above
(condition of consent):

Copy to: Regional Officer, UPPCB, Lucknow.

Chief Environmental Officer, Circle-5, UPPCB.

U.P. POLLUTION CONTROL BOARD, LUCKNOW

Annexure to Consent issued to M/s.HCL IT CITY LUCKNOW PVT LTD vide

Consent Order No. 14624453/ Water

Dated : 05/05/2022

CONDITIONS OF CONSENT

1. This consent is valid only for the approved production capacity of Information Technology Hub (HCL Technology Hub).
2. The quantity of maximum daily effluent discharge should not be more than the following :

Effluent Discharge Details			
S.No	Kind of Effluent	Maximum daily discharge.KL/day	Treatment facility and discharge point
1	Domestic	300 KLD	STP

3. Arrangement should be made for collection of water used in process and domestic effluent separately in closed water supply system. The treated domestic and industrial effluent if discharged outside the premises, if meets at the end of final discharge point, arrangement should be made for measurement of effluent and for collecting its sample. Except the effluent informed in the application for consent no other effluent should enter in the said arrangements for collection of effluent. It should also be ensured that domestic effluent should not be discharged in storm water drain.
- 4(a) The domestic effluent should be treated in treatment plant so that the should be in conformity with the following norms dated treated effluent.

Domestic Effluent		
S.No	Parameter	Standard
1	Quantity of Discharge	Achieve the standard specified in the notification issued by MoEF & CC vide GSR 1265 (E) dated 13-10-2017 in the time period as specified in the notification & treated water shall be used in flushing/horticulture etc.

- 4(b). The industrial effluent should be treated in treatment plant so that the treated effluent should be in conformity with the following norms.

Industrial Effluent		
S.No	Parameter	Standard

5. Effluent generated in all the processes, bleed water, cooling effluent and the effluent generated from washing of floor and equipments etc should be treated before its disposal with treated industrial effluent so that it should be according to the norms prescribed under The Environment (Protection) Act,1986 or otherwise mandatory.
6. The other pollutant for which norms have not been prescribed, the same should not be more than the norms prescribed for the water used in manufacturing process of the industry.
7. The method for collecting industrial and domestic effluent and its analysis should be as per legal Indian standards and its subsequent amendments/standards prescribed under The Environment (Protection) Act, 1986.
8. The treated domestic and industrial effluent be mixed (as per the provisions of Condition No. 2) and disposed of on one disposal point. This common effluent disposal point should have arrangement for flow meter/V Notch for measuring effluent and its log book be maintained.
9. The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

Specific Conditions:

1. This consent is valid for M/s HCL IT City, HCL Technology Hub, Chack Gajaria Farms, Sultanpur Road, IT City, Lucknow. In Case of any changes, enhancement etc., No Objection Certificate shall be obtained from the Board.
2. The unit shall ensure to operate the installed Sewage Treated Plant (600 KLD) in such a manner so that it can achieve the standard specified in the notification issued by Ministry of Environment, Forest & Climate Change vide GSR 1265 (E) dated 13-10-2017 in the time period as specified in the notification & treated water shall be used in flushing/horticulture/cooling etc.
3. As per condition no. 02 imposed in the CTE order dated 07.07.2015 issued by the Board, the unit shall installed a STP of 830 KLD capacity and after expansion of STP the unit shall again apply and submit in to the Board.
4. The unit shall obtain NOC from UP Ground Water Department for abstraction of ground water within 03 months and submit in the Board.
5. The Order issued by Hon'ble Courts/Hon'ble NGT, MoEF & CC, Central Pollution Control Board, U.P. Pollution Control Board, shall be complied with.
6. Generated hazardous waste shall be stored temporarily in the unit premises and disposed off through authorized TSDF after obtaining the authorization from the Board.
7. The unit shall submit the latest copy of Audited Balance Sheet/C.A. Certificate (Fixed Assets+ Current Assets – Current Liabilities) so that the Consent fee payable by the industry may be verified.
8. The treated sewage shall be reused for flushing, cooling and irrigation purpose. Only the surplus sewage shall be discharged in to sewer line with prior permission of competent authority.
9. Sludge generated from STP shall be utilized for composting and manure.
10. The unit shall submit the Environment Statement to the Board on or before 30th September of every year.
11. The unit shall maintained logbook to record daily electricity consumption in STP.
12. The unit shall comply with the provisions of Environment (Protection) Act 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended, Plastic Waste Management Rules 2016, E- Waste (Management) Rules 2016, Solid Waste Management Rules 2016 & Hazardous and other Waste (Management and Transboundary Movement) Rules 2016 (Whichever is applicable).
13. The industry shall ensure to establish Miyawaki forest as per the GO no. 1011/81-7-2021-09(rit)/2016 dated 13.10.2021 of Deptt. of Environment, forest and climate change UP and submit a Bank Guarantee of Rs. 2.00 lacs in favour of the Board within a month along with the proposal for proposed Miyawaki plantation.
14. If closure order is issued by CPCB or UPPCB against this defaulting unit, then CTO issued earlier will remain suspended during the closure period and after ensuring the compliance and after revocation of closure order, the CTO will automatically be effective from the date of issuance of closure order revocation, with additional conditions mentioned in the closure revocation order.

Issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board .

Chief Environmental Officer, Circle-5, UPPCB.



UTTAR PRADESH POLLUTION CONTROL BOARD

Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010

Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.com, Website: www.uppcb.com

CONSENT ORDER

Ref No. -
146617/UPPCB/Lucknow(UPPCBRO)/CTO/air/LUCKNOW/2021

Dated : 05/05/2022

To,

Shri VENUGOPAL RAJESH

M/s HCL IT CITY LUCKNOW PVT LTD

HCL Technology Hub, Chak Gajariya Farms, Sultanpur Road, IT City

Lucknow,LUCKNOW,226002

LUCKNOW

Sub : Consent under section 21/22 of the Air (Prevention and control of Pollution) Act, 1981 (as amended) to M/s. HCL IT CITY LUCKNOW PVT LTD

Reference Application No. 14626659

Dated : 05/05/2022

1. With reference to the application for consent for emission of air pollutants from the plant of M/s HCL IT CITY LUCKNOW PVT LTD. under Air Act 1981. It is being authorised for said emissions, as per the standards, in environment, by the Board as per enclosed conditions.
2. This consent is valid for the period from 01/01/2022 to 31/12/2026.
3. In spite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 21 (6) of the Air (Prevention and Control of Pollution) Act, 1981 as amended.
This consent is being issued with the permission of competent authority.

For and on behalf of U.P. Pollution Control Board

Chief Environmental Officer, Circle-5, UPPCB.

Enclosed : As above
(condition of consent):

Copy to: Regional Officer, UPPCB, Lucknow.

Chief Environmental Officer, Circle-5, UPPCB.

CONDITIONS OF CONSENT

1. This consent is valid only for the approved production capacity of Information Technology Hub (HCL Technology Hub).
2. This consent is valid only for products and quantity mentioned above. Industry shall obtain prior approval before making any modification in product/ process /fuel/ plant machinery failing which consent would be deemed void.
- 3(a) The maximum rate of emission of flue gas should not be more than the emission norms for the stacks.
- 3(b) Air Pollution Source Details.

Air Pollution Source Details					
S.No	Air Pollution Source	Type of Fuel	Stack No.	Parameters	Height
1	1500 KVA DG set	HSD	1	Particulate Matter	As per standard
2	1500 KVA DG set	HSD	2	Particulate Matter	As per standard
3	1500 KVA DG set	HSD	3	Particulate Matter	As per standard
4	1500 KVA DG set	HSD	4	Particulate Matter	As per standard
5	1010 KVA DG Set	HSD	5	Particulate Matter	As per standard
6	1010 KVA DG Set	HSD	6	Particulate Matter	As per standard
7	350 KVA DG set	HSD	7	Particulate Matter	As per standard

- 3(c) The emissions by various stacks into the environment should be as per the norms of the Board.

Emission Quality Details Detail			
S.No	Stack No	Parameter	Standard
1	1	Particulate Matter	75 mg/Nm3
2	2	Particulate Matter	75 mg/Nm3
3	3	Particulate Matter	75 mg/Nm3
4	4	Particulate Matter	75 mg/Nm3
5	5	Particulate Matter	75 mg/Nm3
6	6	Particulate Matter	75 mg/Nm3
7	7	Particulate Matter	75 mg/Nm3

4. Quantity of other pollutants should also be as per the norms prescribed by the Board/MOEF & CC/or otherwise mandatory.
5. The equipment for air pollution control system and monitoring, as proposed by the industry and approved by the Board should be installed in their premises itself.
6. The modification or installation in the existing pollution control equipments should be done only by prior approval of Board.
7. The operation of air pollution control system and maintenance be done in such a way that the quantity of pollutants should be in accordance with the standards prescribed by the Board/MoEF & CC/or otherwise mandatory.
8. Unit should do provisions for fugitive emissions chimney/stack as per the norms of the Board/MOEF & CC/or otherwise mandatory.

9. The unit should submit the stack emissions monitoring report within one month from issuance of consent order along with the point wise compliance report of the consent order. Further quarterly monitoring report should be submitted.

The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

Specific Conditions:

1. This consent is valid for M/s HCL IT City, HCL Technology Hub, Chack Gajaria Farms, Sultanpur Road, IT City, Lucknow. In Case of any changes, enhancement etc., No Objection Certificate shall be obtained from the Board.
2. Ambient air quality of the area shall be monitored on quarterly basis and report be submitted to the Board.
3. Noise and emission level from the DG sets installed, 4X1500 KVA, 2X1010 KVA and 1X350 KVA shall be within the prescribed norms.
4. The Order issued by Hon'ble Courts/Hon'ble NGT, MoEF & CC, Central Pollution Control Board, U.P. Pollution Control Board, shall be complied with.
5. Generated hazardous waste shall be stored temporarily in the premises and disposed off through authorized TSDF after obtaining the authorization from the Board.
6. The unit shall submit the latest copy of Audited Balance Sheet C.A. Certificate (Fixed Assets+ Current Assets - Current Liabilities) so that the Consent fee payable by the industry may be verified.
7. The unit shall comply with the conditions of Environmental Clearance dated 06.09.2018 issued by Ministry of Environment, Forest and Climate Change Government of India.
8. The unit shall comply with the provisions of Environment (Protection) Act 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended, Plastic Waste Management Rules 2016, E- Waste (Management) Rules 2016, Solid Waste Management Rules 2016 & Hazardous and other Waste (Management and Transboundary Movement) Rules 2016 (Whichever is applicable).
9. The industry shall ensure to develop Miyawaki forest, so that entire treated effluent may be used for irrigation as per the GO no. 1011/81-7-2021-09(writ)/2016 dated 13.10.2021 of Department of Environment, forest and Climate Change.
10. If closure order is issued by CPCB or UPPCB against any defaulting unit, then CTO issued earlier will remain suspended during the closure period and after ensuring the compliance and after revocation of closure order, the CTO will automatically be effective from the date of issuance of closure order revocation, with additional conditions mentioned in the closure revocation order.

Issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board .

Chief Environmental Officer, Circle-5, UPPCB.

Photographs showing mobile toilets, drinking water facility, canteen facility



Photographs of Creche



Photographs showing First Aid Facility



Health Care Facility



Photographs of Greenbelt Development





TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. ELPL/IV/QF/20

Amend. No. & Amend. Date :
02& 17.02.2018

Lab Reference No.

: 250303016 W

ULR No.

: TC154932500000078F

Issue Date

: 10/03/2025

Your Reference

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: SEZ Area Nearby (DG Room Back Side)	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.62	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL (DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	354	500	2000	IS 3025 (Pt-18)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium as Ca	mg/l	56.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride as Cl	mg/l	10	250	1000	IS 3025 (Pt-32)
12	Fluoride as F	mg/l	0.39	1.0	1.5	APHA 23 rd Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate as NO ₃	mg/l	BDL (DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate as SO ₄	mg/l	12	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL (DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity as CaCO ₃	mg/l	340	200	600	IS 3025 (Pt-23)
19	Total Hardness as CaCO ₃	mg/l	320	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL (DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL (DL 0.01)	0.03	0.2	APHA 23 rd Ed. 3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA 23 rd Ed. 3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SINGHA)





TC-15493

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. ELPL/IV/QF/20

Amend. No. & Amend. Date :
02& 17.02.2018

Lab Reference No.

: 250303016 W

ULR No.

: TC154932500000078F

Issue Date

: 10/03/2025

Your Reference

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: SEZ Area Nearby (DG Room Back Side)	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 th Ed.3120B
24	Copper (as Cu)	mg/l	BDL (DL 0.02)	0.05	1.5	APHA 23 th Ed.3120B
25	Iron as Fe	mg/l	0.13	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium as Mg	mg/l	43.7	30	100	APHA 23 th Ed.3500B
27	Manganese as Mn	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 th Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 th Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 th Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 th Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 th Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 th Ed.3120B
33	Mercury (as Hg)	mg/l	BDL (DL 0.001)	0.001	No relaxation	APHA 23 th Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 th Ed.3120B
35	Nickel (as Ni)	mg/l	BDL (DL 0.01)	0.02	No relaxation	APHA 23 th Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 th Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL (DL 0.03)	0.05	No relaxation	APHA 23 th Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit
DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)



TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. ELPL/IV/QF/20

Amend. No. & Amend. Date :
028.17.02.2018

Lab Reference No.

: 250303017 W

ULR No.

: TC154932500000079F

Issue Date

: 10/03/2025

Your Reference

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower SDC-1 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.34	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL(DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	398	500	2000	IS 3025 (Pt-16)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	72.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride (as Cl)	mg/l	25	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.36	1.0	1.5	APHA 23 rd Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate (as NO ₃)	mg/l	BDL(DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	16	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity (as CaCO ₃)	mg/l	320	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	205	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL(DL 0.01)	0.03	0.2	APHA23 rd Ed 3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA23 rd Ed 3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory

Signature
Signature

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. ELPL/IV/QF/20

Amend. No. & Amend. Date :
02& 17.02.2018

Lab Reference No.

: 250303017 W

ULR No.

: TC154932500000079F

Issue Date

: 10/03/2025

Your Reference

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower SDC-1 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 th Ed.3120B
24	Copper (as Cu)	mg/l	BDL (DL 0.02)	0.05	1.5	APHA 23 th Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	6.0	30	100	APHA 23 rd Ed.3500 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL (DL 0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL (DL 0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL (DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit
DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date :

02& 17.02.2018

250303018 W

TC154932500000080F

10/03/2025

Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower SDC -2 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.28	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL (DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	320	500	2000	IS 3025 (Pt-16)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	62.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride (as Cl)	mg/l	05	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.40	1.0	1.5	APHA 23 rd Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate (as NO ₃)	mg/l	BDL (DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	10	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL (DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity (as CaCO ₃)	mg/l	270	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	195	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL (DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL (DL 0.01)	0.03	0.2	APHA23 rd Ed.3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA23 rd Ed.3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)



TC-15493

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

02& 17.02.2018

: 250303018 W

: TC15493250000080F

: 10/03/2025

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower SDC -2 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 rd Ed.3120B
24	Copper (as Cu)	mg/l	BDL (DL 0.02)	0.05	1.5	APHA 23 rd Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	9.7	30	100	APHA 23 rd Ed.3500 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL (DL 0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL (DL 0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL (DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit

DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

: 02& 17.02.2018

: 250303019 W

: TC154932500000081F

: 10/03/2025

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Admin Block Back Side	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.20	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL(DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	350	500	2000	IS 3025 (Pt-16)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	60.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride (as Cl)	mg/l	7.4	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.43	1.0	1.5	APHA 23 ¹⁰ Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate (as NO ₃)	mg/l	BDL(DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	12.6	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-28)
18	Total Alkalinity (as CaCO ₃)	mg/l	355	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	175	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL(DL 0.01)	0.03	0.2	APHA23 ¹⁰ Ed.3120B
22	Berium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA23 ¹⁰ Ed.3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)





TC-15493

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

: 02& 17.02.2018

: 250303019 W

: TC15493250000081F

: 10/03/2025

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Admin Block Back Side	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 rd Ed.3120B
24	Copper (as Cu)	mg/l	BDL(DL 0.02)	0.05	1.5	APHA 23 rd Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	6	30	100	APHA 23 rd Ed.3500 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL(DL0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL(DL0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL(DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL(DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit

DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Amend. No. & Amend. Date :

02& 17.02.2018

Lab Reference No.

250303020 W

ULR No.

TC154932500000082F

Issue Date

10/03/2025

Your Reference

Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower IT-01 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.33	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL (DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	420	500	2000	IS 3025 (Pt-16)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	70.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride (as Cl)	mg/l	14	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.37	1.0	1.5	APHA 23 rd Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate (as NO ₃)	mg/l	BDL (DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	18	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL (DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity (as CaCO ₃)	mg/l	370	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	355	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL (DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL (DL 0.01)	0.03	0.2	APHA 23 rd Ed 3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA 23 rd Ed 3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. : Amend. No. & Amend. Date :
ELPL/IV/QF/20 : 02& 17.02.2018
Lab Reference No. : 250303020 W
ULR No. : TC154932500000082F
Issue Date : 10/03/2025
Your Reference : Email

Sample Particulars: Borewell water sample was collected at 'HCL Technology Hub' at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower IT-01 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 rd Ed.3120B
24	Copper (as Cu)	mg/l	BDL(DL 0.02)	0.05	1.5	APHA 23 rd Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	43.7	30	100	APHA 23 rd Ed.3500 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL(DL0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL(DL0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL(DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL(DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit
DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Amend. No. & Amend. Date :

028. 17.02.2018

Lab Reference No. : 250303021 W

ULR No. : TC154932500000083F

Issue Date : 10/03/2025

Your Reference : Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower IT-02 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.35	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL(DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	378	500	2000	IS 3025 (Pt-16)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	70.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-25)
11	Chloride (as Cl)	mg/l	10	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.42	1.0	1.5	APHA 23 rd Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate (as NO ₃)	mg/l	BDL(DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	16	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity (as CaCO ₃)	mg/l	360	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	245	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL(DL 0.01)	0.03	0.2	APHA23 rd Ed.3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA23 rd Ed.3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. : Amend. No. & Amend. Date :
ELPL/IV/QF/20 : 02& 17.02.2018
Lab Reference No. : 250303021 W
ULR No. : TC15493250000083F
Issue Date : 10/03/2025
Your Reference : Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower IT-02 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 rd Ed.3120B
24	Copper (as Cu)	mg/l	BDL(DL 0.02)	0.05	1.5	APHA 23 rd Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	16.9	30	100	APHA 23 rd Ed.3500 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL(DL0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL(DL0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL(DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL(DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit
DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Amend. No. & Amend. Date :

02& 17.02.2018

Lab Reference No.

250303022 W

ULR No.

TC154932500000084F

Issue Date

10/03/2025

Your Reference

Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower IT-03 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.30	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
6	Turbidity	NTU	BDL(DL-1.0)	1	5	IS 3025 (Pt-10)
8	Total Dissolved Solids	mg/l	395	500	2000	IS 3025 (Pt-16)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	60.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride (as Cl)	mg/l	30	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.37	1.0	1.5	APHA 23 ¹ Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-26)
14	Nitrate (as NO ₃)	mg/l	BDL(DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	15	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity (as CaCO ₃)	mg/l	350	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	270	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL(DL 0.01)	0.03	0.2	APHA23 ¹ Ed 3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA23 ¹ Ed 3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. : ELPL/IV/QF/20
Amend. No. & Amend. Date : 02& 17.02.2018
Lab Reference No. : 250303022 W
ULR No. : TC154932500000084F
Issue Date : 10/03/2025
Your Reference : Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: Tower IT-03 Pantry Room	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 rd Ed.3120B
24	Copper (as Cu)	mg/l	BDL(DL 0.02)	0.05	1.5	APHA 23 rd Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	29	30	100	APHA 23 rd Ed.3500 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL(DL0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL(DL0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL(DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL(DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit
DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

: 02& 17.02.2018

: 250303023 W

: TC15493250000085F

: 10/03/2025

: Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 27/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 27/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area Back Side	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
1	Color	Hazen	BDL (DL-5.0)	5	15	IS 3025 (Pt-04)
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-05)
3	pH	-	7.29	6.5-8.5	No relaxation	IS 3025 (Pt-11)
4	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 (Pt-08)
5	Turbidity	NTU	BDL(DL-1.0)	1	5	IS 3025 (Pt-10)
6	Total Dissolved Solids	mg/l	362	500	2000	IS 3025 (Pt-18)
7	Ammonia (as total ammonia-N)	mg/l	BDL (DL0.5)	0.5	No relaxation	IS 3025 (Pt-34)
8	Anionic Detergents (as MBAS)	mg/l	BDL (DL0.1)	0.2	1.0	Annex K of IS 13428
9	Calcium (as Ca)	mg/l	72.1	75	200	IS 3025 (Pt-40)
10	Chloramines (as Cl ₂)	mg/l	BDL (DL0.1)	4.0	No relaxation	IS 3025 (Pt-26)
11	Chloride (as Cl)	mg/l	10	250	1000	IS 3025 (Pt-32)
12	Fluoride (as F)	mg/l	0.36	1.0	1.5	APHA 23 rd Ed 4500F
13	Free Residual Chlorine	mg/l	BDL (DL0.05)	0.2	1	IS 3025 (Pt-28)
14	Nitrate (as NO ₃)	mg/l	BDL(DL-1.0)	45	No relaxation	IS 3025 (Pt-34)
15	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	BDL (DL 0.001)	0.001	0.002	IS 3025 (Pt-43)
16	Sulphate (as SO ₄)	mg/l	14	200	400	IS 3025 (Pt-24)
17	Sulphide (as H ₂ S)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-29)
18	Total Alkalinity (as CaCO ₃)	mg/l	340	200	600	IS 3025 (Pt-23)
19	Total Hardness (as CaCO ₃)	mg/l	240	200	600	IS 3025 (Pt-21)
20	Cyanide (as CN)	mg/l	BDL(DL 0.02)	0.05	No relaxation	IS 3025 (Pt-27)
21	Aluminum (as Al)	mg/l	BDL(DL 0.01)	0.03	0.2	APHA23 rd Ed 3120B
22	Barium (as Ba)	mg/l	BDL (DL 0.1)	0.7	No relaxation	APHA23 rd Ed 3120B

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. : Amend. No. & Amend. Date
ELPL/IV/QF/20 : 02& 17.02.2018
Lab Reference No. : 250303023 W
ULR No. : TC154932500000085F
Issue Date : 10/03/2025
Your Reference : Email

Sample Particulars: Borewell water sample was collected at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 27/02/2025.

Type of sample	: Borewell Water	Sample Registration Date	: 03/03/2025
Sampling Date	: 27/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area Back Side	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 2 of 2

S.No	Test Parameters	Units	Results	IS 10500 : 2012		Test Method
				Acceptable Limit, max.	Permissible Limit in the Absence of Alternate source, max.	
23	Boron (as B)	mg/l	BDL (DL 0.1)	0.5	2.4	APHA 23 rd Ed.3120B
24	Copper (as Cu)	mg/l	BDL (DL 0.02)	0.05	1.5	APHA 23 rd Ed.3120B
25	Iron (as Fe)	mg/l	BDL (DL 0.05)	1.0	No relaxation	IS 3052 (Pt-53)
26	Magnesium (as Mg)	mg/l	14.5	30	100	APHA 23 rd Ed.3603 B
27	Manganese (as Mn)	mg/l	BDL (DL 0.05)	0.1	0.3	APHA 23 rd Ed.3120B
28	Selenium (as Se)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
29	Silver (as Ag)	mg/l	BDL (DL 0.05)	0.1	No relaxation	APHA 23 rd Ed.3120B
30	Zinc (as Zn)	mg/l	BDL (DL 0.05)	5	15	APHA 23 rd Ed.3120B
31	Cadmium (as Cd)	mg/l	BDL (DL 0.001)	0.003	No relaxation	APHA 23 rd Ed.3120B
32	Lead (as Pb)	mg/l	BDL (DL 0.005)	0.01	No relaxation	APHA 23 rd Ed.3120B
33	Mercury (as Hg)	mg/l	BDL (DL 0.001)	0.001	No relaxation	APHA 23 rd Ed.3120B
34	Molybdenum (as MO)	mg/l	BDL (DL 0.05)	0.07	No relaxation	APHA 23 rd Ed.3120B
35	Nickel (as Ni)	mg/l	BDL (DL 0.01)	0.02	No relaxation	APHA 23 rd Ed.3120B
36	Total Arsenic (as As)	mg/l	BDL (DL 0.01)	0.01	No relaxation	APHA 23 rd Ed.3120B
37	Total Chromium (as Cr)	mg/l	BDL (DL 0.03)	0.05	No relaxation	APHA 23 rd Ed.3120B

*****END OF REPORT*****

BDL: Below Detection Limit
DL: Detection Limit

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No. : ELPL/IV/QF/20
Lab Reference No. : 250303024 W
ULR No. : TC154932500000086F
Issue Date : 10/03/2025
Your Reference : Email

Amend. No. & Amend. Date :
02 & 17.02.2018

Sample Particulars: STP Inlet water sample was collected from "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: STP Inlet	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: STP Plant Area	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 1

S.No.	Test Parameters	Units	Results	Test Method
1	pH	-	6.92	IS 3025 (P-11)
2	Oil and grease	mg/l	11	IS 3025 (P-39)
3	Biochemical oxygen demand as BOD at 27°C for 3 days	mg/l	130	IS 3025 (P-44)
4	Chemical oxygen demand as COD	mg/l	350	IS 3025 (P-56)
5	Total suspended solids as TSS	mg/l	84	IS 3025 (P-17)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.
ULR No.
Issue Date
Your Reference
Amend. No. & Amend. Date :

: 02 & 17.02.2018

: 250303025 W

: TC154932500000087F

: 10/03/2025

: Email

Sample Particulars: STP Outlet water sample was collected from "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: STP Outlet	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 2 Ltr approx.	Tests Required	: Mentioned below
Sample's Location	: STP Plant Area	Sampling Method	: ELPL/III/SOP/20

Test Results

Page 1 of 1

S.No.	Test Parameters	Units	Results	As Per EP Rules, 1986, Max	Test Method
1	pH	-	7.06	5.5-9.0	IS 3025 (P-11)
2	Oil and grease	mg/l	BDL	10	IS 3025 (P-39)
3	Biochemical oxygen demand as BOD at 27°C for 3 days	mg/l	4.1	30	IS 3025 (P-44)
4	Chemical oxygen demand as COD	mg/l	30	250	IS 3025 (P-58)
5	Total suspended solids as TSS	mg/l	16	100	IS 3025 (P-17)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

02 & 17.02.2018

250303026 E

TC154932500000088F

10/03/2025

Email

(Page 1 of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 1200 KW (1500 KVA)
Source of Emission	: Stack attached to DG Set-1
Make & Model No	: Cummins & KTA-50-G8-I
DG Engine Number	: 25417922
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 50
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 42
Ambient Temperature (k)	: 298
Stack Temperature (k)	: 502
Average velocity of flue emission (m/s)	: 8.92
Isokinetic flow rate (l/min)	: 24
Flue gas flow rate (Nm ³ /hr.)	: 2448.4
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.no.	Test Parameters	Results	Units	Test Method	Emission Limits as per EP Rules
1.	Particulate Matter(PM)	44.2	mg/Nm ³	IS 11255(P-1)	75
2.	Sulphur Dioxide(SO ₂)	70.6	mg/Nm ³	IS 11255(P-2)	Not specified
3.	Oxides of Nitrogen(NO ₂)	374	mg/Nm ³	IS 11255(P-7)	710
4.	Hydrocarbon(HC)	22	mg/Nm ³	IS 5182(P-17)	100
5.	Carbon monoxide(CO)	46	mg/Nm ³	IS 13270:1992	150

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
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Doc No.

ELPL/IV/QF/20

Lab Reference No.

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: 02 & 17.02.2018

: 250303027 DN

: TC154932500000089F

: 10/03/2025

: Email

(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	Capacity- 1500 KVA DG Engine Number- 25417922 DG Make & Model- Cummins & KTA-50-G8-I		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1.	D.G. Room (Inside the room) sound level pressure	dB(A)	101.8	-	ELPL/III/SOP/37
2.	D.G. Room (Closed door outside the room) Sound level Pressure	dB(A)	74.6	75	ELPL/III/SOP/37
3.	Insertion Loss	dB(A)	27.2	25	ELPL/III/SOP/37

*****END OF REPORT*****

Four D.G sets capacity each 1500 KVA are kept in D.G. room at the time of monitoring one D.G. set capacity 1500 KVA was running.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
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Doc No. : Amend. No. & Amend. Date :
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Lab Reference No. : 250303028 E
ULR No. : TC154932500000090F
Issue Date : 10/03/2025
Your Reference : Email

(Page1of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 1200 KW (1500 KVA)
Source of Emission	: Stack attached to DG Set-2
Make & Model No	: Cummins & KTA-50-G8-I
DG Engine Number	: 25417923
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 50
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 42
Ambient Temperature (k)	: 299
Stack Temperature (k)	: 498
Average velocity of flue emission (m/s)	: 9.78
Isokinetic flow rate (l/m)	: 23.9
Flue gas flow rate (Nm ³ /hr.)	: 2413.9
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.no.	Test Parameters	Results	Units	Test Method	Emission Limits as per EP Rules
1.	Particulate Matter(PM)	43.2	mg/Nm ³	IS 11255(P-1)	75
2.	Sulphur Dioxide(SO ₂)	71.4	mg/Nm ³	IS 11255(P-2)	Not specified
3.	Oxides of Nitrogen(NO _x)	370	mg/Nm ³	IS 11255(P-7)	710
4.	Hydrocarbon(HC)	20	mg/Nm ³	IS 5182(P-17)	100
5.	Carbon monoxide(CO)	49	mg/Nm ³	IS 13270:1992	150

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

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Amend. No. & Amend. Date

: 02 & 17.02.2018

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: TC154932500000091F

: 10/03/2025

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(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	: Capacity- 1500 KVA DG Engine Number- 25417923 DG Make & Model- Cummins & KTA-50-G8-I		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1	D.G. Room (Inside the room) sound level pressure	dB(A)	101.5	-	ELPL/III/SOP/37
2	D.G. Room (Closed door outside the room) Sound level Pressure	dB(A)	74.5	75	ELPL/III/SOP/37
3	Insertion Loss	dB(A)	27.0	25	ELPL/III/SOP/37

*****END OF REPORT*****

Four D.G sets capacity each 1500 KVA are kept in D.G. room at the time of monitoring one D.G. set capacity 1500 KVA was running.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

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806, Siddarth, 96, Nehru Place,
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Doc No. : ELPL/IV/QF/20
Lab Reference No. : 250303030 E
ULR No. : TC154932500000092F
Issue Date : 10/03/2025
Your Reference : Email
(Page 1 of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 1200 KW (1500 KVA)
Source of Emission	: Stack attached to DG Set-3
Make & Model No	: Cummins & KTA-50-G8-I
DG Engine Number	: 25417820
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 50
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 41
Ambient Temperature (K)	: 299
Stack Temperature (K)	: 488
Average velocity of flue emission (m/s)	: 9.95
Isokinetic flow rate (l/m)	: 24.8
Flue gas flow rate (Nm ³ /hr.)	: 2455.6
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.no.	Test Parameters	Results	Units	Test Method	Emission Limits as per EP Rules
1.	Particulate Matter(PM)	42.7	mg/Nm ³	IS 11255(P-1)	75
2.	Sulphur Dioxide(SO ₂)	73.6	mg/Nm ³	IS 11255(P-2)	Not specified
3.	Oxides of Nitrogen(NO _x)	382	mg/Nm ³	IS 11255(P-7)	710
4.	Hydrocarbon(HC)	23	mg/Nm ³	IS 5182(P-17)	100
5.	Carbon monoxide(CO)	50	mg/Nm ³	IS 13270:1992	150

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
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(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	Capacity- 1500 KVA DG Engine Number- 25417820 DG Make & Model- Cummins & KTA-50-G8-1		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1.	D.G. Room (Inside the room) sound level pressure	dB(A)	101.5	-	ELPL/III/SOP/37
2	D.G. Room (Closed door outside the room) Sound level Pressure	dB(A)	74.6	75	ELPL/III/SOP/37
3	Insertion Loss	dB(A)	26.7	25	ELPL/III/SOP/37

*****END OF REPORT*****

Four D.G sets capacity each 1500 KVA are kept in D.G. room at the time of monitoring one D.G. set capacity 1500 KVA was running.


Checked By
(VIKASH KUMAR)


Authorized Signatory
(SNEHA SMITA)

TEST REPORT

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ULR No. : TC15493250000094F
Issue Date : 10/03/2025
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(Page 1 of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 1200 KW (1500 KVA)
Source of Emission	: Stack attached to DG Set-4
Make & Model No	: Cummins & KTA-50-G8-I
DG Engine Number	: 25417819
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 50
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 42
Ambient Temperature (K)	: 299
Stack Temperature (K)	: 504
Average velocity of flue emission (m/s)	: 9.91
Isokinetic flow rate (l/min)	: 23.9
Flue gas flow rate (Nm ³ /hr.)	: 2446
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.no.	Test Parameters	Results	Units	Test Method	Emission Limits as per EP Rules
1.	Particulate Matter(PM)	43.3	mg/Nm ³	IS 11255(P-1)	75
2.	Sulphur Dioxide(SO ₂)	72.5	mg/Nm ³	IS 11255(P-2)	Not specified
3.	Oxides of Nitrogen(NO ₂)	395	mg/Nm ³	IS 11255(P-7)	710
4.	Hydrocarbon(HC)	24	mg/Nm ³	IS 5182(P-17)	100
5.	Carbon monoxide(CO)	52	mg/Nm ³	IS 13270:1992	150

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)



TEST REPORT

Issued to:

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02 & 17.02.2018

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: 10/03/2025

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(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: DG Yard SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	: Capacity- 1500 KVA DG Engine Number- 25417819 DG Make & Model- Cummins & KTA-50-G8-I		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1.	D.G. Room (Inside the room) sound level pressure	dB(A)	101.1	-	ELPL/III/SOP/37
2.	D.G. Room (Closed door outside the room) Sound level Pressure	dB(A)	74.6	75	ELPL/III/SOP/37
3.	Insertion Loss	dB(A)	26.5	25	ELPL/III/SOP/37

*****END OF REPORT*****

Four D.G sets capacity each 1500 KVA are kept in D.G. room at the time of monitoring one D.G. set capacity 1500 KVA was running.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH-SMITA)

TEST REPORT

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ELPL/IV/QF/20

Amend. No. & Amend. Date :

02 & 17.02.2018

Lab Reference No.

: 250303034 E

ULR No.

: TC154932500000096F

Issue Date

: 10/03/2025

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(Page 1 of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajana Farms, Sultanpur Road, Lucknow, Uttar Pradesh, on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 808 KW (1010 KVA)
Source of Emission	: Stack attached to DG Set-1
Make & Model No	: Cummins & KTA-38-G5
DG Engine Number	: 25417527
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 30
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 40
Ambient Temperature (K)	: 299
Stack Temperature (K)	: 462
Average velocity of flue emission (m/s)	: 9.48
Isokinetic flow rate (l/m)	: 24.9
Flue gas flow rate (Nm ³ /hr.)	: 2339.6
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.no.	Test Parameters	Results	Units	Test Method	Emission Limits as per EP Rules
1.	Particulate Matter(PM)	41.1	mg/Nm ³	IS 11255(P-1)	75
2.	Sulphur Dioxide(SO ₂)	64.2	mg/Nm ³	IS 11255(P-2)	Not specified
3.	Oxides of Nitrogen(NO _x)	341	mg/Nm ³	IS 11255(P-7)	710
4.	Hydrocarbon(HC)	19	mg/Nm ³	IS 5182(P-17)	100
5.	Carbon monoxide(CO)	44	mg/Nm ³	IS 13270.1992	150

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)



TEST REPORT

Issued to

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ELPL/IV/QF/20

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Issue Date
Your Reference
Amend. No. & Amend. Date

: 02 & 17.02.2018

: 250303035 DN

: TC154932500000097F

: 10/03/2025

: Email

(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Suitanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	Capacity- 1010 KVA DG Engine Number- 25417527 DG Make&Model- Cummins & KTA-38-G5		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1.	Acoustic enclosure (Open Door) Sound level pressure	dB(A)	100.1	-	ELPL/III/SOP/37
2	Acoustic enclosure (Closed Door) Sound level pressure	dB(A)	74.0	75	ELPL/III/SOP/37
3	Insertion Loss	dB(A)	26.1	25	ELPL/III/SOP/37

*****END OF REPORT*****

Note – Noise Limit for DG Sets (up to 1000 KVA) manufactured on or after 1st January 2005 shall be 75 dB (A) at 1 meter from the enclosure surface, and having insertion loss minimum 25 dB(A).


Checked By
 (VIKASH KUMAR)


Authorized Signatory
 (SNEHA SMITA)

TEST REPORT

Issued to

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ELPL/IV/QF/20

Amend. No. & Amend. Date :

02 & 17.02.2018

Lab Reference No.

250303036 E

ULR No.

TC154932500000098F

Issue Date

10/03/2025

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(Page 1 of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 304 KW (360 KVA)
Source of Emission	: Stack attached to DG Set-2
Make & Model No	: Cummins & QSN-14-G2
DG Engine Number	: 25417908
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 30
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 37
Ambient Temperature (K)	: 298
Stack Temperature (K)	: 394
Average velocity of flue emission (m/s)	: 8.85
Isokinetic flow rate (l/m)	: 27.3
Flue gas flow rate (Nm ³ /hr.)	: 2184.3
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.No.	Test Parameters	Results	Units	Test Method	Limits as per old EP Rules*	New Limit as per MOEFcc (KW)**			
						≤19	19 to ≤56	56 to ≤560	560 to ≤800
1	Particulate Matter(PM)	0.11	g/kw-hr	IS 11255(P-1)	≤ 0.2	0.3	0.03	0.02	0.03
2	Sulphur Dioxide(SO ₂)	0.42	g/kw-hr	IS 11255(P-2)	-	-	-	-	-
3	Oxides of Nitrogen(NO _x)	1.13	g/kw-hr	IS 11255(P-7)	≤ 4.0	4.7	4.7	0.40	0.67
4	Hydrocarbon(HC)	0.18	g/kw-hr	IS 5182(P-17)	-	-	-	0.19	0.19
5	Carbon monoxide(CO)	0.41	g/kw-hr	IS 13270:1992	≤ 3.5	3.5	3.5	3.5	3.5

*****END OF REPORT*****

*Old limit as from Dated 01 April 2015

** New Limit as from Dated 01 July 2023

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

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Issue Date

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10/03/2025

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(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	: Capacity- 380 KVA DG Engine Number- 25417808 DG Make&Model- Cummins & QSN-14-G2		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1.	Acoustic enclosure (Open Door) Sound level pressure	dB(A)	97.4	-	ELPL/III/SOP/37
2	Acoustic enclosure (Closed Door) Sound level pressure	dB(A)	71.0	75	ELPL/III/SOP/37
3	Insertion Loss	dB(A)	26.4	25	ELPL/III/SOP/37

*****END OF REPORT*****

Note - Noise Limit for DG Sets (up to 1000 KVA) manufactured on or after 1st January 2005 shall be 75 dB (A) at 1 meter from the enclosure surface, and having insertion loss minimum 25 dB(A).


Checked By
(VIKASH KUMAR)


Authorized Signatory
(SNEH SMITTA)

TEST REPORT

Issued to

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806, Siddarth, 96, Nehru Place,
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Doc No. : ELPL/IV/QF/20
Lab Reference No. : 250303038 E
ULR No. : TC154932500000100F
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(Page 1 of 1)

Sample Particulars: DG Stack monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Stack	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area	Sampling Method	: ELPL/III/SOP/32

DG Capacity	: 608 KW (1010 KVA)
Source of Emission	: Stack attached to DG Set-3
Make & Model No	: Cummins & KTA-38-G5
DG Engine Number	: 25434061
Type of fuel used	: HSD
Type of Stack	: Circular
Operating Schedule	: As per requirement
Diameter of Stack (m)	: 0.3
Height of Stack from Ground level (m)	: 30
Height of Stack from roof level (m)	: -
Time of sampling (minutes)	: 37
Ambient Temperature (K)	: 299
Stack Temperature (K)	: 412
Average velocity of flue emission (m/s)	: 9.28
Isokinetic flow rate (l/min)	: 27.4
Flue gas flow rate (Nm ³ /hr.)	: 2290.5
Control Measures (if any)	: Nil
Remark (if any)	: Nil

S.no.	Test Parameters	Results	Units	Test Method	Emission Limits as per EP Rules
1.	Particulate Matter(PM)	41.5	mg/Nm ³	IS 11255(P-1)	75
2.	Sulphur Dioxide(SO ₂)	68.6	mg/Nm ³	IS 11255(P-2)	Not specified
3.	Oxides of Nitrogen(NO ₂)	372	mg/Nm ³	IS 11255(P-7)	710
4.	Hydrocarbon(HC)	21	mg/Nm ³	IS 5182(P-17)	100
5.	Carbon monoxide(CO)	46	mg/Nm ³	IS 13270:1992	150

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
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ELPL/IV/QF/20

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Amend. No. & Amend. Date :

02 & 17.02.2018

: 250303039 DN

: TC154932500000101F

: 10/03/2025

: Email

(Page 1 of 1)

Sample Particulars: DG Noise monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh., on 28/02/2025.

Type of sample	: DG Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 01 Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Area	Sampling Method	: ELPL/III/SOP/37
Details of DG Set	: Capacity- 1010 KVA DG Engine Number- 25434061 DG Make&Model- Cummins & KTA-38-G5		

Test Results

S.no.	Description	Unit	Result	CPCB Norm	Test Method
1.	Acoustic enclosure (Open Door) Sound level pressure	dB(A)	100.3	-	ELPL/III/SOP/37
2	Acoustic enclosure (Closed Door) Sound level pressure	dB(A)	74.5	75	ELPL/III/SOP/37
3	Insertion Loss	dB(A)	25.8	25	ELPL/III/SOP/37

*****END OF REPORT*****

Note - Noise Limit for DG Sets (up to 1000 KVA) manufactured on or after 1st January 2005 shall be 75 dB (A) at 1 meter from the enclosure surface, and having insertion loss minimum 25 dB(A).

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date :

02 & 17.02.2018

250303040 A

TC154932500000102F

10/03/2025

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(Page 1 of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 26/02/2025 to 27/02/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 26/02/2025 to 27/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Front Side	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	231	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	122.6	080 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	17.1	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	39.2	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.48	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt, Ltd
806, Siddarth, 96, Nehru Place,
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Issue Date

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: 250303041 N

: TC154932500000103F

: 10/03/2025

: Email

(Page1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 26/02/2025 to 27/02/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 26/02/2025 to 27/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: None SEZ Front Side	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	59.6	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	47.7	ELPL/III/SOP/37

Standards for Ambient Noise As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
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ELPL/IV/QF/20

Amend. No. & Amend. Date :

02 & 17.02.2018

Lab Reference No.

: 250303042 A

ULR No.

: TC154932500000104F

Issue Date

: 10/03/2025

Your Reference

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(Page1 of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 27/02/2025 to 28/02/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 27/02/2025 to 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: SDC-01 Front Side Area	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	219	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	117.3	060 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	17.5	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	38.3	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.45	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****


Checked By
 (VIKASH KUMAR)


Authorized Signatory
 (SNEHA SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
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10/03/2025

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(Page 1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 27/02/2025 to 28/02/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 27/02/2025 to 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: SDC-01 Front Side Area	Sampling Method	: ELPL/III/SOP/37

Test Result

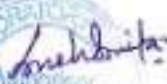
Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	58.6	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	47.1	ELPL/III/SOP/37

Standards for Ambient Noise As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.


Checked By
(VIKASH KUMAR)


Authorized Signatory
(SNEHA SMITA)

TEST REPORT

Issued to

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ELPL/IV/GF/20

Lab Reference No.

ULR No.

Issue Date

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02 & 17.02.2018

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: TC154932500000106F

: 10/03/2025

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(Page 1 of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 28/02/2025 to 01/03/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025 to 01/03/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: IT-01 Near Water Body Area	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	232	100 (24 Hourly)	IS 5182 (P1-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	129.3	080 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	18.2	080 (24 Hourly)	IS 5182 (P1-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	40.3	080 (24 Hourly)	IS 5182 (P1-06)
5	Carbon Monoxide as CO	mg/m ³	0.50	002 (08 Hourly)	IS 5182 (P1-10)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
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ELPL/IV/QF/20

Lab Reference No.

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Issue Date

Your Reference

Amend. No. & Amend. Date

: 02 & 17.02.2018

: 250303045 N

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: 10/03/2025

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(Page 1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at 'HCL Technology Hub' at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 28/02/2025 to 01/03/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025 to 01/03/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: IT-01 Near Water Body Area	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	58.1	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	47.5	ELPL/III/SOP/37

Standards for Ambient Noise

As per Noise Pollution (Regulation & Control Rule-2000)

Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
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ULR No.

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02 & 17.02.2018

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TC154932500000108F

10/03/2025

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(Page1of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 01/03/2025 to 02/03/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 01/03/2025 to 02/03/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: IT-03 Front Side Area	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	202	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	112.1	080 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	18.9	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	37.7	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.44	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SINGHA)

TEST REPORT

Issued to

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806, Siddarth, 96, Nehru Place,
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ELPL/IV/QF/20

Lab Reference No.

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Issue Date

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: 250303047 N

: TC154932500000109F

: 10/03/2025

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(Page 1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 01/03/2025 to 02/03/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 01/03/2025 to 02/03/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: IT-03 Front Side Area	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	60.3	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	48.6	ELPL/III/SOP/37

Standards for Ambient Noise As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.


Checked By
(VIKASH KUMAR)


Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

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Amend. No. & Amend. Date :

02 & 17.02.2018

Lab Reference No. : 250303048 A

ULR No. : TC15493250000110F

Issue Date : 10/03/2025

Your Reference : Email

(Page 1 of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 26/02/2025 to 27/02/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 26/02/2025 to 27/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: SDC-01 Back Side Area	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	211	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	120.5	060 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	16.4	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	37.1	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.42	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****


Checked By
(VIKASH KUMAR)


Authorized Signatory
(SNEHA SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
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: 250303049 N

: TC154932500000111F

: 10/03/2025

: Email

(Page 1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at 'HCL Technology Hub' at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 26/02/2025 to 27/02/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 26/02/2025 to 27/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: SDC-01 Back Side Area	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	59.9	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	48.6	ELPL/III/SOP/37

Standards for Ambient Noise As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
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Doc No. : ELPL/IV/QF/20
Lab Reference No. : 250303050 A
ULR No. : TC154932500000112F
Issue Date : 10/03/2025
Your Reference : Email

Amend. No. & Amend. Date :

02 & 17.02.2018

(Page 1 of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 28/02/2025 to 01/03/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025 to 01/03/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: Near Cafeteria Area	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	198	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	108.6	060 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	16.1	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	36.9	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.43	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
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Issue Date

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: 02 & 17.02.2018

: 250303051 N

: TC154932500000113F

: 10/03/2025

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(Page 1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 28/02/2025 to 01/03/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 28/02/2025 to 01/03/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: Near Cafeteria Area	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	59.2	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	48.0	ELPL/III/SOP/37

Standards for Ambient Noise As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

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Amend. No. & Amend. Date :

02 & 17.02.2018

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TC154932500000114F

10/03/2025

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(Page1of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 01/03/2025 to 02/03/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 01/03/2025 to 02/03/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: Admin Office Car Parking	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	225	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	127.4	080 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	18.8	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	39.1	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.51	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

02 & 17.02.2018

250303053 N

TC154932500000115F

10/03/2025

Email

(Page1of 1)

Sample Particulars: Ambient Noise Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 01/03/2025 to 02/03/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 01/03/2025 to 02/03/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: Near Cafeteria Area	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	61.2	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	50.4	ELPL/III/SOP/37

Standards for Ambient Noise As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)

TEST REPORT

Issued to

 M/s HCL IT City Lucknow Pvt. Ltd
 806, Siddarth, 96, Nehru Place,
 New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Amend. No. & Amend. Date :

02 & 17.02.2018

Lab Reference No.

250303054 A

ULR No.

TC154932500000116F

Issue Date

10/03/2025

Your Reference

Email

(Page1 of 1)

Sample Particulars: Ambient Air Monitoring was done at "HCL Technology Hub" at Check Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 27/02/2025 to 28/02/2025.

Type of sample	: Ambient Air	Sample Registration Date	: 03/03/2025
Sampling Date	: 27/02/2025 to 28/02/2025	Analysis Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Analysis Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: Sample Flat Front Side	Sampling Method	: ELPL/III/SOP/21

Test Reports

S.No.	Test Parameters	Units	Results	NAAQS	Test Method
1	Particulate Matter as PM ₁₀	µg/m ³	238	100 (24 Hourly)	IS 5182 (Pt-23)
2	Particulate Matter as PM _{2.5}	µg/m ³	137.4	080 (24 Hourly)	ELPL/III/SOP/23
3	Sulphur Dioxide as SO ₂	µg/m ³	19.2	080 (24 Hourly)	IS 5182 (Pt-02)
4	Oxides of Nitrogen as NO ₂	µg/m ³	41.1	080 (24 Hourly)	IS 5182 (Pt-06)
5	Carbon Monoxide as CO	mg/m ³	0.54	002 (08 Hourly)	IS 5182 (Pt-10)

*****END OF REPORT*****


Checked By
 (VIKASH KUMAR)


Authorized Signatory
 (SNEHA SMITA)

TEST REPORT

Issued to

M/s HCL IT City Lucknow Pvt. Ltd
806, Siddarth, 96, Nehru Place,
New Delhi- 110019

Doc No.

ELPL/IV/QF/20

Lab Reference No.

ULR No.

Issue Date

Your Reference

Amend. No. & Amend. Date

: 02 & 17.02.2018

: 250303055 N

: TC154932500000117F

: 10/03/2025

: Email

(Page 1 of 1)

Sample Particulars: Ambient Noise Monitoring was done at "HCL Technology Hub" at Chack Gajaria Farms, Sultanpur Road, Lucknow, Uttar Pradesh, from 27/02/2025 to 28/02/2025.

Type of sample	: Ambient Noise	Sample Registration Date	: 03/03/2025
Sampling Date	: 27/02/2025 to 28/02/2025	Testing Starting Date	: 03/03/2025
Sampling Done by	: Lab representative	Testing Completion Date	: 10/03/2025
Quantity received	: 24 Hourly Sample	Tests Required	: Mentioned below
Sample's Location	: Sample Flat Front Side	Sampling Method	: ELPL/III/SOP/37

Test Result

Time	Unit	Leq	Test Method
Day Time(06:00 am to 10:00 pm)	dB(A)	60.7	ELPL/III/SOP/37
Night Time(10:00 pm to 06:00 am)	dB(A)	50.0	ELPL/III/SOP/37

Standards for Ambient Noise			
As per Noise Pollution (Regulation & Control Rule-2000)			
Area Code	Category of Area/Zone	Limits in dB (A) Leq*	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

*****END OF REPORT*****

*Leq : It is energy mean of the noise level over a specified period.

Checked By
(VIKASH KUMAR)

Authorized Signatory
(SNEH SMITA)



UTTAR PRADESH POLLUTION CONTROL BOARD

TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Phone: 0522-2720828, 2720831 Fax: 0522-2720764 Email: info@uppcb.com Website: www.uppcb.com

Ref. No : 18462/UPPCB/Lucknow(UPPCBRO)/HWM/LUCKNOW/2022

Dated : 30/10/2022

To,

M/s HCL IT CITY LUCKNOW PVT LTD

HCL Technology Hub, Chak Gajariya Farms, Sultanpur Road, IT City

Lucknow, LUCKNOW, 226002

Tehsil : Lucknow

District : LUCKNOW

Sub :- Authorisation issued under the provisions of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

1. Number of authorization and date of issue 18462 and 30/10/2022 .
2. Reference of application (No. and date) 16385514 and 29/09/2022 .
3. Mr VENUGOPAL RAJESH of M/s HCL IT CITY LUCKNOW PVT LTD is hereby granted an authorization based on the enclosed signed inspection report for generation, collection, utilization, storage and disposal or any other use of hazardous or other wastes or both on the premises situated at Chak Gajariya Farms, Sultanpur Road, ITCity Lucknow .

Details of Authorisation

S No.	Category of Hazardous Waste as per the Schedules I, II and III of these rules	Authorised mode of disposal or recycling or utilization or co-processing, etc.	Quantity(ton/annum)
1.	Sch-I, Cat.-5.1 (Used or spent oil)	TSDF	3.0 KL/annum
2.	Sch-I, Cat.-5.2 (Wastes or residues containing oil)	TSDF	0.15 KL/annum

1. The authorization shall be valid for a period of 28/10/2027 from the date of issue of this letter .
2. The authorization is subject to the following general and specific conditions (please specify any conditions that need to be imposed over and above general conditions, if any) .

A General Conditions of Authorization -

1. The authorised person shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made there under .
2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the State Pollution Board .
3. The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous and other wastes except what is permitted through this authorization .
4. Any unauthorized change in personnel, equipment or working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorisation .

5. The person authorised shall implement Emergency Response Procedure (ERP) for which this authorisation is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time .
6. The person authorised shall comply with the provisions outlined in the Central Pollution Control Board guidelines on Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and penalty .
7. It is the duty of the authorised person to take prior permission of the State Pollution Control Board to close down the facility .
8. The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation .
9. The record of consumption and fate of the imported hazardous and other wastes shall be maintained .
10. The hazardous and other waste which gets generated during recycling or reuse or recovery or pre-processing or utilisation of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of authorisation .
11. The importer or exporter shall bear the cost of Import or export and mitigation of damages if any
12. An application for the renewal of an authorisation shall be made as laid down under these Rules .
13. Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Changes or Central Pollution Control Board from time to time .
14. Annual return shall be filed by June 30th for the period ensuring 31st March of the year .
15. The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

B Specific Conditions of Authorization

1. The Hazardous Waste Authorization earlier issued to the industry M/s HCL IT CITY LUCKNOW PVT. LTD., Chack Gajaria Farms, Sultanpur Road, Lucknow by the Board vide letter no.11265/UPPCB/Lucknow(UPPCBRO)/HWM/LUCKNOW/2020 dated 15.05.2020 is hereby revoked and the fresh authorization is issued which shall be valid for a period of Five Years from the date of issue, if not suspended or cancelled earlier.
2. The wastes must be safely collected in leak proof containers and shall be duly marked in a manner suitable for handling, storage and transport and the packaging shall be easily visible and be able to withstand physical conditions and climatic factors. All hazardous waste containers / bags shall be provided with a general label. The storage area should be at an isolated spot in the premises and must be fenced, covered and duly marked.
3. The authorized person/agency shall ensure that no adverse impact on the air, soil and water including groundwater takes place due to activities for which authorization has been requested. Comprehensive safety measures must be followed in handling of wastes and the staff must be properly trained.
4. It is brought to your notice that as per the order dated 14-11-2003 passed by the Hon'ble Supreme Court in W.P. (c) No. 657 of 1995, no industry covered under Hazardous and other Wastes (Management and Tran boundary Movement) Rules, 2016 shall be allowed to operate without valid authorization. It is also provided in the same orders that industries which are not complying with the

conditions of authorization shall not be allowed to operate. Hence in case you fail to apply for authorization, before its expiry or fail to comply with conditions of the earlier authorization issued to you, closure order shall be issued against your industry without any further notice.

5. The applicant must file returns on prescribed Form- 4 along with a compliance report of this letter and should also maintain records on Form 3 and present it to Board's inspecting officials.

6. In case of occurrence of an accident, complete details on form must be sent to U.P. Pollution Control Board at the earliest along with details of mitigative and remedial measures taken.

7. The authorized person/agency shall not receive, collect, or store any hazardous waste from any unauthorized occupier or generator of hazardous wastes. In case any hazardous wastes is sold to any other reprocessing unit it must be ensured that such unit is fully complying with environmental requirements and has a valid authorization of the Board.

8. In no case any hazardous wastes shall be disposed off on land, in any drain or stream. All spillages of hazardous chemicals, used containers, of hazardous chemicals such as flammable corrosive, explosive and toxic nature must be safely collected and stored. Non-compatible wastes must be suitably and safely handled.

9. It is within the powers and functions of the U.P. Pollution Control Board to modify / revoke the terms and conditions of the authorization/Registration issued under the Rule – 7 of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

10. You are directed to display on-line data/display board outside the main factory gate with regard to quantity and nature of hazardous chemicals being handled in the plant, including waste water and air emission and solid hazardous waste generated within the factory premises. Necessary compliance should be sent within 15 days of receipt of this letter.

11. It is the mandatory duty of the authorized person/agency to comply with the guidelines for transportation of hazardous waste in accordance with rule 18 of Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016.

12. It should be ensured that hazardous wastes shall be properly collected and packed in HDPE bags and then temporarily stored in a lined RCC tank/pit with suitable shed.

13. An ETP sludge test report of a laboratory approved under E.P. Act shall be submitted along with compliance of this letter of this office.

14. Used oil shall be sold only to recyclers registered with U.P. Pollution Control Board. The record shall be maintained.

15. The occupier, transporter and operator of a facility shall be liable for damages caused to the environment resulting due to improper handling and disposal of hazardous waste listed in schedule 1, 2, and 3 and shall be liable to pay a fine as levied by the State Pollution Control Board under the rules.

16. Details of raw material (which is Hazardous waste) and product along with quantity shall be sent

within a month.

17. You shall become the member of any common TSDF for S.L.F. which has been authorized by UPPCB and send the stored hazardous wastes for final disposal to the TSDF and report back to U.P.P.C.B. with the required manifesto (document of proof) within one/three month of this letter.

18. The unit shall ensure that H.W. is regularly sent to Authorized common TSDF and shall not store for more than 90 days in accordance with under rule 8 of HOWM Rules, 2016.

19. Emission from the Common/Captive incinerator stack shall meet the prescribed standards under Environmental Protection Act, 1986.

20. Copies of Hazardous Waste Manifest in Form-10 shall be sent regularly to UPPCB for each category of waste sent to TSDF/Incinerator.

21. This authorization/Registration is valid till the industry is having valid consent as per the provisions of Air (Prevention and Control of Pollution) Act 1981 and Water (Prevention and Control of Pollution) Act, 1974.

22. Industry shall comply the provisions of EP Act, 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended and E-waste (Management and Handling) Rules, 2016.

23. The industry shall ensure renewal of agreement from TSDF before expiry date.

24. The authorized actual user of hazardous and other wastes shall maintain records of hazardous and other wastes purchased in a passbook issued by the State Pollution Control Board along with the authorization.

(Authorized Signatory)

RAM KARAN Digitally signed by RAM KARAN
Date: 2022.12.07 15:04:45
+05'30'

UTTAR PRADESH POLLUTION CONTROL BOARD

Copy to: To the Regional Officer, U.P. Pollution Control Board, Lucknow for information and necessary action .

RAM KARAN Digitally signed by RAM KARAN
Date: 2022.12.07 15:05:13
+05'30'
CEO/EE, I/C Circle _____



Government of Uttar Pradesh

Name of the App: HIMANSHU TIWARI

App Code: UP14090604

Licence No.: 10/Ghaziabad

Nyay Khand-2, Indrayan

Tehsil & District - Ghaziabad

Mob: 9971246251

e-Stamp

Certificate No. : IN-UP10257454082030V
 Certificate Issued Date : 17-May-2023 01:44 PM
 Account Reference : NEWIMPACC (SV)/ up14090604/ GHAZIABAD SADAR/ UP-GZB
 Unique Doc. Reference : SUBIN-UPUP1409060415060604173448V
 Purchased by : HCL TECHNOLOGIES LIMITED
 Description of Document : Article 5 Agreement or Memorandum of an agreement
 Property Description : AGREEMENT
 Consideration Price (Rs.) :
 First Party : HCL TECHNOLOGIES LIMITED
 Second Party : AS PER AGREEMENT WITH HCL TECHNOLOGIES LIMITED
 Stamp Duty Paid By : HCL TECHNOLOGIES LIMITED
 Stamp Duty Amount (Rs.) : 100
 (One Hundred only)



Please write or type below this line

This Stamp Paper forms part of the Agreement for Addendum 3 to Services Agreement dated 25th October 2023 executed between M/s HCL Technologies Limited, and M/s Bharat Oil Company (India) Registered.

CONTRACT :: CW2345938 LEGAL SPOC :: MEENAL HEMANT CHANDWASKAR-52153654

Statutory Alert

1. The authenticity of this Stamp certificate should be verified at www.echampany.com or using e-Stamp Mobile App of Bhaskar Hattori.
2. The link of verifying the legitimacy is on the back of the certificate.
3. In case of any discrepancy please inform the Contractual Authority.

3

Addendum 3 to Service Agreement dated 15th November, 2021

This addendum to agreement is entered into on this 25/11/2023 (hereinafter the "Addendum 3")

BY AND BETWEEN

HCL Technologies Ltd., a Company incorporated under the Companies Act, 1956 having its registered office at 806-808, Siddharth, 96 Nehru Place, New Delhi – 110 019 (hereinafter referred to as "Company" which expression shall, unless repugnant to the meaning or context, mean and include its successors and assigns) **OF THE ONE PART**

AND

Bharat Oil Company (India) Registered (BOC), partnership concern registered under the Partnership Act with its registered office at 169 Kailash Hills, New Delhi 110065, duly registered with Central Pollution Control Board, having its CHWTSDF at E-18, Site IV, Sahibabad Industrial Area, Ghaziabad, (UP), duly authorized by the UPPCB, under the Environment Protection Act 1986 (for short the 'Act') and the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 and / or the E-Waste (Management) Rules 2016 (for short 'The Rules') as amended from time to time, represented by its Director/Partner, as the case may be (hereinafter referred to as "Service Provider" which expression shall, unless repugnant to the meaning or context, mean and include its successors and permitted assigns) **OF THE OTHER PART**

Company and Service Provider shall hereinafter be referred to individually as "Party" and collectively as "Parties".

WHEREAS,

- A. The Parties had entered into services Agreement dated 15th November, 2021 (wrongly written as 25th November, 2021 in previous addendums) (hereinafter "Agreement") which expired on 24th November, 2022 for providing hazardous waste disposal services to Company.
- B. Further, the Parties had entered into addendum dated 26th July, 2022 (hereinafter "Addendum 1") valid with effect from 25th November, 2022 up till 31st December, 2023 for extension of services.
- C. Thereafter, The Parties executed an Addendum date 20th December, 2022 (hereinafter "Addendum 2") to extend the term till 31st December, 2023

AND WHEREAS the Parties after mutual discussion have decided to extend the Term of the Agreement as follows:

NOW THEREFORE THIS ADDENDUM WITNESSETH AS UNDER

1. This Addendum shall form an integral part of the Agreement.
2. The Parties hereby agree and record that the Agreement is extended /renewed further with effect from 1st January, 2024 up till 31st December, 2024.

for Bharat Oil Co. (I) Regd.

Neelam
Partner

3. The Parties understand and agree that in case of contradiction in the contents of this Addendum and the Agreement the terms of this Addendum shall prevail and would be binding between the Parties.
4. Save as above, the remaining terms and conditions of the Agreement shall continue to have full force and effect.

By signatures of their duly authorized representatives below, Company and Service Provider, intending to be legally bound, agree to all of the provisions of this Addendum and ratify the Agreement

For & on behalf of

HCL Technologies Ltd.

DocuSigned by:

Amita Sharma

AGM-Legal

01-Nov-23 | 11:01 AM IST

For & on behalf of

Bharat Oil Company (India) Registered (BOC)

For Bharat Oil Co. (India) Registered

Director

DocuSigned by:
MHG

Meenal C





प्रारूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/CC/UP/15/2448(P382558)

जीएस फीस (Fee Rs.) 5000/- per year

M/s. HCL IT CITY LUCKNOW PRIVATE LIMITED, IT/ITES Special Economic Zone, Village - Kanjehara, Chack Gajaria Farms sultanpur road Lucknow-22600, kanjehara mastemau, Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002 को केवल इसमें गणित निम्नलिखित वर्ग और मात्राओं में पेट्रोलियम 25.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/CC/UP/15/2448(P382558) तारीख 05/11/2020 जो कि इससे उपबद्ध है, में दिखाए गए स्थान पर भण्डारण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदात की जाती है।

Licence is hereby granted to M/s. HCL IT CITY LUCKNOW PRIVATE LIMITED, IT/ITES Special Economic Zone, Village - Kanjehara, Chack Gajaria Farms sultanpur road Lucknow-22600, kanjehara mastemau, Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002 valid only for the importation and storage of 25.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/CC/UP/15/2448(P382558) dated 05/11/2020 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2026 तक प्रवृत्त रहेगी।

The Licence shall remain in force till the 31st day of December 2026.

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञात मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग A प्रमुख पेट्रोलियम /Petroleum Class A in bulk	NIL
वर्ग A प्रमुख पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग B प्रमुख पेट्रोलियम /Petroleum Class B in bulk	25.00 KL
वर्ग B प्रमुख पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग C प्रमुख पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग C प्रमुख पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	25.00 KL

December 20, 2016

For Jt. Chief Controller of Explosives
CC, Agra

1). Amendment dated - 28/04/2017

अनुज्ञात परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञात परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टताएं संपूर्ण अनुमोदित नक्शों में दिखाई गई हैं Plot No: 40.469 Hectare (100 Acre Bulk), Industrial Area, Chak Ganjaria, Sultanpur Road, CHAK GANJARIA, Lucknow, Taluka: Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002 स्थान पर अवस्थित है तथा उसमें निम्नलिखित 1 Under Ground tank(s) for CLAS B सम्मिलित है।

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at Plot No: 40.469 Hectare (100 Acre Bulk), Industrial Area, Chak Ganjaria, Sultanpur Road, CHAK GANJARIA, Lucknow, Taluka: Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002 and consists of 1 Under Ground tank(s) for CLAS B together with connected facilities.

Note:-This is system generated document does not require

signature.

प्रारूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/CC/UP/15/2447(P382561)

फीस रूपरेखा (Fee Rs.) 5000/- per year

M/s. HCL IT CITY LUCKNOW PRIVATE LIMITED, IT/ITE 5 Special Economic Zone Village- Kanjehara, Chack Gajaria Farms, Sultanpur Road Lucknow- (u.p., kanjehara mastemau, Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002) को केवल इसमें पेट्रोलियम वर्ग और मात्राओं में पेट्रोलियम 40.00 KL आयात करने के लिए और उसका नीचे वर्णित और अनुमोदित नक्शा संख्या P/CC/UP/15/2447(P382561) तारीख 04/11/2020 जो कि इससे उपावद्ध है, में दिखाए गए स्थान पर भण्डारण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to M/s. HCL IT CITY LUCKNOW PRIVATE LIMITED, IT/ITE 5 Special Economic Zone Village- Kanjehara, Chack Gajaria Farms, Sultanpur Road Lucknow- (u.p., kanjehara mastemau, Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002) valid only for the importation and storage of 40.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/CC/UP/15/2447(P382561) dated 04/11/2020 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence

यह अनुज्ञप्ति 31st day of December 2026 तक प्रवृत्त रहेगी।

The Licence shall remain in force till the 31st day of December 2026

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटर्स में) /Quantity licenced in KL
वर्ग A प्रयुज पेट्रोलियम /Petroleum Class A in bulk	NIL
वर्ग A प्रयुज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग B प्रयुज पेट्रोलियम /Petroleum Class B in bulk	40.00 KL
वर्ग B प्रयुज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग C प्रयुज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग C प्रयुज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	40.00 KL

December 20, 2016

For Jt. Chief Controller of Explosives
CC, Agra

1). Amendment dated - 28/04/2017

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टताएं संलग्न अनुमोदित नक्शों में दिखाई गई हैं Plot No: 40.469 Hectare (100 Acre Bulk), IT City, Industrial Area, Chak Ganjaria Sultanpur Road, Chak Ganjaria, Lucknow, Taluka: Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002 स्थान पर अवस्थित है तथा उसमें निम्नलिखित 2 Under Ground tank(s) for CLASS B सम्मिलित है।

The licensed premises, the layout ; boundaries and other particulars of which are shown in the attached approved plan are situated at Plot No: 40.469 Hectare (100 Acre Bulk), IT City, Industrial Area, Chak Ganjaria Sultanpur Road, Chak Ganjaria, Lucknow, Taluka: Lucknow, District: LUCKNOW, State: Uttar Pradesh, PIN: 226002 and consists of 2 Under Ground tank(s) for CLASS B together with connected facilities.

Note:-This is system generated document does not require signature.



उत्तर प्रदेश UTTAR PRADESH

BM 579616



खनन अनुज्ञा पत्र का आदेश प्रपत्र (नियम 33)

मेसर्स एडिटीयूएलओ आईटीडी सिटी लखनऊ प्राइमिड लखनऊ द्वारा एलएनएटीडी(खनन एण्ड टर्न) लिमिटेड चक गंजारिका सुल्तानपुर रोड एलएनएटीडीआईटीडी सिटी लखनऊ द्वारा चक गंजारिका चक आईटीडी सिटी लखनऊ तहसील मोहनलालगंज ग्राम कजेंडा/मसतोक फुल राटा संख्या-89 की भूखंड सरकार का राजपत्र में अंकित कुल रकबा 40.4889 हे. में से 18,000 घनमीटर खाद मिट्टी के खनन अनुज्ञा हेतु उत्तर प्रदेश उपखनिज(परिवार)नियमनवली, 1983 के नियम 52 की अधीन (उपखनिज) तीन माह की अवधि हेतु खनन करने के लिए अनुज्ञा पत्र देने के निमित्त प्रार्थना पत्र दिया है। अविदन शुल्क रु. 2,000/- रुपये जमा किया है। उप जिलाधिकारी लखनऊ लखनऊ की आरूप दिनांक 24.02.2016 के अनुसार प्रस्तावित भूखण्ड का परीक्षण कर लिया है। अतः खान निरीक्षण वाली कार्यालय, तथा उप जिलाधिकारी मोहनलालगंज की स्थलीय निरीक्षण के अनुसार प्रस्तावित क्षेत्र में 1.50 मीटर की गहराई में खनन करने पर लगभग 12878 घनमीटर मिट्टी की सख्ती रु. 30/- प्रतिघनमीटर की दर से रु. 386,340/- (रुपया तीन लाख छियाली हजार तीन सौ चालीस मात्र) खनन अनुज्ञा जिलाधिकारी लखनऊ के आदेश दिनांक 06.04.2016 द्वारा स्वीकृत की गयी है।

जिलाधिकारी लखनऊ के उक्त आदेश 06.04.2016 के अनुपालन में आवेदक द्वारा रायल्टी रुपये-3,86,340-00/- का भुगतान बालन संख्या-जी. 40119 दिनांक 07.04.2016 द्वारा तथा कुल रायल्टी रु. 3,86,340-00 की 02 प्रतिशत वनराशि अर्थात् रु. 7730/- जनरल नं. 049244650 दिनांक 04.07.2016 द्वारा TCS खाते में जमा करा ली गयी है।

एतद्वारा नीचे उल्लिखित सूची में 12878 घनमीटर साधारण मिट्टी दिनांक 7-04-2016 से दिनांक 6-07-2016 तक तीन माह अवधि हेतु खनन अनुज्ञा प्रदान की जाती है।

G. S. Singh



2/-



उत्तर प्रदेश UTTAR PRADESH

BM 5756



ग्राम के बीच

संख्या	परमाणु	ग्राम/नगर क्षेत्र	गाटा/पट्टा सं.	सं.
1	2	3	4	5

संख्या संख्या

संख्या संख्या-09 की भासा सरकार का राजपत्र में अंकित कुल रकमा 40,46,000 में से 12878 घनमीटर साठ मिट्टी की खपटी 40 30/-प्रतिघनमीटर की दर से 100 3,28,340/-अंतिम नाम करने पर तीन लाख की दरमि हेतु खाना मनुष्य विभागिकारी अखनक के आदेश दिनांक 02.04.2016 द्वारा खींचा की गई है।

स्थान-संख्या
दिनांक 7-4-016

लगान कर



प्रभारी अधिकारी (खाना)
जिलाधिकारी, संख्या

3/-



उत्तर प्रदेश UTTAR PRADESH

BM 579698

BM 579698

21 MAR 2018

(2)

अनुसंधानक द्वारा निम्नलिखित शर्तों का अनुपालन किया जाना आवश्यक है :-

निदेशक, पर्यावरण, विद्युत्सालय, सीमांतनगर लखनऊ के एन संख्या-1660/Paryal
SEAC/2022/2015 (एडीओ(एनए)) दिनांक 04.01.2018 अन्वयति प्रमाण पत्र के अनुसार ही खनन कार्य किया
जाना है, चरलेख Safeguards को अक्षतता जता होगा :-

- 1- Top Soil should be adequately preserved and should be used for landscaping.
- 2- Excavated soil should be properly stored in a manner not increase surrounding SPM level.
- 3- Water spraying should be exercised during excavation and storage of soil for suppression of fugitive dust.

- 4- Unused excess soil should be disposed with proper permission from District Administration.
- 5- Disposal of Unused soil should only be transported in covered vehicles.
- 6- Excavated area should be properly reclaimed and insured that no open bore hole is left.

- 7- Safety measures for the people working at the site shall be duly taken care of as per law.
- 8- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 9- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 10- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 11- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 12- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 13- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 14- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 15- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 16- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 17- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 18- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 19- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 20- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 21- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 22- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 23- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 24- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 25- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 26- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

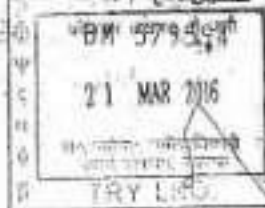
- 27- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 28- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।

- 29- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।
- 30- अनुसंधानक द्वारा जारी की गई शर्तों का पालन करके खनन कार्य किया जाएगा।



उत्तर प्रदेश UTTAR PRADESH

BM 579554



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16. खनन कार्य (180मी) की गहराई तक प्रस्तावित है। जहाँ इस प्रकार खनन कार्य किया जायेगा कि समीपवासी भू-भाग अथवा कार्यरत मजदूरों एवं परिवारों को हानि न पहुँचे और यदि कोई हानि होती है तो उसका समस्त मुआवजा आवेदक द्वारा देया होगा तथा यदि खनन कार्य के समय कोई भी मृत्यु होती है तो निम्नी के अनुसार मुआवजा अथवा आर्थिक कार्यवाही की जा सकती है।

16. यदि खनन कार्य करते समय अन्य आवश्यक मूल्य अब निकलता है तो उसकी सूचना अनुसंधान द्वारा तत्काल इस कार्यालय को देनी होगी एवं अन्य उपखनिज की मात्रा का अर्थकलन कर नियमानुसार अतिरिक्त राशियाँ राज्य सरकार के पास में जमा करनी होंगी। यदि कोई प्राचीन धरोहर या धरोहर से सम्बन्धित वस्तु/वास्तु निकलती है तो उस पर राज्य सरकार का अधिकार होगा, प्राचीन धरोहर या धरोहर से सम्बन्धित वस्तु/वास्तु उसकी सुरक्षा अनुधारक इस कार्यालय को देगा उसे राज्य सरकार को बतला करेगा।

17. यदि अनुसंधान कार्य की गहराई के अनुसार कार्य न करके, सतों का चतुर्धन करता है तो अनुसंधान पर निरस्त हस्त दिया जायेगा और जमा राशियों राज्य सरकार के पास में जमा कर ली जायेगी और वैधानिक कार्यवाही की जा सकती है।

18. खनन कार्य करते समय कोई भी हानि होती है तो उसका समस्त मुआवजा आवेदक को देया होगा और मुआवजा/प्रतिकार आवेदक द्वारा देया होगा।

19-यदि धनी अथवा मृत्यु होता है अनुसंधान कार्य का परीक्षण तत्काल जहाँ से एक कर दिया जायेगा जिससे मृत्यु इत्यादि न उठे।

अथवा





उत्तर प्रदेश UTTAR PRADESH

BM 579595



(3)

- 20-आवेदक द्वारा खान बलिचियन-1962 खन और खनिज विनियम और विनियम अधिनियम-1957 तथा विनियमकी 1963 एवं वर्तमान शासनादेशों तथा विभागों द्वारा जारी शर्तों की अधीन ही किया जाएगा।
- 21-अनुशासक उद्योगिक द्रव्य सेवा का सीमांकन के पाराम्परी ही खनन कार्य प्रारम्भ करेगा।
- 22-आवेदक गेटाई के उद्योगिक मिट्टी का प्रयोग निर्माणवीन 33/11 संशोधन विधुत उपकरण से ही किया जावेगा।
- 23-आवेदक संख्या-1426/88-08-55/08 दिनांक 8.04.2008 एवं सर्वोच्च निदेशालय भौगोलिक संरक्षण के पत्र संख्या-55/Parya/ SEAC/2391/ 2009/ एनडीएएल दिनांक 14.04.2015 से ही गई शर्तों के अनुसार खनन कार्य किया जावेगा, खनन अनुज्ञा का उद्घाटन करने पर यह अनुज्ञा तत्काल निरस्त नहीं जावेगी।

स्थान-लखनऊ।

दिनांक 7-4-2016



(सहस्र कुमर सिंह)
प्रभारी अधिकारी(खनन)
जिलाधिकारी, लखनऊ।

8/-

6/4/2016



GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)

Ministry of Jal Shakti

Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG046080

VALID FROM 27/12/2022 TO 23/01/2027

Serial No.: 202202000262

Name of the Owner	VENUGOPAL RAJESH		
Address of the Applicant	Chack Gauria Farms, Sultanpur Road, Lucknow, UP	Application No.	LKNW3222RIF0052
Date of Submission	15/02/2022	Specimen Signature	
Company Name	HCL IT CITY LUCKNOW PVT LTD	Company Address	HCL Technology Hub, CHACK GAURIA FARMS, SULTANPUR

Location Particulars

District	Lucknow	Block	MOHARJALGARJ
Plot No./Khata No.	IT/ITES SPECIAL ECONOMIC ZONE	Municipality/Corporation	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	07/05/2015		
Type of Well	Tube Well/Spring	Depth of the Well (in meter)	75.00
Purpose of well	Infrastructural	Assembly Size (For Tube Well)	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	H.P. of the Pump	8.00
Operational Device	Electric Motor	Rate of Withdrawal (m ³ /hr.)	5.00
Date of Energization (in Case of Electric Pump)		17/05/2015	
Maximum Allowable Rate of Withdrawal (m ³ /hr.)	5.00	Maximum Allowable Running Hours Per Day:	8.00
Maximum Allowable Annual Extraction of Ground Water	14400	Recharge Required	7200.00
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	It is a SEZ in which IT HUB established and various work has been going on.		
Against Case			

- This No-Objection Certificate authorizes the concerned applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at Sl. (3), for Running Meters per day, and for maximum allowable annual extraction of ground water and is valid subject to the observance of the conditions stated overleaf.

- Holder of this NOC is hereby directed to assure annual recharge of 7200.00 cubic meter, as specified under the application form.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meter (conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of abstraction of ground water from the well as shown in item 3(a) shall not exceed to the recorded rate from water meters.
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
- (7) In case, any of the particulars / information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis.
- (10) Guidelines for Installation of Piezometers and their Monitoring
- Piezometer is a borewell/tube well used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing whenever needed. General guidelines for installation of piezometers are as follows for compliance of NOC:
 - The piezometer is to be installed/constructed at the minimum of 30 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
 - The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If more than one piezometer are installed the shallowest piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
 - No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No.	Quantum of Ground water withdrawal (cum/day)	No. of piezometers required	Monitoring Mechanism	
			Manual	DVLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50 - 100	1	0	1
4	> 100	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm, the reported measurement should be given in meter up to two decimal.
- For measurement of water level sounder or automatic water level recorder (DWLR) Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- All the details regarding coordinates, reduced level (with respect to mean level), depth, zone tapped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its utilization.
- The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 L capacity bottle) is to be concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- A Permanent display board should be installed at piezometer/tube wells site for providing the location, piezometer/tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.
- Any other site-specific requirement regarding safety and access for measurement may be taken care of.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars / information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.

SPECIFIC CONDITION 1:

- (A) **For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
 - i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
 - ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
 - iii) All industries abstracting ground water in excess of 100 m³/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC)/PHD Chamber of Commerce & Industries/ Laghu Udyog Bharat/ certified auditors and submit audit reports within three months of completion of the same to Ground Water Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.
 - iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries showing/ proposing to draw more than 10 m³/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
 - v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dye, pigments, paint, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
 - vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
 - vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
 - i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be returned by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
 - ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m³/day. The water from STP shall be utilized for toilet flushing, car-washing, gardening etc.



GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)

Ministry of Jal Shakti

Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG044033

VALID FROM 27/12/2022 TO 23/01/2027

Serial No.: 202202000258

Name of the Owner	VENUGOPAL RAJESH		
Address of the Applicant	Chack Gauria Farms, Sultanpur Road, Lucknow, UP	Application No.	LKNW3222RIF0051
Date of Submission	15/02/2022	Specimen Signature	
Company Name	HCL IT CITY LUCKNOW PVT LTD	Company Address	HCL Technology Hub, CHACK GAURIA FARMS, SULTANPUR

Location Particulars

District	Lucknow	Block	MOHARJALGARJ
Plot No./Khata No.	IT/ITES SPECIAL ECONOMIC ZONE	Municipality/Corporation	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	07/05/2015		
Type of Well	Tube Well/Spring	Depth of the Well (in meter)	85.00
Purpose of well	Infrastructural	Assembly Size (For Tube Well)	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	H.P. of the Pump	5.00
Operational Device	Electric Motor	Rate of Withdrawal (m ³ /hr.)	5.00
Date of Energization (in Case of Electric Pump)		17/05/2015	
Maximum Allowable Rate of Withdrawal (m ³ /hr.)	5.00	Maximum Allowable Running Hours Per Day:	8.00
Maximum Allowable Annual Extraction of Ground Water	14400	Recharge Required	7200.00
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	It is a SEZ in which IT HUB Started and various work has been going on.		
Against Case			

- This No-Objection Certificate authorizes the concerned applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at Sl. (3), for Running Meters per day, and for maximum allowable annual extraction of ground water and is valid subject to the observance of the conditions stated overleaf.

- Holder of this NOC is hereby directed to assure annual recharge of 7200.00 cubic meter, as specified under the application form.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meter (conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of abstraction of ground water from the well as shown in item 3(a) shall not exceed to the recorded rate from water meters.
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
- (7) In case, any of the particulars / information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometers and installation of digital water level recorder with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorder shall be made available to this office on monthly basis.
- (10) Guidelines for installation of Piezometers and their Monitoring
- Piezometer is a borewell tube well used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing whenever needed. General guidelines for installation of piezometers are as follows for compliance of NOC:
 - The piezometer is to be installed/constructed at the minimum of 30 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
 - The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If more than one piezometer are installed the shallowest piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
 - No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No.	Quantum of Ground water withdrawal (cum/day)	No. of piezometers required	Monitoring Mechanism	
			Manual	DVLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50 - 100	1	0	1
4	> 100	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm, the reported measurement should be given in meter up to two decimal.
- For measurement of water level sounder or automatic water level recorder (DWLR) Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- All the details regarding coordinates, reduced level (with respect to mean level), depth, zone tapped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its utilization.
- The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 L capacity bottle) is to be concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- A Permanent display board should be installed at piezometer/Tube well site for providing the location, piezometer/tube well number, depth and zone tapped of piezometer/tube well for constant referencing and identification.
- Any other site-specific requirement regarding safety and access for measurement may be taken care of.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars / information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.

SPECIFIC CONDITION 1:

- (A) **For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
 - i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
 - ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
 - iii) All industries abstracting ground water in excess of 100 m³/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC)/PHD Chamber of Commerce & Industries/ Laghu Udyog Bharat/ certified auditors and submit audit reports within three months of completion of the same to Ground Water Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.
 - iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries showing/ proposing to draw more than 10 m³/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
 - v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dye, pigments, paint, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
 - vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
 - vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
 - i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be returned by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
 - ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m³/day. The water from STP shall be utilized for toilet flushing, car-washing, gardening etc.



GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)

Ministry of Jal Shakti

Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG046080

VALID FROM 27/12/2022 TO 23/01/2027

Serial No.: 202202000262

Name of the Owner	VENUGOPAL RAJESH		
Address of the Applicant	Chack Gauria Farms, Sultanpur Road, Lucknow, UP	Application No.	LKNW3222RIF0052
Date of Submission	15/02/2022	Specimen Signature	
Company Name	HCL IT CITY LUCKNOW PVT LTD	Company Address	HCL Technology Hub, CHACK GAURIA FARMS, SULTANPUR

Location Particulars

District	Lucknow	Block	MOHARLALGANJ
Plot No./Khata No.	ITITES SPECIAL ECONOMIC ZONE	Municipality/Corporation	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	07/05/2015		
Type of Well	Tube Well/Spring	Depth of the Well (in meter)	75.00
Purpose of well	Infrastructural	Assembly Size (For Tube Well)	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	H.P. of the Pump	8.00
Operational Device	Electric Motor	Rate of Withdrawal (m ³ /hr.)	5.00
Date of Energization (in Case of Electric Pump)		17/05/2015	
Maximum Allowable Rate of Withdrawal (m ³ /hr.)	5.00	Maximum Allowable Running Hours Per Day:	8.00
Maximum Allowable Annual Extraction of Ground Water	14400	Recharge Required	7200.00
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	It is a SEZ in which IT HUB established and various work has been going on.		
Against Case			

- This No-Objection Certificate authorizes the concerned applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at Sl. (3), for Running Meters per day, and for maximum allowable annual extraction of ground water and is valid subject to the observance of the conditions stated overleaf.

- Holder of this NOC is hereby directed to assure annual recharge of 7200.00 cubic meter, as specified under the application form.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meter (conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of abstraction of ground water from the well as shown in item 3(a) shall not exceed to the recorded rate from water meters.
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
- (7) In case, any of the particulars / information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometers and installation of digital water level recorder with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorder shall be made available to this office on monthly basis.
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S.No.	Quantum of Ground water withdrawal (cum/day)	No. of piezometers required	Monitoring Mechanism	
			Manual	DVLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50 - 100	1	0	1
4	> 100	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm, the reported measurement should be given in meter up to two decimal.
- For measurement of water level sounder or automatic water level recorder (DWLR) Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
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- All the details regarding coordinates, reduced level (with respect to mean level), depth, zone tapped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its utilization.
- The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 L capacity bottle) is to be concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- A Permanent display board should be installed at piezometer/Tube well site for providing the location, piezometer/tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.
- Any other site-specific requirement regarding safety and access for measurement may be taken care of.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars / information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.

SPECIFIC CONDITION 1:

- (A) **For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
 - i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
 - ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
 - iii) All industries abstracting ground water in excess of 100 m³/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC)/PHD Chamber of Commerce & Industries/ Laghu Udyog Bharat/ certified auditors and submit audit reports within three months of completion of the same to Ground Water Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.
 - iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries showing/ proposing to draw more than 10 m³/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
 - v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dye, pigments, paint, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
 - vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
 - vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
 - i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be returned by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
 - ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m³/day. The water from STP shall be utilized for toilet flushing, car-washing, gardening etc.



GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)

Ministry of Jal Shakti

Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG022063

VALID FROM 29/06/2022 TO 28/06/2027

Registration No.: 202202000275

Name of the Owner	VENUGOPAL RAJESH		
Address of the Applicant	Chack Gajra Farms, Sultanpur Road, Lucknow, UP	Application Form Serial No.	LKNW3222RIF0037
Date of Submission	19/02/2022	Applicant Signature	
Company Name	HCL IT CITY LUCKNOW PVT LTD	Company Address	HCL Technology Hub, CHACK GAJRA FARMS, SULTANPUR

NOC issued By:
जनसर्विक प्रशासन विभाग (गुप्त निर्देश)

Central Ground Water Authority
केन्द्रीय भूगर्भीय जल प्राधिकरण

Yes

Certificate Number
प्रमाणपत्र संख्या

CGWA/NO/CHR/ORG/2020/1247

Issue Date
निर्गत दिनांक

23/01/2020

Expiry Date
अवधि दिनांक

23/01/2022

Ground Water Department Uttar Pradesh
भूगर्भीय जल विभाग उत्तर प्रदेश सरकार

No

Location Particulars

District	Lucknow	Block	MCHINSAJGANJ
Plot No./Khasra No.	ITITES SPECIAL ECONOMIC ZONE	Municipality/Corporation	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	07/05/2015		
Type of Well	Tube Well/Boring	Depth of the Well (in meter)	70.00
Purpose of well	Infrastructural	Assembly Size(For Tube Well)	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	H.P. of the Pump	5.00
Operational Device	Electric Motor	Rate of Withdrawal (m ³ /hr.)	5.00
Date of Energization (in Case of Electric Pump)		17/05/2015	
Maximum Allowable Rate of Withdrawal (m ³ /hr.)	5.00	Maximum Allowable Running Hours Per Day:	8.00
Maximum Allowable Annual Extraction of Ground Water:			14400
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	It is a SEZ in which IT HUB established and various work has been going on.		
Against Case			

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every well user shall affix digital water flow meters (conforming to BIS/IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping device and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(a) shall not exceed to the recorded rate from water meters.
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
- (7) In case, any of the particulars / information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometer/s and installation of digital water level recorder/s with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorder/s shall be made available to this office on monthly basis.
- (10) Guidelines for installation of Piezometers and their Monitoring
- Piezometer is a borewell tube well used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing whenever needed. General guidelines for installation of piezometers are as follows for compliance of NOC:
 - The piezometer is to be installed/constructed at the minimum of 50 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
 - The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If, more than one piezometer are installed the second piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water source monitoring.
 - No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table.

S.No	Quantum of Ground water withdrawal (cum/day)	No. of piezometers required	Monitoring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50 - 100	1	0	1
4	> 100	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter up to two decimals.
- For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- All the details regarding coordinates, reduced level (with respect to mean level), depth, zone tapped and ascendency (elevation) should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analysed from NABL approved lab. Besides, one sample (1 L capacity bottle) to be the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for constant referencing and identification.
- Any other site-specific requirement regarding safety and access for measurement may be taken care of.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars / information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
- (13) Any other condition imposed by the concerned Authority.

SPECIFIC CONDITIONS:

- (A) **For Industrial User:** No Objection Certificate for ground water extraction by Industries shall be granted subject to the following specific conditions:
 - i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
 - ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
 - iii) All industries abstracting ground water in excess of 100 m³/day shall be required to undertake annual water audit through Certification of Indian Industries (CII) Federation/ Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.
 - iv) Construction of observation well(s) (piezometer/s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ producing to draw more than 10 m³/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
 - v) The proponent shall be required to adopt roof-top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dye, pigments, paints, tanneries, pesticides/ insecticides, fertilizers, slaughter houses, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
 - vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
 - vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructure User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
 - i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
 - ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for cdu projects, where ground water requirement is more than 20 m³/day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

सेवा में

मैसर्स एच.सी.एल.आई.टी.सिटी, लखनऊ प्रा०लि०,
808, सिद्धार्थ, 98, नेहरू प्लेस,
नई दिल्ली-110019

विषय:

प्लॉट/भूखण्ड एच.सी.एल.आई.टी. सिटी चक गजरा फार्म सुल्तानपुर रोड
जिला-लखनऊ में मैसर्स एच.सी.एल.आई.टी.सिटी, लखनऊ प्रा०लि० द्वारा
प्रस्तावित भवनों की प्रोवीजनल अग्निशमन अनापत्ति प्रमाण पत्र निर्गत किये जाने
के सम्बन्ध में।

सहोदय,

कृपया उपरोक्त विषयक अपने पत्र दिनांक: 13-03-2015 के माध्यम से उक्त प्रश्नगत
प्रस्तावित भवन की अग्निशमन अनापत्ति प्रमाण पत्र निर्गत किये जाने का अनुरोध किया गया है।

उक्त प्रश्नगत प्रस्तावित भवन के मानचित्रों में प्रस्तावित अग्निशमन व्यवस्थाओं एवं
अगिलेखों का परीक्षण अग्निशमन अधिकारी, पी०जी०आई० लखनऊ, मुख्य अग्निशमन अधिकारी, लखनऊ,
उप निदेशक, लखनऊ द्वारा किया गया। अग्निशमन अधिकारी, पी०जी०आई० लखनऊ, मुख्य अग्निशमन
अधिकारी, लखनऊ, उप निदेशक, लखनऊ की आज्ञा दिनांक 23-03-2015 के अनुसार:-

भवन की संरचना:-

1-कुल भूखण्ड एरिया-404885.60 वर्ग मी०।

2-प्रस्तावित भवनों के भूतल कवर्ड एरिया-

आई.टी.ब्लॉक (फेज-01) के भूतल का कवर्ड एरिया-	4980.0 वर्ग मीटर।
ब्यायज हास्टल ब्लॉक (फेज-01) के भूतल का कवर्ड एरिया-	1925.0 वर्ग मीटर।
गर्ल्स हास्टल ब्लॉक (फेज-01) के भूतल का कवर्ड एरिया-	1180.0 वर्ग मीटर।
रिक्त डेवलपमेंट सेंटर ब्लॉक (फेज-ए) के भूतल का कवर्ड एरिया-	1450.0 वर्ग मीटर।
कैंफेटेरिया ब्लॉक के भूतल का कवर्ड एरिया-	1350.0 वर्ग मीटर।

3-प्रस्तावित भवनों के टिपिकल फ्लोर का कवर्ड एरिया का विवरण -

आई.टी. ब्लॉक के प्रथम तल से चौथे तल तक प्रत्येक तल का कवर्ड एरिया अलग-अलग
4785.0-4785.0 वर्ग मीटर मानचित्र में प्राविधानित है।

ब्यायज हास्टल ब्लॉक के प्रथम तल से 7वें तल तक प्रत्येक तल का कवर्ड एरिया
अलग-अलग 1700.0-1700.0 वर्ग मीटर मानचित्र में प्राविधानित है।

गर्ल्स हास्टल ब्लॉक के प्रथम तल से तृतीय तल तक प्रत्येक तल का कवर्ड एरिया
अलग-अलग 1350.0-1350.0 वर्ग मीटर तथा चौथे तल का कवर्ड एरिया 1295.0 वर्ग
मीटर मानचित्र में प्राविधानित है।

रिक्त डेवलपमेंट सेंटर ब्लॉक के प्रथम तल व द्वितीय तल का प्रत्येक तल का कवर्ड
एरिया अलग-अलग 1345.0-1345.0 वर्ग मीटर मानचित्र में प्राविधानित है।

कैंफेटेरिया ब्लॉक के प्रथम तल व द्वितीय तल का प्रत्येक तल का कवर्ड एरिया
अलग-अलग 1350.0-1350.0 वर्ग मीटर मानचित्र में प्राविधानित है।

4-प्रश्नगत भवन के बेसमेंट का कवर्ड एरिया- 15000.0 वर्ग मी० मानचित्र में प्राविधानित है।

5-भवन की ऊँचाई आई.टी. ब्लॉक- 21.50 मीटर, ब्यायज हास्टल ब्लॉक- 27.30 मीटर, गर्ल्स हास्टल
ब्लॉक- 17.50 मीटर, रिक्त डेवलपमेंट सेंटर ब्लॉक- 14.50 मीटर तथा कैंफेटेरिया ब्लॉक- 13.50 मीटर
मानचित्र में प्राविधानित है।

भवन का अधिमोम एवं हैजार्ड श्रेणी- प्रसंगत भवन का अधिमोम एन0बी0सी0-2005 में शैक्षिक श्रेणी, आवासीय तथा विजनेस भवन के अन्तर्गत वर्गीकृत किया गया है।

वांछागत व्यवस्था:-

1- पहुँच मार्ग- मुख्यड के सामने मानचित्रों में 45 मी0 रोड की चौड़ाई है।

2- प्रवेश द्वार/निकास की चौड़ाई- भवन परिसर में गेट 06-08 मी0 चौड़ाई के मानचित्र में प्राविधान किया गया है।

3- सैटबैंक- भवन का सैटबैंक निम्नवत है:-

ए0-अग्रभाग- 12.0 मी0।

बी0-पृष्ठ भाग- 12.0 मी0।

सी0-पार्श्व भाग प्रथम- 12.0 मी0।

डी0-पार्श्व भाग द्वितीय- 12.0 मी0 है।

उपरोक्तानुसार भवन के सैटबैंक भवन विनियमावली के अनुसार है। सैटबैंक सदैव अवरोध मुक्त रखे जायेंगे। सैटबैंक में किसी प्रकार का स्थाई/अस्थायी निर्माण कार्य मान्य नहीं होगा। भवनों के चारों तरफ 06-08 मीटर मोटरबुल रखा जाना प्राविधानित है।

4- निकास मार्ग- प्रस्तावित भवनों के ब्लॉक आई.टी.ब्लॉक में 02-02 मीटर चौड़ाई के 04 स्टेयरकेस, ब्याज हास्टल ब्लॉक में 1.50-1.50 मीटर चौड़ाई के 04 स्टेयरकेस, गर्ल्स हास्टल ब्लॉक में 1.50-1.50 चौड़ाई के 03 स्टेयरकेस, स्कूल डेवलपमेंट सेंटर ब्लॉक 2.40-2.40 मीटर चौड़ाई के 02 व 2.0 मीटर चौड़ाई का 01 स्टेयरकेस तथा कैफेटेरिया ब्लॉक में 2.0-2.0 मी0 चौड़ाई के दो तथा 2.50 मी0 चौड़ाई का एक स्टेयरकेस का मानचित्र में प्राविधान किया गया है, जिनकी फ्लोर के समस्त स्थानों से ट्रेवलिंग डिस्टेंस अधिकतम अनुमन्य सीमा के अन्तर्गत है।

5- रिकयूज एरिया का विवरण- ब्याज हास्टल में प्राविधानित है।

अग्निशमन सुरक्षा व्यवस्था- प्रसंगत भवन में निम्नलिखित अग्निशमन व्यवस्था मानचित्र में प्राविधानित है :-

1- भूमिगत टैंक- भवन परिसर में भूमिगत टैंक 300 कं0एल0 क्षमता का मानचित्र में प्राविधानित है।

2- पम्प- भूमिगत टैंक के पास 2850 एल.पी.एम. क्षमता का एक अदद विद्युत चालित पम्प, 4550 एल.पी.एम. क्षमता का एक अदद डीजल चालित पम्प, दो अदद जाको पम्प 180-180 एल.पी.एम0 क्षमता का 2850 एल.पी.एम. क्षमता का एक अदद सिंकलर पम्प तथा 1620 एल.पी.एम. क्षमता का एक अदद वाटर कर्टेन पम्प मानचित्र में प्राविधानित है।

3- होजरील -प्रस्तावित भवनों में होजरील लेण्डिंग वाल्व आई0एस0-3844 मानकों के अनुसार लगाया जाना मानचित्र में प्राविधानित है।

4- वेटराइजर- प्रस्तावित भवनों में वेट राइजर सिस्टम, एन0बी0सी0-2005 के मानकों के अनुरूप लगाया जाना मानचित्र में प्राविधानित है।

5- प्रस्तावित सम्पूर्ण भवन परिसर में फाई हाईड्रैण्टस होज कंवेनेट एवं उसमें फिलीप्री होज तथा ब्रान्च पाइप एवं फायर सर्विस इनलेट का प्राविधान आई0एस0-13039-1991 के अनुसार किया जाना मानचित्र में प्राविधानित है।

6- हस्त चालित इलेक्ट्रिक फायर एलार्म सिस्टम-मैनुअल आपरेटिड इलेक्ट्रिक फायर एलार्म सिस्टम का प्राविधान एन0बी0सी0 मानकों के अनुसार समस्त भवनों में लगाया जाना मानचित्र में प्राविधानित है।

7- स्वचालित डिटेक्शन एण्ड एलार्म सिस्टम-प्रस्तावित भवन के मानचित्र में स्वचालित डिटेक्शन एण्ड एलार्म सिस्टम का प्राविधान किया जाना अंकित है।

8- स्वचालित सिंकलर सिस्टम- भवन के बेसमेंट सहित आई.टी. ब्लॉक में ऑटोमेटिक सिंकलर सिस्टम एन0बी0सी0 मानकों के अनुसार लगाया जाना प्राविधानित है। सिंकलर सिस्टम में पानी की फीडिंग टेरस व अप्पर ग्राउण्ड टैंक दोनों से किया जाना अनिवार्य है।

9- टेरिस टैंक- प्रसंगत भवनों की टेरिस पर अग्निशमन कार्य हेतु टेरिस टैंक आई.टी. ब्लॉक, कैफेटेरिया ब्लॉक तथा स्कूल डेवलपमेंट सेंटर ब्लॉक के टेरिस पर 10000-10000 ली0, ब्याज हास्टल व गर्ल्स हास्टल के टेरिस पर 25000-25000 ली0 क्षमता का टेरिस टैंक स्थापित कराया जाना मानचित्र में प्राविधानित है।

- 10-टेरिस पम्प-प्रश्नगत भवनों के ब्यायज व गर्लर ब्लॉक के टेरिस पर 900-900 एल.पी.एम. समता का प्राविधानित है।
- 11-प्राथमिक अग्निशमन उपकरण (फायर एक्सटिंग्यूशर)- प्रस्तावित भवन में फायर एक्सटिंग्यूशर आई०एस०-2190-2010 के अनुसार लगाया जाना मानचित्र में प्राविधानित है।
- 12- स्मोक एक्सट्रैक्शन सिस्टम-
ए०-फायर चैकडोर, स्मोक चैक डोर की लोकेशन व रेटिंग का 02 घण्टा रखा गया है।
बी०-सिस्टम की मैक अप एयर हेतु व्यवस्था किया जाना मानचित्र में प्राविधानित है।
सी०-स्मोक रिजर्वॉयर एवं अनुमानित स्मोक लेयर आदि को आधारित करते हुए एक्सट्रैक्शन सिस्टम का तकनीकी विश्लेषण किया गया है।
- 13-प्रेसराईजेशन प्रणाली :-1-प्रश्नगत भवन के लाबी व स्टेयरकेस को प्रेशराईजेशन किया जाना मानचित्र में प्राविधानित व प्रयुक्त होने वाले फैनस की डक्टिंग इत्यादि है।
2- प्रेशराईजेशन सिस्टम, डिटेक्शन से इण्टरसलिक है जो एन०बी०सी० के मानकों के अनुरूप है।
- 14-एग्जिट साईनेज-सम्पूर्ण भवन में एग्जिट साईनेज प्राविधानित किया जाना अनिवार्य है।
- 15-पी०ए० सिस्टम- पी०ए०सिस्टम की व्यवस्था सम्पूर्ण भवन में प्राविधानित किया गया है।
- 16- प्रश्नगत भवनों में इमरजेंसी/एस्केप लाइटिंग एन०बी०सी०-2005 पार्ट-04 में उल्लिखित मानकों के अनुसार कराया जाना अनिवार्य है।
- 17- भवन निर्माण के मध्याह्न व उपयोग के पूर्व भवन में अविष्ठापित अग्निशमन प्रणाली के कुशल संचालन व सदैव कार्यशील दशा में रखने हेतु एन०बी०सी०-2005, पार्ट-04 के प्रस्तर-सी-05, सी-06, सी-07, सी-08 व सी-09 में उल्लिखित मानकों का पालन किया जाना अनिवार्य है।
- 18- भवन में एन०बी०सी०-2005, पार्ट-04 के प्रस्तर सी- 1.15 के अनुसार एक दैनिक उर्जा स्रोत (जन्नेटर सेट) स्थापित कर उससे भवन की अग्निशमन प्रणाली, फायर लिफ्ट, स्टेयरकेसों व कोरीडोर की लाइटो, स्टैंड बाई फायर पम्प को पृथक लाइन (दायरिंग) फायर सेफ डकट से सुरक्षित जोड़ा जाना अनिवार्य है।

अतः उपरोक्तानुसार मैटर्ल एच.सी.एल.आई.टी. सिटी लखनऊ प्रा०लि० द्वारा चक भजशि फार्म सुल्तानपुर रोड लखनऊ में प्रस्तावित भवनों के निर्माण हेतु अग्निशमन अनापत्ति प्रमाण पत्र इस हत के साथ निर्गत किया जाता है कि आवेदक द्वारा भवन/इकाई में अग्नि से सुरक्षा सम्बन्धी सभी प्रस्तावित प्राविधान भवन विनियमावली तथा नेशनल बिल्डिंग कोड ऑफ इण्डिया-2006 में उल्लेखित मानकों के अनुसार कारये जायेंगे तथा भवन के निर्माणोपरान्त भवन का प्रयोग करने से पहले भवन में अग्नि से सुरक्षा व्यवस्थाये मानकों के अनुसार भौतिक रूप से स्थापित कर उनका निरीक्षण/परीक्षण अग्निशमन विभाग से कराकर अन्तिम अग्निशमन अनापत्ति प्रमाण पत्र प्राप्त किया जायेगा अन्यथा निर्गत किया जा रहा भवन निर्माण हेतु प्रोविजनल अनापत्ति प्रमाण पत्र स्वतः ही निरस्त समझा जायेगा।

संतमनक : मानचित्र।

(अरविन्द कुमार)
संयुक्त निर्देशक,
अग्निशमन सेवा मुख्यालय,
उ०प्र० लखनऊ।

प्रतिलिपि -

- 1- उपनिर्देशक, फायर सर्विस, लखनऊ परिक्षेत्र को उनके पत्र सं० अ-7-डीडी (लखनऊ)-2012 दिनांक 23-03-2015 के संदर्भ में सूचनाये प्रेषित।
- 2- मुख्य अग्निशमन अधिकारी-लखनऊ को उनके पत्र सं० प-2081/एफएस-15 दि० 20-03-2015 के संदर्भ में मय संलग्न मानचित्र के सूचनाये एवं अनुपालनाये प्रेषित।
- 3- अग्निशमन अधिकारी अग्निशमन केन्द्र-पी०जी०आई० जनपद-लखनऊ को अनुपालनाये प्रेषित।

अप - छ (संलक -6) अि सुरा माणप (पूणता (कीशन) अनापि माणप)

यूआईटी सी : UPFS/2021/27940/LCK/LUCKNOW/1745/CFO

दिनांक: 12-02-2021

मापित किया जाता है कि मैसेज HCL IT City Lucknow Pvt Ltd (भवन/तिन का नाम) पता TOWER A-2, HCL IT City, CG CITY, SULTANPUR ROAD, LUCKNOW तहसील - MOHANLALGANJ, प् एरया 404683 sq.mt, कुल ऊंचाई एरया 7062.89 (वग मीटर), स्लाको की सी - 1 जिसम

कि / टावर	क एक म तली की सी	बैसमें की सी	ऊँचाई
TOWER A2	9	1	29.350 mt.

है। भवन का अधिभोग मैसेज HCL IT City Lucknow Pvt Ltd प् किया जा रहा है। इनके प् भवन म अि निवारण एवं अि सुरा वधाप , एन0बी0सी0 एवं त वंछी भारतीय मानक , ुरो के आई0एस0 के अनुसार भवन म धापित करापी गयी वधाओ का निरीण अशिमन अधिकारी प् दिनांक 18-02-2021 को भवन मी /भवन मी के तिलिपि े SANJEEV SHUKLA के साथ किया गया। भवन म अधिधापित अि सुरा वधाप मानको के अनुसार अधिधापित पायी गयी। अतः त भवन को अि सुरा माणप (फायर से सटिफिकेट) एन0बी0सी0 की अधिभोग ेयी Residential के अना त वैधता तिथि 20-02-2021 से 19-02-2026 तक 5 वष के तिप इस तत के साथ निगत किया जा रहा है कि भवन म नियमानुसार धापित सभी अशिमन वधाओ का अनुण करते ए पोषीत बनाये रखा जायेगा। भवन म धापित की गयी अशिमन वधाओ म पायी गयी कमी के कारण किसी भी घटना के तिप मैसेज HCL IT City Lucknow Pvt Ltd अधिभोगी पूणप से बि ेदार होगा/होगा। निगत अि सुरा माणप का नवीनीकरण निधारात समयावधि के अर न कराये जाने पर निगत अि सुरा माणप तः ही निर मान लिया जायेगा, जिसके तिप मैसेज HCL IT City Lucknow Pvt Ltd अधिभोगी पूणप से बि ेदार होगा/होगा।

पक्ष मात -व आये तः , व अधिलेखी, स्वरुओ के आधार पर निगत किया जा रहा है। इनके अतः पक्ष करने पर निगत मात -व सा नहीं होग।

हारा (निगमन अधिकारी)

(मु अशिमन अधिकारी)



Digitally Signed By
(VIJAY KUMAR SINGH)

[5464802F54042A31238848F277613D6348F16119]

20-02-2021

निगत किये जाने का दिनांक : 20-02-2021
थान : LUCKNOW

I प-झ (संल क-9)

अि एवं जीवन सुरा माण प का नवीनीकरण

युआईटी संल : UPFS/2021/39539/LCK/LUCKNOW/2321/CFO

दिनांक: 30-10-2021

माणित किया जाता है कि मैसर्स HCL IT CITY LUCKNOW PVT LTD (भवन/ ति न का नाम) एता IT CITY CHAKGAJARIA FARMS, SULTAN PUR ROAD, LUCKNOW तइसीत - SARAJINI NAGAR विसम

Y क/टावर	तलों की सं	वेसमें की सं	ऊँचाई
SDC 2	7	1	29.90 mt.

तथा I ट एरिया 3500.00 sq.mt है। भवन का अधिभोग HCL IT CITY LUCKNOW PVT LTD (भवन I मी/ अधिभोगी अथवा क नी का नाम) I रा किया जा रहा है। इनके I रा भवन म अि निवारण एवं अि सुरा व धाय एनओसीओ एवं त ंधी भारतीय मानक रू के आईएसओ के अनुसार भवन म धाणित व धाओ का अनुर ण किया जा रहा है। जिसका निरी ण अि शमन अधिकारी I रा दिनीक 08-11-2021 को भवन I मी के तिनिधि SANJEEV SHUKLA 9910480403 के साथ किया गया तथा भवन म अशि पित अि एवं जीवन सुरा व धाओ को मानकों के अनुसार एधसिधिति म पाया गया। अतः गत भवन को अि एवं जीवन सुरा माण प का नवीनीकरण (Renewal of Fire & Life Safety Certificate)(एनओसीओ की अधिभोग ेची) Business के अ यत वैधता तिधि 09-11-2021 से 08-11-2024 तक 3 वष के तिधे इस रत के साथ दिया जा रहा है कि भवन म सभी मानकों का अनुपालन किया जायेगा तथा भवन के इस माण प का नवीनीकरण निधारित समयवधि के अ गत पुनः करणा जायेगा तथा नवीनीकरण से पूव भवन म, धाणित अि शमन व धाओ को ि पोषील रखने की वि ेदारी आपकी होगी।

"इस सात-प, आरक्षी I रा, अि अधिभोगी, स्थनाओं के आखर पर निगत किया जा रहा है। इनके अम, पाव जाने पर निगत सात-प का नवी होव। इस सात-प, भूमि / भवन के I ति / अधिभोग को माणित नहीं करता है।"

हा र (निगमन अधिकारी)

(मु अि शमन अधिकारी)



Digitally Signed By
(VJAY KUMAR SINGH)

[54649029F54042A312382A8F277513D6248F18119]

09-11-2021

निगत किये जाने का दिनांक : 09-11-2021
थान : LUCKNOW

I प-झ (संल क-9)

अि एवं जीवन सुरा माण प का नवीनीकरण

युआईसी सं : UPFS/2021/37014/LCK/LUCKNOW/2207/CFO

दिनांक: 08-09-2021

माणित किया जाता है कि मैसर्स HCL IT CITY LUCKNOW PVT LTD (भवन/ ति न का नाम) पता IT 01 AND CAFETERIA C G CITY, SULTAN PUR ROAD, LUCKNOW लहसील - LUCKNOW जिसम

Y क/टावर	तलों की सं	वेसम की सं	ऊँचाई
IT 1 BLOCK	5	1	21.25 mt.
CAFETERIA BLOCK	2	0	10.00 mt.

तथा। ए एरिया 404685.60 sq.mt है। भवन का अधिभोग HCL IT CITY LUCKNOW PVT LTD (भवन। सी/ अधिभोगी अथवा क नी का नाम)। रा किया जा रहा है। इनके। रा भवन म अि निवारण एवं अि सुरा व धय एन0बी0सी0 एवं त ेधी भारतीय मानक ुरो के आई0एस0 के अनुसार भवन म धणित व धओ का अनु ण किया जा रहा है। जिसका निरी ण अि शमन अधिकारी। रा टिनीक 13-09-2021 को भवन। सी के तिनिधि SANJIV SHUKLA के साथ किया गया तथा भवन म अधि पित अि एवं जीवन सुरा व धओ को मानकों के अनुसार पथस्थिति म पाण गया। अतः त भवन को अि एवं जीवन सुरा माण प का नवीनीकरण (Renewal of Fire & Life Safety Certificate)(एन0बी0सी0 की अधिभोग ेपी) Business के अ गत वैधता तिधि 14-09-2021 से 13-09-2024 तक 3 वष के लिये इस शत के साथ दिया जा रहा है कि भवन म सभी यानकों का अनुपलतन किया जायँगा तथा भवन के इस माण प का नवीनीकरण निधारित समग्रधधि के अ गत पुनः कराया जायेगा तथा नवीनीकरण से पूव भवन म, धणित अि शमन व धओ को ि घासीत रखने की जि ेदारी आपकी होगी।

"यह माण-प आरके। रा, ए अधिभोगी, यधनओ के आधार पर निगत किया जा रहा है। इनके अतः, यह धय पर निगत माण-प का नहीं होण। यह माण-प भुवि / भवन के। सि / अधिभोग की सणित नहीं कराया है।"

हा र (निगमन अधिकारी)

(मु अि शमन अधिकारी)



Digitally Signed By
(VIJAY KUMAR SINGH)

[346A902F84C42A5123E2A8F177613D6248F18118]

14-09-2021

निगत किये जाने का दिनांक : 14-09-2021
थान : LUCKNOW

प्रारूप-झ (संलग्नक-9)

अग्नि एवं जीवन सुरक्षाप्रमाण पत्र का नवीनीकरण

पुआईडी संख्या: UPFS/2021/31754/LCK/LUCKNOW/1919/CFO

दिनांक: 22-05-2024

प्रमाणित किया जाता है कि मैसर्स HCL IT CITY LUCKNOW PVT LTD (भवन/प्रतिष्ठान का नाम) पता IT-03 AND SDC-01 CHAK GAJARIA FARMS, SULTANPUR ROAD, LUCKNOW तहसील - SAROJINI NAGAR जिसमें

प्लॉक/टावर	खतों की संख्या	बेसमेंट की संख्या	ऊँचाई
IT 03	3	0	14.50 mt.
SDC 01	3	0	14.50 mt.

तथा प्लॉट एरिया 404685.60 sq.mt है। भवन का अधिभोग HCL IT CITY LUCKNOW PVT LTD (भवन स्वामी/ अधिभोगी अथवा कम्पनी का नाम) द्वारा किया जा रहा है। इनके द्वारा भवन में अग्नि निवारण एवं अग्नि सुरक्षा व्यवस्थाएँ एन0बी0सी0 एवं तत्संबंधी भारतीय मानक श्रूरी के आई0एस0 के अनुसार भवन में स्थापित व्यवस्थाओं का अनुरक्षण किया जा रहा है। जिसका निरीक्षण अग्निशमन अधिकारी द्वारा दिनांक 28-05-2024 को भवन स्वामी के प्रतिनिधि श्री SANJEEV SHUKLA के साथ किया गया तथा भवन में अद्यतित अग्नि एवं जीवन सुरक्षा व्यवस्थाओं को मानकों के अनुसार यथास्थिति में पाया गया। अतः प्रशस्त भवन को अग्नि एवं जीवन सुरक्षाप्रमाण पत्र का नवीनीकरण (Renewal of Fire & Life Safety Certificate)(एन0बी0सी0 की अधिभोग श्रेणी) Business के अन्तर्गत वैधता तिथि 30-05-2024 से 30-05-2027 तक 3 वर्षों के लिये इस शर्त के साथ दिया जा रहा है कि भवन में सभी मानकों का अनुपालन किया जायेगा तथा भवन के इस प्रमाण पत्र का नवीनीकरण निर्धारित समयवधि के अन्तर्गत पुनः कराया जायेगा तथा नवीनीकरण से पूर्व भवन में, स्थापित अग्निशमन व्यवस्थाओं को क्रियाशील रखने की जिम्मेदारी आयोजी होगी।

Note : अग्निशमन अधिकारी की संस्तुति आख्या के आधार पर फायर सेफ्टी सर्टिफिकेट निर्गत किया जाता है तथा इलेक्ट्रिक ऑडिट सर्टिफिकेट प्राप्त करना अनिवार्य होगा।

"यह प्रमाण-पत्र आवक द्वारा प्रस्तुत अभिलेखी, सूचनाओं के आधार पर निर्गत किया जा रहा है। इनके अलावा यह जानें पर निर्गत प्रमाण-पत्र मान्य नहीं होगा। यह प्रमाण-पत्र भूमि / भवन के स्वामित्व / अधिभोग को प्रमाणित नहीं करता है।"

हस्ताक्षर (निर्गमन अधिकारी)
(मुख्य अग्निशमन अधिकारी)



Digitally Signed By
(MANGESH KUMAR)

[CB878F98B1828A278D00E89314F241D04CAB3C081]

30-05-2024

निर्गत किये जाने का दिनांक : 30-05-2024
स्थान : LUCKNOW

प्रारूप-इ (संलग्नक-9) अग्नि एवं जीवन सुरक्षाप्रमाण पत्र का नवीनीकरण

पूराईडी संख्या: UPFS/2024/105547/LCK/LUCKNOW/5136/CFO

दिनांक: 13-01-2024

प्रमाणित किया जाता है कि मेसर्स HCL IT CITY LUCKNOW PVT LTD (भवन/प्रतिष्ठान का नाम) पता IT-02 HCL IT CITY PVT LTD CHAK GAJARIA FARMS, SULTANPUR ROAD GOMTI NAGAR EXTENSION, LUCKNOW तहसील - SAROJINI NAGAR जिले में

ब्लॉक/टॉवर	लॉट की संख्या	सेसमेंट की संख्या	ऊँचाई
TOWER IT 02	5	1	21.45 mt.

तथा प्लॉट एरिया 13675.00 sq.mt है। भवन का अधिभोग HCL IT CITY LUCKNOW PVT LTD (भवन स्वामी/ अधिभोगी अथवा कम्पनी का नाम) द्वारा किया जा रहा है। इनके द्वारा भवन में अग्नि निवहरण एवं अग्नि सुरक्षा व्यवस्थायें एनोबीडसीड एवं तत्संबंधी भारतीय मानक खूटे के आईएसओ के अनुसार भवन में स्थापित व्यवस्थाओं का अनुरक्षण किया जा रहा है। जिसका निरीक्षण अग्निशमन अधिकारी द्वारा दिनांक 16-01-2024 को भवन स्वामी के प्रतिनिधि श्री SANJEEV SHUKLA 9910480403 के साथ किया गया तथा भवन में अधिभूषित अग्नि एवं जीवन सुरक्षा व्यवस्थाओं की मानकों के अनुसार व्यवस्थिति में पाया गया। अतः दृश्यत भवन को अग्नि एवं जीवन सुरक्षाप्रमाण पत्र का नवीनीकरण (Renewal of Fire & Life Safety Certificate)(एनोबीडसीड की अधिभोग मंजी) Business के अंतर्गत वैधता तिथि 18-01-2024 से 17-01-2027 तक 3 वर्षों के लिये दस वर्षों के साथ दिया जा रहा है कि भवन में सभी मानकों का अनुपालन किया जायेगा तथा भवन के इस प्रमाण पत्र का नवीनीकरण निर्धारित सम्पत्ति के अनर्कित पुनः करसा जायेगा तथा नवीनीकरण से पूर्व भवन में, स्थापित अग्निशमन व्यवस्थाओं की क्षमाशील रखने की जिम्मेदारी आपकी होगी।

Note : अग्निशमन अधिकारी की संस्तुति आख्या के आधार पर अनापत्ति प्रमाण पत्र निर्गत किया जाता है तथा इलेक्ट्रिक ऑडिट सर्टिफिकेट प्राप्त करना अनिवार्य होगा।

"यह प्रमाण-पत्र आपके द्वारा प्रस्तुत अपिलेटोरी, दस्तावेजों के आधार पर निर्गत किया जा रहा है। इसके अन्तर्गत पाए जाने या निर्गत प्रमाण-पत्र मान्य नहीं होगा। यह प्रमाण-पत्र एमि / भवन के आगिक / अधिभोग की प्रमाणित नहीं करता है।"

हस्ताक्षर (निर्गत अधिकारी)
(मुख्य अग्निशमन अधिकारी)



Digitally Signed By
(MANGESH KUMAR)

[CB57517085E29A27BD0C1B3147341D94C485CDB1]

18-01-2024

निर्गत किये जाने का दिनांक : 18-01-2024
स्थान : LUCKNOW



भारतीय विमानपत्तन प्राधिकरण AIRPORTS AUTHORITY OF INDIA

Restricted Height

No. AAI/BRQ/16/ADM/NOC/2015/169/2728-31		Date: 26/5/2015
HCL IT City Lucknow Private Limited		
208, Siddharth, 46, Nehru Place, New Delhi.		
NO Objection Certificate for Height Clearance		
This NOC is issued by Airports Authority of India (AAI) in pursuance of responsibility conferred by and as per the provisions of Govt. of India (Ministry of Civil Aviation) order S064 (E) dated 14th Jan. 2010 for Safe and Regular Aircraft Operations.		
1. References		
NOCID	LUCK/NORTH/041115/108135	
Applicant Letter	LUCK/NORTH/041115/108135	
AAI Reference		
2. NOC Details for Height Clearance		
Applicant Name	HCL IT City Lucknow Private Limited	
Type of Structure	Building	
Site Address	HCL IT City, Chak Gajaria, Sultanpur Road, Lucknow	
Site Coordinates	26 47 27N -81 01 17E, 26 47 55N -81 01 40E, 26 47 41N -81 01 48E, 26 47 22N -81 01 32E, 26 47 21N -81 01 34E, 26 47 19N -81 01 33E	
Site Elevation AMSL in Mtrs	112.0 Mtrs One Hundred Twelve only	
Permissible Height above Ground Level in Mtrs	55.00 Mtrs Fifty Five only	
Permissible Top Elevation AMSL in Mtrs	167.00 Mtrs One Hundred Sixty Seven only	
3. This NOC is subject to the terms and conditions as given below		
a. The site elevation and site coordinates provided by the applicant are taken for calculation of the permissible top elevation for the proposed structure. If however, at any stage it is established that the actual data is different from the one provided by the applicant, this NOC will be invalid.		
b. The issue of the 'NOC' is further subject to the provisions of Section 9-A of the Indian Aircraft Act, 1934 and those of any notifications issued there under from time to time including the Aircraft Demolition or Obstruction caused by buildings and trees etc.; Rules, 1934.		
c. No radio/TV Antenna, lighting arresters, staircase, Munties, Overhead water tank and attachments of fixtures of any kind shall project above the Permissible Top Elevation 167.00 Mtrs, indicated in para 2.		
d. The use of oil fired or electric fired furnace is mandatory, within 5 KM of the Aerodrome Reference Point.		
e. The certificate is valid for a period of 5 years from the date of its issue. If the		

building/structure/Chimney is not constructed & completed within the period, the applicant will be required to obtain a fresh 'NOC' from the Designated Officer of Airports Authority of India. The date of completion of Building/Structure/Chimney should be intimated to this office of AAI. Request for revalidation of NOC will not be entertained after the expiry of its validity period.

f. No light or a combination of lights which by reason of its intensity, configuration or colour may cause confusion with the aeronautical ground lights of the Airport shall be installed at the site at any time, during or after the construction of the building.

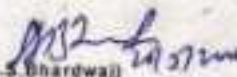
g. The applicant will not complain/claim compensation against aircraft noise, vibrations, damages etc. caused by aircraft operations at or in the vicinity of the airport.

h. Day markings & night lighting with secondary power supply shall be provided as per the guidelines specified in chapter 6 and appendix 5 of Civil Aviation Requirement Series 'E' Part I Section 4, available on DGCA India website: www.dgca.aic.in

i. The applicant is responsible to obtain all other statutory clearances from the concerned authorities, including the approval of building plans as this NOC for height is for the purpose of 'to ensure the safe and regular aircraft operations' and shall not be used as document for any other purpose/claim whatsoever, including ownership of land etc.

j. This NOC has been issued w.r.t. the Civil Airports as notified in SO 84(E). Applicant needs to seek separate NOC from Defence, if the site lies within jurisdiction of Defence Airport.

This certificate is issued for "HEIGHT CLEARANCE ONLY" with the approval of Competent Authority for Permissible Top Elevation 167.00 Mtrs.


(S.S. Bhardwaj)
Asstt. General Manager(ATM-NOC)
For General Manager(ATM),NR
Airports Authority Of India

Copy to:

1. The Executive Director(ATM), AAI, Rajiv Gandhi Bhawan, Safdarjung Airport, New Delhi-110003.

2. GM(NOC)/Airport Director(Bundle).

3. Guard File

4. LUCKNOW DEVELOPMENT AUTHORITY, Navin Bhawan, vipin Khand, Gomti Nagar, Lucknow

5. Airport Director, Chaudhary Charan Singh Airport, Amousi, Lucknow-226009

Stamp area with fields for Date, Time, and Signature.



Eia Team <eia.team@amogroup.co.in>

Submission of Form-3 for IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow as per rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13(1)(xi), 13(2)(v), 13(3)(vii) and 13(4)(v) of E-Waste (Management) Rules, 2022 for the financial year April 2023-March 2024.

1 message

Eia Team <eia.team@amogroup.co.in>

To: ms@uppcb.com

Cc: nolucknow@uppcb.in

Tue, Jun 25, 2024 at 11:32 AM

Respected Sir,

This is with reference to the above-mentioned subject, we would like to inform you that, Our unit, IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow of M/s HCL IT City Lucknow Pvt Ltd. is an occupier of E-Waste.

We are hereby submitting Form-3 (form for filing annual returns by the occupier or operator of a facility) as per rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13(1)(xi), 13(2)(v), 13(3)(vii) and 13(4)(v) of E-Wastes (Management) Rules, 2022 for the financial year April 2023 – March 2024.

Thanking you,

Sincerely Yours,

For M/s HCL IT City Lucknow Pvt. Ltd.



HCL IT CITY FORM-3.pdf

1837K

Date: 21/06/2024

To,
The Member Secretary
Uttar Pradesh Pollution Control Board,
Building No. TC-12 V, Vibhuti Khand,
Gomti Nagar, Lucknow,
Uttar Pradesh- 226010

Subject: Submission of Form-3 for IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow as per rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13(4)(v) of E-Waste (Management) Rules, 2022 for the financial year April 2023-March 2024.

Respected Sir,

This is with reference to the above-mentioned subject, we would like to inform you that, Our unit, IT Project "HCL Technology Hub" at Chak Gajaria Farms, Sultanpur Road, Lucknow of M/s HCL IT City Lucknow Pvt Ltd, is an occupier of E-Waste.

We are hereby submitting Form-3 (Form for filing annual returns by the occupier or operator of a facility) as per rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13(4)(v) of E-Waste (Management) Rules, 2022 for the financial year April 2023– March 2024.

Thanking you,

Sincerely Yours,

For M/s HCL IT City Lucknow Pvt. Ltd.

(Authorized Signatory)



Enclosure: Form-III

CC: Regional Office UPPCB, Picup-Bhuvan B-Block, 4th Floor, Vibhuti Khand, Gomti Nagar,
Lucknow-226010.

FORM-3

[See rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13(4)(v) under E-Waste (Management) Rules, 2022]

FORM FOR FILING ANNUAL RETURNS

[To be submitted by producer or manufacturer or refurbisher or dismantler or recycler by 30th day of June following the financial year to which that return relates].

Quantity in Metric Tonnes (MT)

1.	Name and address of the producer or manufacturer or refurbisher or dismantler or recycler	IT Project "HCL Technology Hub" at Chack Gajaria Farm Sultanpur Road, Lucknow		
2.	Name of the authorized person and complete address with telephone and fax numbers and e-mail address	Mr. Rizwan Hafiz Global Workplace Solutions (Administration & Facilities) Admin Helpdesk, HCL Technologies Ltd. GWS - Administration Block, Chack Gajaria Farms Sultanpur Road Lucknow-226002 Contact No. 9044099705		
3.	Total quantity of e-waste collected or channelized to recyclers or dismantlers for processing during the year for each category of electrical and electronic equipment listed in the Schedule I (Attach list) by PRODUCERS	NIL		
	DETAILS OF THE ABOVE	TYPE	QUANTITY (kg/tons)	No.
3(A)*	BULK CONSUMERS: Quantity of e-waste	N.A	NIL	N.A
3(B)*	REFURBISHERS: Quantity of e-waste:	N.A	N.A	N.A
3(C)*	DISMANTLERS: i. Quantity of e-waste processed (Code wise); ii. Details of materials or components recovered and sold; iii. Quantity of e-waste sent to recycler; iv. Residual quantity of e-waste sent to Treatment, Storage and Disposal Facility.	N.A	N.A	N.A
3(D)*	RECYCLERS: i. Quantity of e-waste processed (Code wise); ii. Details of materials recovered and sold in the market; iii. Details of residue sent to Treatment, Storage and Disposal Facility.	N.A	N.A	N.A
4	Name and full address of the destination with respect to 3(A)-3(D) above	Recyclers: Bharat Oil Company India Regd, E-18, Site-IV, Sahibabad Industrial Area, Ghaziabad, 201010		
5	Type and quantity of materials segregated or recovered from e-waste of different codes as applicable to 3(A)-3(D)	Type N.A	Quantity of waste N.A	

✓ Enclose the list of recyclers to whom e-waste have been sent for recycling.

Place: Lucknow

Date: 21-06-2024

Signature of the authorized Person

Note:

- (1) * Strike off whichever is not applicable.
- (2) Provide any other information as stipulated in the conditions to the authorizer.
- (3) In case filing on behalf of multiple regional offices, Bulk Consumers and Producers need to add extra rows to 1 & 3(A) with respect to each office

Embassy Services Pvt. Ltd.

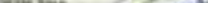
STP Daily Check List

SLIDE	HELITECH WATERWORKS										TUNES 2783										DATE: 27/07/20									
TIME	Aeration tank (DOOR)			Re-aeration Pump (DOOR)			Aeration tank (DOOR)			Filter tank Pump (DOOR)			Back wash time (DOOR)		Filter tank (DOOR)		Effluent Water (DOOR)		Effluent Water (DOOR)		Inlet of change 1 to 2		Outlet of change 1 to 2		Bar screen clearing		By			
	1	2	3	Pump-1	Pump-2	Pump-3	M 33 m³/hr (Range 3000 to 10000)	Pump-1	Pump-2	Pump-1	Pump-2	Pump-3	PSF	ASD	Pump-1	Pump-2	Pump-1	Pump-2	Pump-1	Pump-2	Pump-1	Pump-2	Pump-1	Pump-2	Pump-1	Pump-2				
07:00	OFF	ON	OFF	OFF	OFF	OFF	7000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	7	8	OK	OK	OK	OK				
08:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF			OK	OK	OK	OK				
09:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
10:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	OFF	ON	ON	ON	OFF	ON	ON	OFF	OFF			OK	OK	OK	OK				
11:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
12:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
13:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
14:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
15:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
16:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK					
17:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
18:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
19:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
20:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
21:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
22:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
23:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
24:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
25:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
26:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
27:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
28:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
29:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				
30:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF			OK	OK	OK	OK				

Remarks:

Supervisor Sign: *[Signature]*Eng. Sign: *[Signature]*Manager Sign: *[Signature]*

ETP Daily Check List

Remarks:														
Inspector Sign.					Eng. Sign.					Manager Sign.				

Embassy Services Pvt. Ltd.

STP Daily Check List



TIME	Air Blowers (On/Off)						Effluent Pump (On/Off)			Filter Feed Pump (On/Off)			Back wash time (On/Off)		Filtrate Slurry (On/Off)		Effluent Motor (On/Off)	Chemical Dosing Pump (On/Off)	Silt off (Range 1 to 5)	Culvert off (Range 1 to 5)	Bar screen cleaning	STP Operator Sig.			
	1	2	3	Pump-1	Pump-2	Pump-3	MLSS (Range 3000 to 5000)	Pump-1	Pump-2	Pump-1	Pump-2	Pump-3	PSI	ATP	Pump-1	Pump-2									
07:00	OFF	OFF	ON	OFF	OFF	OFF	2500	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	17	16	OK	Handwritten				
08:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF		OK	Handwritten				
09:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Handwritten				
10:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF		OK	Handwritten				
11:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Handwritten				
12:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF		OK	Handwritten				
13:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF		OK	Handwritten				
14:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Handwritten				
15:00	OFF	OFF	ON	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF		OK	Handwritten				
16:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF		OK	Handwritten				
17:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
18:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
19:00	OFF	ON	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Handwritten				
20:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF		OK	Handwritten				
21:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Handwritten				
22:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Handwritten				
23:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Handwritten				
00:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
01:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
02:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
03:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
04:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
05:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
06:00	OFF	ON	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OK	Handwritten				
Signature: _____																									
Time: _____																									
Signature: _____																									

Remarks:

Inspector Sign: _____

Eng. Sign: SinghManager Sign: Sumit

Embassy Services Pvt. Ltd.

STP Daily Check List



HLL Tertiary Treatment		TOWNS: 1, 2, 3										DATE: 4/1/2009										
TIME	as Blowers (On/Off)			Raw effluent Pump (On/Off)			Recirculation pump (On/Off)			Filter feed Pump (On/Off)			Backwash line (On/Off)		Filtrate Pump (On/Off)		Effluent Motor (On/Off)	Effluent Intergration pump (On/Off)	Inlet eff. Pump 1 to 6	Outlet eff. Pump 1 to 6	Bar screen clearing	STP Operator Sig.
	1	2	3	Pump-1	Pump-2	Pump-3	Pump-1	Pump-2	Pump-3	Pump-1	Pump-2	Pump-3	P1	P2	Pump-1	Pump-2						
07:00	Off	On	Off	Off	Off	Off	Stop	Off	Off	Off	Off	Off	Off	Off	Off	Off	On	Off	6	7	OK	Parag
08:00	Off	Off	On	Off	Off	Off		On	Off	Off	Off	Off	Off	Off	Off	Off	On	Off			OK	Parag
09:00	Off	On	Off	Off	Off	Off		Off	On	Off	Off	Off	Off	Off	On	Off	On	Off			OK	Parag
10:00	Off	Off	On	Off	Off	Off		On	Off	Off	Off	Off	Off	Off	Off	Off	On	Off			OK	Parag
11:00	Off	On	Off	Off	Off	Off		On	Off	Off	On	Off	On	On	Off	On	On	On			OK	Parag
12:00	Off	Off	On	Off	Off	Off		Off	On	Off	On	Off	Off	Off	Off	Off	On	On			OK	Parag
13:00	Off	On	Off	On	Off	Off		Off	Off	Off	On	Off	Off	Off	Off	Off	On	On			OK	Parag
14:00	Off	Off	On	On	Off	Off		Off	Off	Off	On	Off	Off	Off	Off	On	On	On			OK	Parag
15:00	Off	On	Off	On	Off	Off		Off	Off	Off	On	Off	Off	Off	Off	Off	On	On			OK	Parag
16:00	Off	Off	On	On	Off	Off		Off	Off	On	Off	Off	Off	Off	On	Off	On	On			OK	Parag
17:00	Off	On	Off	On	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
18:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
19:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
20:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
21:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
22:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
23:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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16:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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22:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
23:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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02:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
03:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
04:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
05:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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07:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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12:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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16:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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18:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
19:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
20:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
21:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
22:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
23:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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02:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
03:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
04:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
05:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
06:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
07:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
08:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
09:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
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11:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
12:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
13:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
14:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
15:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
16:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
17:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
18:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
19:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On	On	Off				OK	Parag
20:00	Off	Off	On	Off	Off	Off		Off	Off	Off	Off	Off	Off	Off	On							

STP Daily Check List

HCL T-7 CIP Cell Room						TOWER - T-7B3								SAFE - JAN - 2-1								
Air Movers (On/Off)			Row Effluent Pump (On/Off)			Aeration Performance Reduction Control (On/Off)				Total Feed Pump (On/Off)			Back Wash Line (On/Off)		Filtering Pump (On/Off)		Sewer Motor (On/Off)	Chlorine Discharge Pump (On/Off)	Inlet pH Sample 1 or 2	Outlet pH Sample 1 or 2	Bar screen clearing	CIP Operator Sig.
	1	2	3	Pump 1	Pump 2	Pump 3	WE SS up/down change 3000 to	Pump 1	Pump 2	Pump 1	Pump 2	Pump 3	FBI	AIF	Pump 1	Pump 2						
07:00	on	off	off	off	off	off	350m	on	off	off	off	off	off	off	off	off	off	off	6	7	OK	John
08:00	on	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
09:00	off	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
10:00	on	off	off	on	off	off		off	off	off	on	off	on	on	off	on	on	off			OK	John
11:00	off	off	on	on	off	off		on	off	off	on	off	off	off	on	off	on	off			OK	John
12:00	on	off	off	on	off	off		off	on	off	on	off	off	off	off	on	off	off			OK	John
13:00	off	off	on	off	off	off		on	off	off	off	off	off	off	off	on	off	off			OK	John
14:00	on	off	off	on	off	off		off	on	off	on	off	off	off	on	on	off	off			OK	John
15:00	off	off	on	on	off	off		off	off	off	on	off	off	off	off	on	on	off			OK	John
16:00	on	off	off	on	off	off		on	off	off	off	off	off	off	off	on	on	off			OK	John
17:00	off	off	on	on	off	off		off	on	off	off	off	off	off	on	off	on	off			OK	John
18:00	on	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
19:00	on	off	off	on	off	off		off	off	off	on	off	off	off	on	off	on	off			OK	John
20:00	off	off	on	on	off	off		off	off	off	on	off	off	off	on	off	on	off			OK	John
21:00	off	off	on	on	off	off		off	off	off	on	off	off	off	on	off	on	off			OK	John
22:00	on	off	off	on	off	off		off	off	off	on	off	off	off	on	on	off	off			OK	John
23:00	on	off	off	off	off	off		off	off	off	off	off	off	off	on	off	off	off			OK	John
00:00	off	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
01:00	off	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
02:00	on	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
03:00	on	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
04:00	off	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
05:00	off	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John
06:00	off	off	off	off	off	off		off	off	off	off	off	off	off	off	off	off	off			OK	John

Embassy Services Pvt. Ltd.

STP Daily Check List



TOWER- T D 3										DATE- 21/03/25																
Air Blowers (On/Off)			Raw effluent Pump (On/Off)			Aeration tank/Sludge recirculation pump (On/Off)		Filter feed Pump (On/Off)			Back wash time (On/Off)		Filtrate Pump (On/Off)		Effluent Motors (On/Off)		Overload protection (On/Off)		Inlet pH Range 5 to 9		Outlet pH Range 5 to 9		Sludge screen clearing		STP Operator Sig.	
						MLSS mg/lts (Range 000 to 3500)																				
							Pump-1	Pump-2																		
									Pump-1	Pump-2	Pump-3	PSI	ASD													
														Pump-1	Pump-2											
07:00	OFF	ON	OFF	OFF	OFF	3500	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	6	7	OK	Pass	OK	Pass	OK	Pass	
08:00	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF			OK	Pass	OK	Pass	OK	Pass	
09:00	OFF	ON	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF			OK	Pass	OK	Pass	OK	Pass	
10:00	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF			OK	Pass	OK	Pass	OK	Pass	
11:00	OFF	ON	OFF	OFF	OFF		ON	OFF	OFF	ON	OFF	ON	ON	OFF	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
12:00	OFF	OFF	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	ON	OFF	ON	ON			OK	Pass	OK	Pass	OK	Pass	
13:00	OFF	ON	OFF	ON	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
14:00	OFF	OFF	ON	ON	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
15:00	OFF	ON	OFF	ON	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
16:00	OFF	OFF	ON	ON	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
17:00	OFF	ON	OFF	ON	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
18:00	OFF	OFF	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
19:00	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
20:00	OFF	OFF	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
21:00	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
22:00	OFF	ON	OFF	ON	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
23:00	OFF	OFF	ON	ON	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
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03:00	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
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05:00	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
06:00	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	
07:00	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON			OK	Pass	OK	Pass	OK	Pass	

Eng. Sign

Manager Sign

STP Daily Check List



HCL IT CM Muknow			TOWER-TP3			DATE: 1 JAN - 2019																																																																																																																																																																																																																																																												
TIME	Air Blower (On/Off)			Raw effluent Pump (On/Off)			Aeration tank/budge Reconstruction Pump (On/Off)			Filter feed Pump (On/Off)			Back wash line (On/Off)		Foliate Slump (On/Off)		Foliate Slump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump 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(On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)	Sludge pump (On/Off)

Embassy Services Pvt. Ltd.

STP Daily Check List

HCC North Carolina			STP Daily Check List										DATE: 3/11/2020															
Air Blowers (On/Off)			Raw Effluent Pumps (On/Off)			Aeration Tank/Sludge Recirculation Pump (On/Off)			Filter Feed Pump (On/Off)			East West Side (On/Off)		Flopple Pump (On/Off)		Exhaust Blower (On/Off)		Overhead Storage Pump (On/Off)		Low pH (Pump 1 to 4)		Culvert (Pump 1 to 4)		Sewer over-sight		STP Operator Sig.		
1 2 3			Pump 1 Pump 2 Pump 3			Pump 1 Pump 2			Pump 1 Pump 2 Pump 3			PSP ASP		Pump 1 Pump 2														
07:00	OFF	OFF	ON	ON	OFF	OFF	3000	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
08:00	OFF	OFF	ON	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
09:00	ON	OFF	OFF	ON	OFF	OFF		OFF	OFF	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
10:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
11:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	ON	ON	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
12:00	ON	OFF	OFF	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
13:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
14:00	ON	OFF	OFF	ON	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	ON	ON	ON	ON	ON	ON	ON
15:00	OFF	OFF	ON	OFF	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
16:00	ON	OFF	OFF	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
17:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
18:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
19:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
20:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
21:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
22:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
23:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
00:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
01:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
02:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
03:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
04:00	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
05:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
06:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Remarks:																												
Supervisor Sign:	[Signature]										[Signature]										[Signature]							

Embassy Services Pvt. Ltd.

STP Daily Check List

BLOCK	HPT 17 & 18M Substation										TOWER- TPO3										DATE: 01/11/2024			
TIME	All Towers (On/Off)			Raw effluent Pump (On/Off)			Aeration tank/sump recirculation pump (On/Off)		Filter feed Pump (On/Off)			Back wash (On/Off)		Purine Pump (On/Off)		Exhaust Motor (On/Off)	Oxygen storage pump (On/Off)	Inlet pH (Range 5 to 9)	Outlet pH (Range 5 to 9)	Bar screen clearing	Site Supervisor			
	1	2	3	Pump-1	Pump-2	Pump-3	BLAS right (Range 300 to 500)	Pump-1	Pump-2	Pump-1	Pump-2	Pump-3	PS	AS	Pump-1							Pump-2		
07:00	ON	OFF	OFF	ON	OFF	OFF	1250	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	7	6	OK	Shah				
08:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON			OK	Shah				
09:00	OFF	OFF	ON	ON	OFF	OFF		OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	ON			OK	Shah				
10:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON			OK	Shah				
11:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON			OK	Shah			
12:00	OFF	OFF	ON	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	ON	ON	OFF	OFF			OK	Shah				
13:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	ON	ON	ON	OFF			OK	Shah				
14:00	ON	OFF	OFF	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	ON			OK	Shah			
15:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	ON		OK	Shah			
16:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON		OK	Shah			
17:00	ON	OFF	OFF	ON	OFF	OFF		OFF	ON	ON	ON	OFF	OFF	OFF	ON	OFF	ON	ON		OK	Shah			
18:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF			OK	Shah			
19:00	OFF	OFF	ON	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF			OK	Shah			
20:00	OFF	OFF	ON	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON		OK	Shah			
21:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	ON	ON	ON	OFF	ON	ON		OK	Shah			
22:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON		OK	Shah			
23:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Shah			
01:00	ON	OFF	OFF	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON		OK	Shah			
02:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON			OK	Shah			
03:00	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Shah			
04:00	OFF	OFF	ON	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Shah			
05:00	OFF	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF		OK	Shah			
06:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON			OK	Shah			

Remarks: _____

Supervisor Sign: _____ Eng. Sign: _____ Manager Sign: _____

Embassy Services Pvt. Ltd.

STP Daily Check List



Block: HQ IT CITY Lucknow. TOWER: T-03 DATE: 01/10/2024

TIME	Air Blowers (ON/OFF)			Raw Effluent Pump (ON/OFF)			MLSS mg/lts (Range 2000 to 3000)	Aeration tank/bubble (ON/OFF)			Final Feed Pump (ON/OFF)			Ditch wash tank (ON/OFF)		Filtrate Sludge (ON/OFF)		Exhaust Solids (ON/OFF)	Chlorine Discharge Pump (ON/OFF)	Inlet pH (Range 5 to 11)	Outlet pH (Range 5 to 11)	Ditch screen clearing	STP Operator Sig.
	1	2	3	Pump-1	Pump-2	Pump-3		Pump-1	Pump-2	Pump-3	Pump-1	Pump-2	Pump-3	PSF	ASR	Pump-1	Pump-2						
07:00	ON	OFF	OFF	OFF	OFF	OFF	1200	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
08:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF	7	6	OK	Amir
09:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
10:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
11:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
12:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
13:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
14:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
15:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
16:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
17:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
18:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
19:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
20:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
21:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
22:00	OFF	ON	ON	ON	ON	ON		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
23:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
00:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
01:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
02:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
03:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
04:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
05:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir
06:00	ON	OFF	OFF	OFF	OFF	OFF		ON	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	OFF			OK	Amir

Signature: Amir Eng. Sign: Amir Manager Sign: Amir



PILIFT City Lucknow

TOWER: 7702

DATE: 28/10/24

TIME	Air Pressure (ON/OFF)			Raw Effluent Pump (ON/OFF)			Aeration Tank/Sludge Recirculation Pump (ON/OFF)			Filter Feed Pump (ON/OFF)			Back wash time (ON/OFF)		Sludge Slump (ON/OFF)		Exhaust Motors (ON/OFF)		Chlorine Dosing Pump (ON/OFF)		Inlet pH (Range 6 to 9)	Outlet pH (Range 6 to 9)	Bar screen clearing	STP Operator Sign.
	1	2	3	Pump-1	Pump-2	Pump-3	Pump-1	Pump-2	Pump-3	Pump-1	Pump-2	Pump-3	PH	ASP	Pump-1	Pump-2	Exhaust Motors	Chlorine Dosing Pump						
07:00	ON	OFF	OFF	OFF	OFF	OFF	1300	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	6.2	7.2	OK	Prashant	
08:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
09:00	OFF	OFF	ON	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
10:00	OFF	OFF	ON	ON	OFF	OFF		OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
11:00	ON	OFF	OFF	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
12:00	OFF	OFF	ON	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
13:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
14:00	ON	OFF	OFF	OFF	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
15:00	OFF	OFF	ON	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
16:00	OFF	OFF	ON	ON	OFF	OFF		OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
17:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
18:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
19:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
20:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
21:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
22:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
23:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
23:55	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
01:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
02:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
03:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
04:00	OFF	OFF	ON	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
05:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	
06:00	ON	OFF	OFF	ON	OFF	OFF		ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF			OK	Prashant	

Engg. Sign.

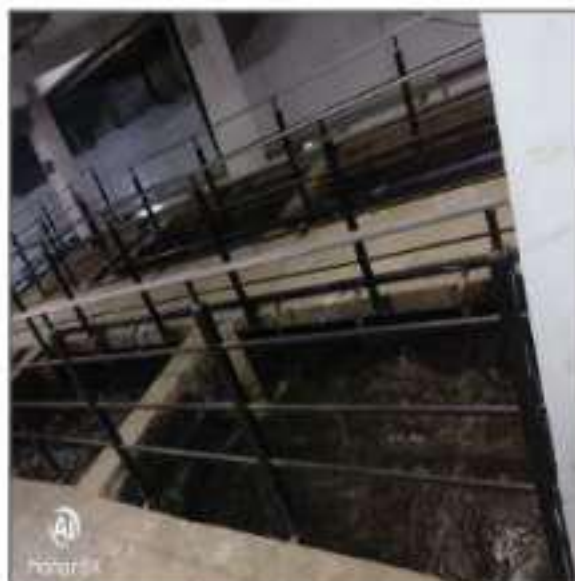
Sawant

Manager Sign.

Prashant

Photographs of STP









NoV SEZ

GARDEN WASTE CHECKLIST SEZ HCL LUCKNOW

October 2024

Date	Gross Waste (Gross Waste from the Lawn) Leaf Waste (Hemlock, Cypress palm, Pines palm, Anemone plant) / Kg	Wooden waste / Kg	Signature	Remarks
02/10/24	48 kg	13 kg	Abhaya Yadav	
02/10/24	39.2 kg	9 kg	Abhaya Yadav	
03/10/24	52 kg	28 kg	Abhaya Yadav	
04/10/24	37 kg	11 kg	Abhaya Yadav	
05/10/24	61 kg	5 kg	Abhaya Yadav	
06/10/24	32 kg	16 kg	Abhaya Yadav	
07/10/24	41 kg	9 kg	Abhaya Yadav	
08/10/24	43 kg	12.7 kg	Abhaya Yadav	
09/10/24	39.2 kg	6 kg	Abhaya Yadav	
10/10/24	49 kg	9 kg	Abhaya Yadav	
11/10/24	52 kg	17 kg	Abhaya Yadav	
12/10/24	41 kg	13 kg	Abhaya Yadav	
13/10/24	29 kg	4 kg	Abhaya Yadav	
14/10/24	45 kg	16 kg	Abhaya Yadav	
15/10/24	29 kg	21 kg	Abhaya Yadav	
16/10/24	37.3 kg	23 kg	Abhaya Yadav	
17/10/24	42 kg	15 kg	Abhaya Yadav	
18/10/24	31 kg	19 kg	Abhaya Yadav	
19/10/24	44 kg	11.7 kg	Abhaya Yadav	
20/10/24	39 kg	35 kg	Abhaya Yadav	
21/10/24	25 kg	33 kg	Abhaya Yadav	
22/10/24	37 kg	7 kg	Abhaya Yadav	
23/10/24	42 kg	18 kg	Abhaya Yadav	
24/10/24	49.7 kg	10 kg	Abhaya Yadav	
25/10/24	35 kg	11 kg	Abhaya Yadav	
26/10/24	31 kg	9 kg	Abhaya Yadav	
27/10/24	37 kg	17 kg	Abhaya Yadav	
28/10/24	42 kg	8 kg	Abhaya Yadav	
29/10/24	47 kg	15 kg	Abhaya Yadav	
30/10/24	51 kg	12 kg	Abhaya Yadav	
31/10/24	13 kg	9 kg	Abhaya Yadav	
TOTAL	1263.4 kg	422.2 kg		



N^o SE-2 GARDEN WASTE CHECKLIST NSEZ HCL LUCKNOW

NOVEMBER 2024

Date	Garden Waste (Grass Waste from the Lawn) Leaf Waste (Flammable, Cyclic palm, Ficus palm, Aerial plant) / Kg	Wooden waste / Kg	Signature	Remark
01/11/24	44 Kg	9 Kg	Abhay Varsh	
02/11/24	51 Kg	13 Kg	Abhay Varsh	
03/11/24	10 Kg	3 Kg	Abhay Varsh	
04/11/24	39 Kg	14 Kg	Abhay Varsh	
05/11/24	42.3 Kg	19 Kg	Abhay Varsh	
06/11/24	51 Kg	11.3 Kg	Abhay Varsh	
07/11/24	34 Kg	8 Kg	Abhay Varsh	
08/11/24	23 Kg	4.2 Kg	Abhay Varsh	
09/11/24	55 Kg	7 Kg	Abhay Varsh	
10/11/24	49 Kg	13 Kg	Abhay Varsh	
11/11/24	30 Kg	19 Kg	Abhay Varsh	
12/11/24	41 Kg	7 Kg	Abhay Varsh	
13/11/24	37.2 Kg	11 Kg	Abhay Varsh	
14/11/24	34 Kg	9 Kg	Abhay Varsh	
15/11/24	42 Kg	14 Kg	Abhay Varsh	
16/11/24	13 Kg	5 Kg	Abhay Varsh	
17/11/24	28 Kg	3 Kg	Abhay Varsh	
18/11/24	37 Kg	14 Kg	Abhay Varsh	
19/11/24	31 Kg	8 Kg	Abhay Varsh	
20/11/24	33 Kg	11.2 Kg	Abhay Varsh	
21/11/24	29 Kg	7 Kg	Abhay Varsh	
22/11/24	32.2 Kg	15 Kg	Abhay Varsh	
23/11/24	34 Kg	9 Kg	Abhay Varsh	
24/11/24	43 Kg	4 Kg	Abhay Varsh	
25/11/24	30 Kg	17 Kg	Abhay Varsh	
26/11/24	22 Kg	9 Kg	Abhay Varsh	
27/11/24	37 Kg	12 Kg	Abhay Varsh	
28/11/24	41 Kg	17 Kg	Abhay Varsh	
29/11/24	48 Kg	3.4 Kg	Abhay Varsh	
30/11/24	32 Kg	11 Kg	Abhay Varsh	
TOTAL	1087.7 Kg	313.1 Kg		



NoN SEZ

GARDEN WASTE CHECKLIST NSEZ HCL LUCKNOW

December 2024

Date	Grass Waste (Grass Waste from the Lower) Leaf Waste (Hemlock, Cypress, pine, ficus palm, Acacia plant) / Kg	Wooden waste / Kg	Signature	Remark
02/12/24	37 kg	7 kg	Abhinav Yadav	
02/12/24	41 kg	16 kg	Abhinav Yadav	
03/12/24	31 kg	9 kg	Abhinav Yadav	
04/12/24	33 kg	13 kg	Abhinav Yadav	
05/12/24	45 kg	8 kg	Abhinav Yadav	
06/12/24	29 kg	17 kg	Abhinav Yadav	
07/12/24	21 kg	6 kg	Abhinav Yadav	
08/12/24	42 kg	5.8 kg	Abhinav Yadav	
09/12/24	39 kg	11 kg	Abhinav Yadav	
10/12/24	32 kg	8 kg	Abhinav Yadav	
11/12/24	41 kg	14 kg	Abhinav Yadav	
12/12/24	77 kg	9 kg	Abhinav Yadav	
13/12/24	41 kg	3 kg	Abhinav Yadav	
14/12/24	12 kg	3.7 kg	Abhinav Yadav	
15/12/24	23 kg	5 kg	Abhinav Yadav	
16/12/24	43 kg	3.7 kg	Abhinav Yadav	
17/12/24	37 kg	7 kg	Abhinav Yadav	
18/12/24	40 kg	12 kg	Abhinav Yadav	
19/12/24	23 kg	9 kg	Abhinav Yadav	
20/12/24	35 kg	5.5 kg	Abhinav Yadav	
21/12/24	26 kg	11 kg	Abhinav Yadav	
22/12/24	39 kg	3 kg	Abhinav Yadav	
23/12/24	34 kg	7 kg	Abhinav Yadav	
24/12/24	23 kg	11.2 kg	Abhinav Yadav	
25/12/24	44 kg	12 kg	Abhinav Yadav	
26/12/24	32 kg	2 kg	Abhinav Yadav	
27/12/24	39 kg	3 kg	Abhinav Yadav	
28/12/24	17 kg	13 kg	Abhinav Yadav	
29/12/24	27 kg	17 kg	Abhinav Yadav	
30/12/24	43 kg	5 kg	Abhinav Yadav	
31/12/24	33 kg	9 kg	Abhinav Yadav	
TOTAL	1088.7 Kg	388.8		



NON SEZ

GARDEN WASTE CHECKLIST NSEZ HCL LUCKNOW

January 2025

Date/Month	Waste (Hamelia, Cycas palm, Ficus palm, Annona plant) / KG	Wooden Waste (KG)	Signature	Remark
1	45 KG	13 KG	Abhishek Varshney	
2	37 KG	9 KG	Abhishek Varshney	
3	42 KG	11.2 KG	Abhishek Varshney	
4	33.3 KG	9.4 KG	Abhishek Varshney	
5	48 KG	5 KG	Abhishek Varshney	
6	35 KG	12 KG	Abhishek Varshney	
7	39 KG	7 KG	Abhishek Varshney	
8	19 KG	13 KG	Abhishek Varshney	
9	23 KG	19 KG	Abhishek Varshney	
10	31 KG	16 KG	Abhishek Varshney	
11	30 KG	3 KG	Abhishek Varshney	
12	43 KG	9 KG	Abhishek Varshney	
13	26 KG	4 KG	Abhishek Varshney	
14	47 KG	15 KG	Abhishek Varshney	
15	52 KG	8 KG	Abhishek Varshney	
16	19 KG	4.7 KG	Abhishek Varshney	
17	38 KG	9 KG	Abhishek Varshney	
18	41 KG	11 KG	Abhishek Varshney	
19	33 KG	7 KG	Abhishek Varshney	
20	26.4 KG	12 KG	Abhishek Varshney	
21	19 KG	18.4 KG	Abhishek Varshney	
22	38 KG	9 KG	Abhishek Varshney	
23	34 KG	17 KG	Abhishek Varshney	
24	39 KG	9 KG	Abhishek Varshney	
25	27 KG	7 KG	Abhishek Varshney	
26	43.2 KG	5 KG	Abhishek Varshney	
27	7 KG	12.4 KG	Abhishek Varshney	
28	29 KG	21 KG	Abhishek Varshney	
29	38 KG	13 KG	Abhishek Varshney	
30	32 KG	9 KG	Abhishek Varshney	
31	41 KG	4 KG	Abhishek Varshney	
TOTAL	1010.5 KG	318.7 KG		

New SEZ

JARDEN WASTE CHECKLIST NSEZ HCL LUCKNOW

February 2005

Date/Month	Grass Waste (Grass Waste from the Lawn) Leaf Waste (Marigold, Cytus palm, Ficus palm, Awarri plant) /KG	Wooden Waste (Kgs)	Signature	Remarks
1	4.2 kg	7 kg	Abhinav Verma	
2	3.5 kg	13 kg	Abhinav Verma	
3	2.8 kg	8 kg	Abhinav Verma	
4	13 kg	16.2 kg	Abhinav Verma	
5	3.7 kg	11 kg	Abhinav Verma	
6	15 kg	4 kg	Abhinav Verma	
7	2.8 kg	9 kg	Abhinav Verma	
8	4.4 kg	1.2 kg	Abhinav Verma	
9	1.9 kg	3 kg	Abhinav Verma	
10	3.2 kg	1.2 kg	Abhinav Verma	
11	4.3.2 kg	9 kg	Abhinav Verma	
12	4.9 kg	17.2 kg	Abhinav Verma	
13	2.9 kg	11 kg	Abhinav Verma	
14	3.0 kg	8 kg	Abhinav Verma	
15	3.7 kg	13 kg	Abhinav Verma	
16	4.8 kg	5 kg	Abhinav Verma	
17	4.1.3 kg	1.7 kg	Abhinav Verma	
18	3.4 kg	1.2 kg	Abhinav Verma	
19	4.4 kg	4 kg	Abhinav Verma	
20	3.1 kg	15 kg	Abhinav Verma	
21	4.5 kg	9 kg	Abhinav Verma	
22	2.8 kg	5.2 kg	Abhinav Verma	
23	1.5 kg	7 kg	Abhinav Verma	
24	3.9 kg	11 kg	Abhinav Verma	
25	2.7 kg	9 kg	Abhinav Verma	
26	4.3 kg	3 kg	Abhinav Verma	
27	2.2 kg	7 kg	Abhinav Verma	
28	3.4 kg	13 kg	Abhinav Verma	
29				
30				
31				
TOTAL	935.5 Kg	275.6 Kg		

Non SEZ

GARDEN WASTE CHECKLIST NSEZ HCL LUCKNOW

March 2025

Date/Month	Grass Waste (Grass Waste from the Lawn) Leaf Waste (Bamboo, Cycas palm, Ficus palm, Amlani plant) /KG	Wooden Waste (KG)	Signature	Remark
1	3.4 kg	16 kg	A. J. Yadav	
2	1.9 kg	7.8 kg	A. J. Yadav	
3	4.9 kg	4 kg	A. J. Yadav	
4	3.8 kg	13 kg	A. J. Yadav	
5	3.5 kg	11 kg	A. J. Yadav	
6	4.1 kg	9 kg	A. J. Yadav	
7	3.3 kg	13 kg	A. J. Yadav	
8	2.1 kg	7 kg	A. J. Yadav	
9	2.9 kg	19 kg	A. J. Yadav	
10	2.3 kg	1 kg	A. J. Yadav	
11	3.1 kg	11 kg	A. J. Yadav	
12	2.7 kg	9 kg	A. J. Yadav	
13	2.8 kg	1.3 kg	A. J. Yadav	
14	4.1 kg	15 kg	A. J. Yadav	
15	3.2 kg	13 kg	A. J. Yadav	
16	2.6 kg	5 kg	A. J. Yadav	
17	2.7 kg	9 kg	A. J. Yadav	
18	1 kg	13.2 kg	A. J. Yadav	
19	2.4 kg	8 kg	A. J. Yadav	
20	2.9 kg	12 kg	A. J. Yadav	
21	2.2 kg	4 kg	A. J. Yadav	
22	2.4 kg	9 kg	A. J. Yadav	
23	4.1 kg	11 kg	A. J. Yadav	
24	5.6 kg	7 kg	A. J. Yadav	
25	2.9 kg	15 kg	A. J. Yadav	
26	3.2 kg	21.3 kg	A. J. Yadav	
27	4.5 kg	7 kg	A. J. Yadav	
28	2.7 kg	13 kg	A. J. Yadav	
29	4.0 kg	21 kg	A. J. Yadav	
30	5.2 kg	4 kg	A. J. Yadav	
31	3.6 kg	21 kg	A. J. Yadav	
TOTAL	1130.8 kg	323.7 kg		

Tree Species

S.No.	Common Name	Nos	Qty	Botanical Name
1	Cycas Palm	Nos	80	Cycas Revoluta
2	Date Palm	Nos	14	Phoenix dactylifera
3	Frangipani / Champa	Nos	50	Plumeria Alba
4	Mexican Fan Palm	Nos	29	Washingtonia Robusta
5	Bottle Palm	Nos	9	Hyophorbe lagenicaulis
6	Ficus Tree	Nos	616	Ficus Benjamina
7	Trumpetbush	Nos	114	Tecoma castanifolia
8	Areca palm	Nos	35	Dyopsis lutescens
9	Champa Red / Yellow	Nos	95	Plumeria Rubra
10	Dwarf Singapore Pink	Nos	45	Plumeria Obtusa
11	Jacaranda	Nos	4	Jacaranda mimosifolia
12	Lemon	Nos	1	Citrus limon
13	Calliandra	Nos	19	Calliandra surinamensis
14	Alstonia	Nos	10	Alstonia macrophylla
15	Fox Tail Palm	Nos	15	Wodyetia bifurcata
16	Triangular Palm	Nos	6	Dyopsis decaryi
17	Bismarckia Palm	Nos	12	Bismarckia nobilis
18	Guava	Nos	18	Psidium guajava
19	Mango	Nos	3	Mangifera indica
20	Jungle Jalebi	Nos	14	Pithecellobium dulce
21	Pipal	Nos	1	Ficus religiosa
22	Kadamb	Nos	1	Neolamarckia cadamba
23	Semal	Nos	2	Bombax ceiba
24	Sisam	Nos	6	Dalbergia sissoo
25	Jamun	Nos	8	Syzygium cumini
26	Banana	Nos	3	Musa acuminata
27	Pankaj	Nos	1	Ficus Virens
28	Shahitoor	Nos	3	Morus Rubra
29	Kachnar	Nos	12	Bauhinia variegata
30	Gulmohar	Nos	1	Delonix regia
31	Amaltash	Nos	2	Cassia fistula
32	Custard Apple / Sharifu	Nos	5	Annona squamosa
33	Curry Tree	Nos	1	Murraya koenigii
34	Neem	Nos	1	Azadirachta indica
35	Anar / Pomegranate	Nos	2	Punica granatum
36	Goolar / Cluster Fig	Nos	1	Ficus racemosa

Total 1239



Your (Environment Clearance) application has been Submitted with following details

Proposal No	Nil
Compliance ID	110880884
Compliance Number(For Tracking)	EC/M/COMPLIANCE/110880884/2024
Reporting Year	2024
Reporting Period	01 Dec(01 Apr - 30 Sep)
Submission Date	07-11-2024
IRO Name	Shri Ashok Kumar Sinha
IRO Email	tg035@ifs.nic.in
State	UTTAR PRADESH
IRO Office Address	Integrated Regional Offices Lucknow

Note:- SMS and E-Mail has been sent to Shri Ashok Kumar Sinha, UTTAR PRADESH with Notification to Project Proponent.

Pappu Yadav meets PM, may tie up with NCP

Wants Tariq Out Of Bihar
Secular Front

By Anand Bhatnagar

New Delhi: L. K. Advani PM Pappu Yadav met Prime Minister Manmohan Singh today for the first time. The Bihar leader met the PM for about 15 minutes. The PM was seen talking to him in a friendly manner. The PM was seen talking to him in a friendly manner. The PM was seen talking to him in a friendly manner.



L. K. Advani met PM Pappu Yadav today for the first time. The Bihar leader met the PM for about 15 minutes. The PM was seen talking to him in a friendly manner.

Advani met PM Pappu Yadav today for the first time. The Bihar leader met the PM for about 15 minutes. The PM was seen talking to him in a friendly manner. The PM was seen talking to him in a friendly manner. The PM was seen talking to him in a friendly manner.

Army job racket busted in Fatehpur, four arrested

Recruitment racket busted

By Anand Bhatnagar

Fatehpur: A recruitment racket in Fatehpur district has been busted. Four people have been arrested. The racket was involved in recruiting people for the Indian Army. The racket was involved in recruiting people for the Indian Army.

Fatehpur: A recruitment racket in Fatehpur district has been busted. Four people have been arrested. The racket was involved in recruiting people for the Indian Army. The racket was involved in recruiting people for the Indian Army.

Unnao man's death by robot confounds kin, villager

Unnao man's death by robot

By Anand Bhatnagar

Unnao: A man's death by a robot in Unnao district has confounded his kin and a villager. The man was killed by a robot. The man was killed by a robot.

Unnao man's death by robot

By Anand Bhatnagar

Unnao: A man's death by a robot in Unnao district has confounded his kin and a villager. The man was killed by a robot. The man was killed by a robot.

BJP blames Cong, Left for Parl washout

By Anand Bhatnagar

New Delhi: The BJP today blamed the Congress and the Left for the washout of the Lok Sabha elections. The BJP today blamed the Congress and the Left for the washout of the Lok Sabha elections.

Table with 4 columns: Name, Party, Constituency, and Remarks.

Name	Party	Constituency	Remarks
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting
Dr. B. J. Prasad	BJP	Varanasi	Contesting

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The BJP today blamed the Congress and the Left for the washout of the Lok Sabha elections. The BJP today blamed the Congress and the Left for the washout of the Lok Sabha elections.

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YC 'mundan' protest against Sushma Swaraj

By Anand Bhatnagar

New Delhi: A group of young people (YC) have organized a protest against Sushma Swaraj. The protest was held in New Delhi. The protest was held in New Delhi.

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Ghuskar Farms Private Limited

CIN: U01114UP2018PTC106248

Address: Plot no. 1322, 1326 Village – Ghuskar, Gosaiganj Tehsil- Mohanlalganj, Lucknow – 226501

Mobile No. 9026606393

To Whom It May Concern

Subject: Acknowledgment of Food Waste Collection

This is to acknowledge that Ghuskar Farms Private Limited has a collaboration with HCLTech Lucknow to collect waste food from their canteen. The collected food is utilized in our piggery farm, contributing to sustainable waste management and supporting our farming operations. We appreciate HCLTech Lucknow's commitment to reducing food waste and promoting sustainable practices.

Thank you for your continued support.

Sincerely,

For Ghuskar Farms Private Limited

Shuchi Shobhna Lakra

Shuchi Shobhna Lakra

Managing Director

DIN: 09375383

Bio Composter Unit Start & Loading Time

Month

Nov-2024

Date	Dry Waste	Wet Waste	Total Waste	Opening Hrs.	Closing Hrs.	Difference Hrs.	Start Time	Stop Time	Difference Time	Start Temp	Closed Temp	Compost Output	Name of Person
01-11-24	—	—	—	—	—	—	—	—	—	—	—	—	—
02-11-24	—	—	—	—	—	—	—	—	—	—	—	—	—
03-11-24	—	—	—	—	—	—	—	—	—	—	—	—	—
04-11-24	60kg	60kg	120kg	—	—	—	15:00	—	—	33.6	—	—	Pinkey
05-11-24	—	—	—	—	—	—	—	15:00	24HRS	—	34.4	115kg	Pinkey
06-11-24	50kg	60kg	110kg	—	—	—	18:00	—	—	34.6	—	—	Pinkey
08-11-24	—	—	—	—	—	—	—	18:00	24HRS	—	—	100kg	Pinkey
09-11-24	60kg	45kg	105kg	—	—	—	11:00	—	—	35.9	—	—	Pinkey
10-11-24	—	—	—	—	—	—	—	11:00	24HRS	—	34.8	115kg	Pinkey
11-11-24	60kg	30kg	90kg	—	—	—	16:30	—	—	34.8	—	—	Pinkey
12-11-24	50kg	55kg	105kg	—	—	—	16:30	—	24HRS	34.9	—	120kg	Pinkey
13-11-24	—	—	—	—	—	—	19:00	—	—	34.4	—	—	Pinkey
14-11-24	50kg	60kg	110kg	—	—	—	13:00	19:00	24HRS	34.9	—	95kg	Pinkey
15-11-24	—	—	—	—	—	—	—	19:00	—	—	—	—	Pinkey
16-11-24	55kg	60kg	115kg	—	—	—	13:00	19:00	24HRS	35.4	—	100kg	Pinkey
17-11-24	—	—	—	—	—	—	19:00	—	—	—	—	—	Pinkey
18-11-24	—	—	—	—	—	—	—	19:00	24HRS	36.6	—	145kg	Pinkey
19-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
20-11-24	50kg	80kg	130kg	—	—	—	15:00	—	—	33.8	—	—	Pinkey
21-11-24	—	—	—	—	—	—	—	15:00	24HRS	—	34.4	100kg	Pinkey
22-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
23-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
24-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
25-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
26-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
27-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
28-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
29-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey
30-11-24	—	—	—	—	—	—	—	—	—	—	—	—	Pinkey

Total - 495 - 515 - 950

Total = 870kg

Bio Composter Unit Start & Loading Time

Month Dec. 2024

Date	Dry Waste	Wet Waste	Total Waste	Opening Hrs.	Closing Hrs.	Difference Hrs.	Start Time	Stop Time	Difference Time	Start Temp	Closed Temp.	Compost Output	Name of Person
01-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
02-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
03-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
04-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
05-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
06-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
07-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
08-12-24	45kg	53kg	98kg	—	—	—	16:00	—	—	35.9	—	—	A
09-12-24	—	—	—	—	—	—	—	16:00	00:05	—	58.2	88kg	A
10-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
11-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
12-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
13-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
14-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
15-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
16-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
17-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
18-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
19-12-24	40kg	43kg	83kg	—	—	—	14:00	—	—	36.8	—	—	A
20-12-24	—	—	—	—	—	—	—	14:00	04:05	—	66.4	72kg	A
21-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
22-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
23-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
24-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
25-12-24	—	—	—	—	—	—	—	—	—	—	—	—	—
26-12-24	30kg	37kg	67kg	—	—	—	18:00	—	—	37.9	—	—	A
27-12-24	—	—	—	—	—	—	—	18:00	04:05	—	55.2	052kg	A
28-12-24	45kg	53kg	98kg	—	—	—	18:00	—	—	36.6	—	—	A
29-12-24	—	—	—	—	—	—	—	18:00	04:05	—	57.2	88kg	A
30-12-24	42kg	51kg	93kg	—	—	—	16:00	—	—	39.1	—	—	A

202kg 241kg 443kg

310kg

Bio Composter Unit Start & Loading Time										Month 2019-2020			
Date	Dry Waste	Wet Waste	Total Waste	Opening Hrs.	Closing Hrs.	Difference Hrs.	Start Time	Stop Time	Difference Time	Start Temp	Closed Temp.	Compost Output	Name of Person
01/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
02/01/2020	50kg	67kg	117kg	—	—	—	12:00	16:00	04HR1	24.4	26.3	82kg	Driver
03/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
04/01/2020	60kg	31kg	191kg	—	—	—	12:00	13:00	01HR1	23.9	29.6	107kg	Driver
05/01/2020	—	—	—	—	—	—	—	13:00	01HR1	—	26.7	182kg	Driver
06/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
07/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
08/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
09/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
10/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
11/01/2020	50kg	41kg	111kg	—	—	—	11:00	—	—	24.6	—	—	Driver
12/01/2020	—	—	—	—	—	—	—	11:00	01HR1	—	26.4	100kg	Driver
13/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
14/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
15/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
16/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
17/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
18/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
19/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
20/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
21/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
22/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
23/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
24/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
25/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
26/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
27/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
28/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
29/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
30/01/2020	—	—	—	—	—	—	—	—	—	—	—	—	Driver
31/01/2020	60kg	28kg	198kg	—	—	—	12:00	—	—	23.7	—	—	Driver
01/02/2020	58kg	23kg	131kg	—	—	—	12:00	—	01HR1	24.6	29.8	108kg	Driver

Total = 270kg, Total = 350kg

Total = 628kg

Total = 588kg

g

Bio Composter Unit Start & Loading Time										Month			
										Feb - 2025			
Date	Dry Waste	Wet Waste	Total Waste	Opening Hrs.	Closing Hrs.	Difference Hrs.	Start Time	Stop Time	Difference Time	Start Temp	Closed Temp.	Compost Output	Name of Person
01/02/25	-	-	-	-	-	-	-	-	-	-	-	-	-
02/02/25	45kg	55kg	100kg	-	-	-	12:00	-	-	52.6	52.6	120kg	Priscilla
03/02/25	-	-	-	-	-	-	-	12:00	24:11:28	-	53.4	90kg	Priscilla
04/02/25	35kg	45kg	80kg	-	-	-	16:00	-	-	38.4	-	-	Priscilla
05/02/25	-	-	-	-	-	-	-	16:00	24:11:28	-	54.6	70kg	Priscilla
06/02/25	40kg	50kg	90kg	-	-	-	12:00	-	-	34.5	-	-	Priscilla
07/02/25	-	-	-	-	-	-	-	12:00	24:11:28	-	55.3	80kg	Priscilla
08/02/25	15kg	25kg	40kg	-	-	-	11:00	-	-	38.3	-	-	Priscilla
09/02/25	-	-	-	-	-	-	-	11:00	24:11:28	-	53.2	30kg	Priscilla
10/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
11/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
12/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
13/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
14/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
15/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
16/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
17/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
18/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
19/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
20/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
21/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
22/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
23/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla
24/02/25	40kg	60kg	100kg	-	-	-	15:00	-	-	33.2	-	-	Priscilla
25/02/25	-	-	-	-	-	-	-	15:00	24:11:28	30	54.6	100kg	Priscilla
26/02/25	48kg	58kg	106kg	-	-	-	12:00	-	-	36.6	-	-	Priscilla
27/02/25	-	-	-	-	-	-	12:00	24:11:28	-	56.3	-	90kg	Priscilla
28/02/25	43kg	53kg	100kg	-	-	-	12:00	-	-	53.3	-	-	Priscilla
29/02/25	-	-	-	-	-	-	-	-	-	-	-	-	Priscilla

280kg-350kg-630kg

Bio Composter Unit Start & Loading Time										Month		Name of Person	
Date	Dry Waste	Wet Waste	Total Waste	Opening Hrs.	Closing Hrs.	Difference Hrs.	Start Time	Stop Time	Difference Time	Start Temp	Closed Temp.		Compost Output
01/03/25	—	—	—	—	—	—	—	12:00	24:18	—	53.5	34.64	A
02/03/25	—	—	—	—	—	—	—	—	—	—	—	—	A
03/03/25	—	—	—	—	—	—	—	—	—	—	—	—	A
04/03/25	—	—	—	—	—	—	—	—	—	—	—	—	Sandesh
05/03/25	—	—	—	—	—	—	—	—	—	—	—	—	Sandesh
06/03/25	—	—	—	—	—	—	—	—	—	—	—	—	Sandesh
07/03/25	—	—	—	—	—	—	—	—	—	—	—	—	Sandesh
08/03/25	—	—	—	—	—	—	—	—	—	—	—	—	Sandesh
09/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
10/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
11/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
12/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
13/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
14/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
15/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
16/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
17/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
18/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
19/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
20/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
21/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
22/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
23/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
24/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
25/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
26/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
27/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
28/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
29/03/25	—	—	—	—	—	—	—	—	—	—	—	—	—
30/03/25	50kg	85kg	135kg	—	—	—	16:00	—	28:00	25.00	—	—	—

SRP/ Name :	MSOCL TECHNOLOGIES LTD	SRP Division :	DIV312664
SRP Address :	NA	SRP No (SRP Email of Division) :	
SRP Address :	CGCT CHAK GALARIA TARM SULTANPUR ROAD Lucknow UP 226016 IND	SRP Sub-Division :	SD03126649
SRP Mobile No. :	9999999999	SRP WT / Supply Load :	1998 kW
SRP Email :	www.ssoawar@bcl.com	SRP Weight / Weight Demand :	1650.00
SRP SRP Connection Date :	23-11-2017	SRP Tariff :	DV1 30V Commercial
SRP SRP SRP Number :	63076543003	SRP SRP Supply Type :	H12
SRP SRP SRP / Insurance Amount :	0.00	SRP Security / Security Deposit :	8000000
SRP SRP SRP / Insurance Subsidy :	0.00	SRP Weight / Billing Latitude :	0.00
SRP SRP SRP / Insurance Subsidy :	0.00	SRP Weight / Billing Longitude :	0.00
SRP SRP SRP / Insurance Subsidy :	0.00	SRP SRP SRP Number :	U9976523

बिल तिथि / Bill Date	11-MAR-2025	बिल आधार / Bill Basis	OK	Scan & Pay your Bill स्कैन करें और अपने बिल का भुगतान करें 
देय तिथि / Due Date	25-MAR-2025	देय धनराशि / Payable Amount	3100160	
बिल तिथि तक चुट / Due Date Rebate	01-APR-2025	(₹)	31185.57	
नेट बिल यूनिट / Net Billed Unit	302778.00	देय तिथि तक धनराशि / Payable by Due date	3068975	

हॉटेल का अग्रिम बिल (Guest) ऑनलाइन वेबसाइट www.lppcl.co.uk एवं मोबाइल एप 'LPPCL Customer App' का जमा एवं भुगतान				
विवरण / Details	अग्रिम (Amount) (₹)		विवरण / Details	अग्रिम/Amount
	कुल अग्रिम / Gross Amount	सब्सिडी अग्रिम / Subsidy Amount (-)		
रूम रेंट / Room Charges	243837.36	0.00	रूम रेंट का नैट / COST	0.00
फूड चार्ज / Food Charges	660000.00	0.00	फूड चार्ज का नैट / COST	0.00
मोबाइल चार्ज / Mobile Charges	0.00	0.00	मोबाइल चार्ज का नैट / Current LPSC	0.00
मोबाइल चार्ज / Mobile Charges	0.00	0.00	मोबाइल चार्ज का नैट / Previous LPSC	0.00
मोबाइल चार्ज / Mobile Charges	0.00	0.00	मोबाइल चार्ज का नैट / Current Bill	3100160.01
मोबाइल चार्ज / Mobile Charges	0.00	0.00	मोबाइल चार्ज का नैट / Security by Govt. (₹)	0.00
मोबाइल चार्ज / Mobile Charges	0.00	0.00	मोबाइल चार्ज का नैट / Subsidized Bill	0.00
मोबाइल चार्ज का नैट / Net Amount	0.00	0.00	मोबाइल चार्ज का नैट / Amount	0.00
मोबाइल चार्ज का नैट / Net Amount	0.00	0.00	मोबाइल चार्ज का नैट / Payable Amount	3800160.01
मोबाइल चार्ज का नैट / Net Amount	-48301.36	-48301.36	मोबाइल चार्ज का नैट / In Words: Thirty One Lakh One Hundred Sixty Rupee Only	

Sl. No	Meter ID	Meter Type	Meter Status	Meter Read	Read Previous	Read Current	Diff.	Max. Value	Min. Value	Unit	Period (Months)	Status
Meter Data & Analysis												
10000001	KWH	A	0	01-FEB-2025 00:00	247.87	07-MAR-2025 18:04	265.88	18.01	10000	340330 KWH	1	OK
10000002	KVAH	A	0	01-FEB-2025 00:00	251.95	07-MAR-2025 18:04	270.11	18.16	30000	344800 KVAH	1	OK
10000003	KVA	A	0.05						30000	1300 KVA	1	OK
10000004	KVA	A	0.04						30000	1200 KVA	0	OK
10000005	KVAH	A	0	01-FEB-2025 16:56	404536	07-MAR-2025 18:07	242622	0	1	242622 KVAH	1	OK

विनिर्दिष्ट युनिट Assigned Rate At	0.00	सीजर युनिट Motor Salvo CD	302798	ऑपरिंग सीजरिंग की युनिट Operating Salvoing Sator Units	0.00	ऑपरिंग सीजरिंग की युनिट Casing Salvoing Sator Units	0.00
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TSA/FA NOT AVAILABLE

1. बिजुल आपूर्ति बंदित-2015 के खण्ड 9.3 के अनुसार इस बिजुल की अधिकतम वोल्टेज परामित्री बचाने का सुनिश्चित करने का मतलब है- The NEI will be construed as First Notifier under Section 9.3 of Electricity Supply Code - 2003. Supply can be disconnected at any time on non-payment of Dues.
2. बिजुल आपूर्ति बंदित का मतलब और इसके विस्तृत जानकारी के लिये फ़ोन/व्हाट्सएप पर हमारे साथ / To get electricity related services on Whatsapp give a message to 09929924204 or NEI/9929924204
3. बिजुल आपूर्ति बंदित का मतलब बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल की दुर्लभ के मतलब में एक अधिकतम बिजुल आपूर्ति बंदित का मतलब है- The NEI will be construed as First Notifier under Section 9.3 of Electricity Supply Code - 2003. Supply can be disconnected at any time on non-payment of Dues.
4. बिजुल आपूर्ति बंदित का मतलब बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल की दुर्लभ के मतलब में एक अधिकतम बिजुल आपूर्ति बंदित का मतलब है- The NEI will be construed as First Notifier under Section 9.3 of Electricity Supply Code - 2003. Supply can be disconnected at any time on non-payment of Dues.
5. बिजुल आपूर्ति बंदित का मतलब बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल की दुर्लभ के मतलब में एक अधिकतम बिजुल आपूर्ति बंदित का मतलब है- The NEI will be construed as First Notifier under Section 9.3 of Electricity Supply Code - 2003. Supply can be disconnected at any time on non-payment of Dues.
6. बिजुल आपूर्ति बंदित का मतलब बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल आपूर्ति बंदित, बिजुल की दुर्लभ, बिजुल की दुर्लभ के मतलब में एक अधिकतम बिजुल आपूर्ति बंदित का मतलब है- The NEI will be construed as First Notifier under Section 9.3 of Electricity Supply Code - 2003. Supply can be disconnected at any time on non-payment of Dues.

“श्रीराम लुई फर गुलाब निवसिनी बीमला” का नाम अपने हेतु पत्र स्टोर से “श्रीराम लुई फर” APP डाउनलोड करें और उस पर Apply करें।



विद्युत बीजक / Electricity Bill

अकाउंट नं./Account No.: 6132438970		
नाम / Name:	M/S HCL TECHNOLOGIES LTD	खंड / Division:
विल धरि का नाम / Husband/Father	NA	खंड का ईमेल / Email of Division:
पता / Address:	CGCT CHAK GAJARIA FARM SULTANPUR ROAD Lucknow UP 226016 IND	उपखंड / Subdivision:
मोबाइल / Mobile No.:	8000005862	सेक्शन भार / Section Load:
ई-मेल / Email:	8000000000000000@hcl.com	बिल डिमांड / Billed Demand:
संयोजन तिथि / Connection Date:	23-FEB-2017	टैरिफ / Tariff:
बिल संख्या / Bill Number:	613563909280	सामग्री टाइप / Supply Type:
इनोपेसिवेटिव राशि / Inoperative Amount:	0.00	रकम जमा/Security Deposit:
प्रगतिशील सब्सिडी / Progressive Subsidy:	0.00	बिलिंग लैटिट्यूड / Billing Latitude:
मीटर प्रकार / Meter Type:	POSTPAID	बिलिंग लॉन्गिट्यूड / Billing Longitude:
		मीटर संख्या / Meter Number:

बिल तिथि / Bill Date	08-FEB-2025	बिल आधार / Bill Basis	OK	Scan & Pay your Bill स्कैन करें और अपने बिल का भुगतान करें 
देय तिथि / Due Date	22-FEB-2025	देय धनराशि / Payable Amount	2029483	
विच्छेदन तिथि / Disc. Date	01-MAR-2025	देय तिथि तक छूट / Due Date Rebate (₹)	20425.44	
नेट बिल्ड यूनिट / Net Billed Unit	170264.00	देय तिथि तक धनराशि / Payable by Due date	2009058	

उपरोक्त अपने संयोजन का भार (Load) ऑनलाइन वेबसाइट www.uppcl.org एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर स्वयं बढ़ाएं

विवरण / Details	रकम / Amount (₹)			विवरण / Details	रकम / Amount
	कुल रकम / Gross Amount	सब्सिडी रकम / Subsidy Amount (-)	देय रकम / Net Amount		
ऊर्जा प्रभार / Energy Charges	1382543.68	0.00	1382543.68	सी जी एल टी. CGST	0.00
वाग प्रभार / Demand Charges	660000.00	0.00	660000.00	लू जी एल टी. SGST	0.00
न्यूनतम प्रभार / Minimum Charges	0.00	0.00	0.00	समयित विलम्ब भुगतान अधिभार / Current LPSC	0.00
ग्रीन ऊर्जा शुल्क / Green Energy Charges	0.00	0.00	0.00	पूर्व विलम्ब भुगतान अधिभार / Previous LPSC	0.00
विद्युत कर / Electricity Duty	0.00	0.00	0.00	नेट करंट बिल / Net Current Bill	2029483.14
अतिरिक्त वाग प्रभार / Excess Demand Penalty	0.00	0.00	0.00	सरकार द्वारा छूट / Subsidy by Govt. (-)	0.00
रकम सीएक अधिभार / Low DF Surcharge	0.00	0.00	0.00	सब्सिडाइज्ड बिल / Subsidized Bill	0.00
विविध चार्ज / Misc. Charges	-13000.54	-13000.54	-13000.54	अवशेष रकम / Arrear Amount	0.32
				देय रकम / Payable Amount	2029483
				शब्दों में / In Words:	Twenty Lakh Twenty Nine Thousand Four Hundred Eighty Three Rupees Only

मीटर मॉडल एवं संख्या	ऊर्जा प्रकार	मीटर स्थिति	रजिस्टर्ड मांग	पिछली Previous		वर्तमान Current		भेद	मीटर पूर्णक	मीटर युक्ति	अवधि (माह)	मीटर टिप्पणी
Meter Make & Number	Energy Type	Meter Status	Recorded Demand	तिथि Date	रीड Read	तिथि Date	रीड Read	Diff.	M.F.	Meter Units	Period (Months)	Meter Remark
UPP70523	KWH	A		01-JAN-2025 00:00	228.95	01-FEB-2025 00:00	247.87	18.92	30000	567600 KWH	1	OK
UPP70523	KVAH	A		01-JAN-2025 00:00	232.79	01-FEB-2025 00:00	251.95	19.16	30000	374800 KVAH	1	OK
UPP70523	KVA	A	0.05						30000	1500 KVA	1	OK
UPP70523	KVAH	A		01-JAN-2025 12:46	418931	01-FEB-2025 16:56	404536	0	1	404136 KVAH	1	OK

निर्धारित यूनिट / Assessed Unit(A)	0.00	मीटर यूनिट / Meter Unit(C)	170264	प्रारंभिक अधिभेद सौर यूनिट / Opening Surplus Solar Unit	0.00	अंतिम अधिभेद सौर यूनिट / Closing Surplus Solar Unit	0.00
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"IMAGE NOT AVAILABLE"	1. विद्युत आपूर्ति संहिता-2005 के धारा 9.3 के अन्तर्गत इस बिल को अंतिम नोटिस माना जायेगा। इसका का भुगतान न करने पर किसी भी तिथि पर आपूर्ति काटी जा सकती है। This Bill will be construed as Final Notice under Section 9.3 of Electricity Supply Code - 2005. Supply can be disconnected at any date on Non-payment of Due.
	2. 8010924203 पर मिसSED कॉल करके विद्युत सम्बन्धी सेवाएँ प्राप्त करने पर कृपया करें। To get electricity related services on Whatsapp give a missed call on 8010924203
	3. उपरोक्त अपने बिल का भुगतान विद्युत कार्यालय, राजन की दुकान, जन्मदिन केंद्र, विद्युत सखी, मीटर रीडरों के माध्यम से तथा ऑनलाइन वेबसाइट 'www.uppcl.org' एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर कर सकते हैं। Consumers can pay bills through Department Offices, Fair Price Shops, Jansamridha Kendra, Vidut Sakhi, Meter Readers and by visiting online website 'www.uppcl.org' & mobile app 'UPPCL Consumer App'.
	4. उपरोक्त स्वयं अपने संयोजन का सीक्शन भार पर फेड वेबसाइट 'www.uppcl.org' एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर बढ़ा सकते हैं। Consumers can themselves increase connected load of their connection through the website 'www.uppcl.org' or through the mobile app 'UPPCL Consumer App'.
	5. जी के एच डीयू प्रत्यक्षी / Pay DD Cheque in favour of EXECUTIVE ENGINEER-EUDD, RAJBHAWAN
	6. बचू बिजु में बचती बचती / Energy Saved is Energy Produced

पीएम सूर्य घर मुफ्त बिजली योजना का लाभ पाने हेतु जे स्टोर से पीएम सूर्य घर APP डाउनलोड करें और उस पर Apply करें।

विभिन्न चार्जों का विवरण / Details of Miscellaneous Charges					
Sr. No.	विवरण / Details	धनराशि / Amount (₹)	Sr. No.	विवरण / Details	धनराशि / Amount (₹)
1	अनुमति समायोजन / Provisional Adjustment (₹)	0.00	10	अनादित चेक धनराशि / Dishonor Cheque (₹)	0.00
2	टैरिफ समायोजन / Tariff Adjustments (₹)	0.00	11	अनादित चेक प्रभार / Dishonor Cheque Charge (₹)	0.00
3	क्रेडिट / Credit (₹)(-)	0.00	12	प्रतिभूति ब्याज / Interest on Security (₹)(-)	0.00
4	डेबिट / Debit (₹)	0.00	13	दूरा प्रतिभूति / Due Security (₹)	0.00
5	छूट / Rebate (₹)(-)	0.00	14	टी.डी.एस. राशि / TDS Amount (₹)	0.00
6	किसल / Installment (₹)	0.00	15	टी.सी.एस. राशि / TCS Amount (₹)	1338.98
7	अनादित केबल शुल्क / Annouced Cable Cost (₹)	0.00	16	अग्रिम भुगतान पर ब्याज / Interest on Advance Payment (₹)(-)	0.00
8	सूक्ष्म चार्ज / Minor Charges (₹)	0.00	17	दूरा तिथि छूट समायोजन / Due date rebate adjustment (₹)(-)	14440.52
9	सुमनकन राशि / Compensation Amt (₹) (-)	0.00	18	AC शुल्क / Charges for AC (₹)	0.00

विद्युत चोरी/अविनियमितता का राजस्व निर्धारण / Theft/UUE Revenue Assessment	
Theft Assessment / विद्युत चोरी का राजस्व निर्धारण	0.00
LPSC on Theft Assessment / (विद्युत चोरी के राजस्व निर्धारण पर विनियमित भुगतान अतिरिक्त)	0.00
Total / कुल	0.00

अंतिम भुगतान का विवरण / Last Payment Details			
भुगतान तिथि / Payment Date	भुगतान धनराशि / Payment Amount (₹)	भुगतान माध्यम / Payment Mode	राशि रसीद / Receipt No.
17-JAN-2025	1394517.00	payment via internet	613240125725

विगत छः महीने का उपभोग / Last Six month's Consumption			
Sr. No.	महीना / Month	रिकॉर्डेड डिमांड / Recorded Demand (kW / kVA)	उपभोग / Consumption in Units (kWh / kVAh)
1	JAN-2025	1200.00	930531.00
2	DEC-2024	1800.00	600800.00
3	NOV-2024	1800.00	711000.00
4	OCT-2024	1800.00	875700.00
5	SEP-2024	1800.00	851100.00
6	AUG-2024	1800.00	874500.00

गणना विवरण / Calculation Details							
Sr. No.	विवरण / Details	एनटी / Unit	दर / Rate (₹)	कुल धनराशि / Gross Amt. (₹)	अनुमति दर / Subsidy Rates (₹)	अनुमति धनराशि / Subsidy Amt. (₹)	शुद्ध धनराशि / Net Amt. (₹)
1	ऊर्जा प्रभार / Energy Charges	Energy	2500.00	8.12	20300.00	0.00	20300.00
2	फिक्स्ड मांग प्रभार / Fixed Demand Charges		1650.00	400.00	660000.00	0.00	660000.00
3	राज्य कोड के प्रभार / Time of Day(ToD)Charges	TOD-1	0.00	0.000,0.000	0.00	0.00	0.00
		TOD-2	0.00	0.000,0.000	0.00	0.00	0.00
		TOD-3	0.00	0.000,0.000	0.00	0.00	0.00
		TOD-4	0.00	0.000,0.000	0.00	0.00	0.00
4	विद्युत का / Electricity Duty		0.00	0.00	0.00	0.00	0.00
5	अतिरिक्त मांग प्रभार / Excess Demand Penalty		0.00	0.00	0.00	0.00	0.00

ABBREVIATION	FULL FORM	ABBREVIATION	FULL FORM	ABBREVIATION	FULL FORM
PF	Power Factor	LPSC	Late Payment Surcharge	MF	Multiplying Factor
ToD	Time of Day	MU	Minor Units	IDF	Identified Defective
RDF	Reading Defective	CDF	Celling Defective	ASS	Assessment
TDS	Tax Deducted at Source	CGST	Central Goods & Services Tax	SGST	State Goods & Services Tax
TCS	Tax Collected at Source	Misc.	Miscellaneous		A/C: 6132401807051 (The first case)

विशेष चार्ज का विवरण / Details of Miscellaneous Charges					
Sr. No.	विवरण / Details	धनराशि / Amount (₹)	Sr. No.	विवरण / Details	धनराशि / Amount (₹)
1	अनुमानित समायोजन / Provisional Adjustment (₹)	0.00	10	अनादित चेक धनराशि / Dishonor Cheque (₹)	0.00
2	टैरिफ समायोजन / Tariff Adjustments (₹)	0.00	11	अनादित चेक प्रभार / Dishonor Cheque Charge (₹)	0.00
3	क्रेडिट / Credit (₹)(-)	0.00	12	प्रतिभूति ब्याज / Interest on Security (₹)(-)	0.00
4	डेबिट / Debit (₹)	0.00	13	दूत प्रतिभूति / Due Security (₹)	0.00
5	छूट / Rebate (₹)(-)	0.00	14	टी.डी.एस. राशि / TDS Amount (₹)	0.00
6	किसल / Installment (₹)	0.00	15	टी.सी.एस. राशि / TCS Amount (₹)	5533.99
7	अनादित केबल शुल्क / Annouced Cable Cost (₹)	0.00	16	अग्रिम भुगतान पर ब्याज / Interest on Advance Payment (₹)(-)	0.00
8	सूक्ष्म चार्ज / Minor Charges (₹)	0.00	17	दूत तिथि छूट समायोजन / Due date rebate adjustment (₹)(-)	55068.72
9	सुमनकन राशि / Compensation Amt (₹) (-)	0.00	18	AC शुल्क / Charges for AC (₹)	0.00

विद्युत चोरी/अविनियमितता का राजस्व निर्धारण / Theft/UUE Revenue Assessment	
Theft Assessment / विद्युत चोरी का राजस्व निर्धारण	0.00
LPSC on Theft Assessment / (विद्युत चोरी के राजस्व निर्धारण पर विनियमित भुगतान अतिरिक्त)	0.00
Total / (कुल)	0.00

अंतिम भुगतान का विवरण / Last Payment Details			
भुगतान तिथि / Payment Date	भुगतान धनराशि / Payment Amount (₹)	भुगतान माध्यम / Payment Mode	राशि रसीद / Receipt No.
12-DEC-2024	5523986.00	payment via internet	613951463942

विगत छः महीने का उपभोग / Last Six month's Consumption			
Sr. No.	महीना / Month	रिकॉर्डेड डिमांड / Recorded Demand (kW / kVA)	उपभोग / Consumption in Units (kWh / kVAh)
1	DEC-2024	1800.00	600800.00
2	NOV-2024	1800.00	711000.00
3	OCT-2024	1800.00	875700.00
4	SEP-2024	1800.00	831100.00
5	AUG-2024	1800.00	874500.00
6	JUL-2024	1800.00	879900.00

गणना विवरण / Calculation Details							
Sr. No.	विवरण / Details	एनपी / Net Pay	रॉ / Rates (₹)	ग्रुप धनराशि / Gross Amt. (₹)	अनुमति रॉ / Subsidy Rates (₹)	अनुमति धनराशि / Subsidy Amt. (₹)	नेट धनराशि / Net Amt. (₹)
1	ऊर्जा प्रभार / Energy Charges	Energy	2500.00	8.12	20300.00	0.00	20300.00
2	फिक्स्ड मांग प्रभार / Fixed Demand Charges		1650.00	400.00	660000.00	0.00	660000.00
3	राज्य कोड के प्रभार / Time of Day(ToD)Charges	TOD-1	0.00	0.000,0.000	0.00	0.00	0.00
		TOD-2	0.00	0.000,0.000	0.00	0.00	0.00
		TOD-3	0.00	0.000,0.000	0.00	0.00	0.00
		TOD-4	0.00	0.000,0.000	0.00	0.00	0.00
4	विद्युत का / Electricity Duty		0.00	0.00	0.00	0.00	0.00
5	अतिरिक्त मांग प्रभार / Excess Demand Penalty		0.00	0.00	0.00	0.00	0.00

ABBREVIATION	FULL FORM	ABBREVIATION	FULL FORM	ABBREVIATION	FULL FORM
PF	Power Factor	LPSC	Late Payment Surcharge	MF	Multiplying Factor
ToD	Time of Day	MU	Minor Units	IDF	Identified Defective
RDF	Reading Defective	CDF	Celling Defective	ASS	Assessment
TDS	Tax Deducted at Source	CGST	Central Goods & Services Tax	SGST	State Goods & Services Tax
TCS	Tax Collected at Source	Misc.	Miscellaneous		A/C: 6132418670311100000194

विद्युत बीजक / Electricity Bill

अकाउंट नं./Account No.: 6132418670			
नाम/Name:	M/S HCL TECHNOLOGIES LTD	खंड/Division:	DRV312614
विल पति का नाम/Husband/Father:	NA	खंड का ईमेल/Email of Division:	
पता/Address:	CGCT CHAK GAJARIA FARM SULTANPUR ROAD Lucknow/UP 226010 IND	उपखंड/Subdivision:	SD03126149
मोबाइल/Mobile No.:	xxxxxx5862	सेक्शन लोड/Section Load:	1980 kW
ई-मेल/Email:	xxxxxxxxxxwari@hcl.com	विल डिमांड/Billed Demand:	1800.00
संयोजन तिथि/Connection Date:	23-FEB-2017	टैरिफ/Tariff:	HV1 MV Commercial
विल संख्या/Bill Number:	613116710361	सप्लाय टाइप/Supply Type:	HL2
इन्फार्मेटिव राशि/Informative Amount:	0.00	सुरक्षा जमा/Security Deposit:	3800000
प्रगामी सब्सिडी/Progressive Subsidy:	0.00	बिलिंग लैट्यूड/Billing Latitude:	0.00
मीटर प्रकार/Meter Type:	POSTPAID	बिलिंग लॉन्ग्यूड/Billing Longitude:	0.00
		मीटर संख्या/Meter Number:	UPP76523

विल तिथि / Bill Date	03-DEC-2024	विल आधार / Bill Basis	OK	Scan & Pay your Bill स्कैन करें और अपने बिल का भुगतान करें 
देय तिथि / Due Date	17-DEC-2024	देय धनराशि/ Payable Amount	5533986	
विच्छेदन तिथि Disc. Date	24-DEC-2024	देय तिथि तक छूट / Due Date Rebate (□)	55968.72	
नेट बिल्ड यूनिट Net Billed Unit	600600.00	देय तिथि तक धनराशि/ Payable by Due date	5478017	

हमसे संपर्क करने के लिए हमें customer@uppccl.org पर ईमेल भेजें, www.uppccl.org पर जाएं या हमें [1800121212](tel:1800121212) पर कॉल करें।

विवरण / Details	प्रमाणित (Amount (-))			विवरण / Details	प्रमाणित/Amount
	कुल प्रमाणित /Gross Amount	समिद्ध प्रमाणित /Subsidy Amount (-)	शेष प्रमाणित /Net Amount		
उर्जा प्रभार / Energy Charges	4876872.00	0.00	4876872.00	सी जी एल टी CGST	0.00
सोप प्रभार / Demand Charges	720000.00	0.00	720000.00	एल जी एल टी SGST	0.00
न्यूनतम प्रभार / Minimum Charges	0.00	0.00	0.00	समिद्ध विद्युत वितरण अधिकार / Current LPSC	0.00
हरी उर्जा शुल्क / Green Energy Charges	0.00	0.00	0.00	पूर्व विद्युत वितरण अधिकार / Previous LPSC	0.00
विद्युत कर / Electricity Duty	0.00	0.00	0.00	नेट करंट बिल Net Current Bill	5533986.24
अतिरिक्त सोप प्रभार / Excess Demand Penalty	0.00	0.00	0.00	सरकार द्वारा हट / Subsidy by Govt. (-)	0.00
कम पावर फेस Low PF Surcharge	0.00	0.00	0.00	समिद्धकृत बिल / Subsidized Bill	0.00
विविध चार्ज / Misc. Charges	-62885.76		-62885.76	अग्रिम प्रमाणित / Arrear Amount	-0.47
				शेष प्रमाणित / Payable Amount	5533986
				शब्दों में / In Words: Fifty Five Lakh Thirty Three Thousand Nine Hundred Eighty Six Rupees Only	

मीटर मेक एवं मॉडल	ऊर्जा प्रकार	मीटर स्थिति	पढ़ी मांग	पिछली Previous		वर्तमान Current		भेदा Diff	मीटर प्रमाण	मीटर इकाई	अवधि (माह)	मीटर टिप्पणी
Meter Make & Number	Energy Type	Meter Status	Recorded Demand	दिनांक Date	पढ़ाई Read	दिनांक Date	पढ़ाई Read		M.F	Meter Units	Period (Months)	Meter Remark
UPP70523	KWH	A		01-NOV- 2024 00:00	192.22	01-DEC- 2024 00:00	212.02	19.8	30000	504000 KWH	1	OK
UPP70323	KVAH	A		01-NOV- 2024 00:00	195.65	01-DEC- 2024 00:00	215.67	20.02	30000	600800 KVAH	1	OK
UPP70523	KVA	A	0.06						30000	1800 KVA	1	OK

निर्वाह युनिट/ Assessd Unit(A)	0.00	मीटर युनिट/ Meter Units(C)	600600	प्रारंभिक अधिशेष सौर युनिट/ Opening Surplus Solar Units	0.00	अंतिम अधिशेष सौर युनिट/ Closing Surplus Solar Unit	0.00
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IMAGE NOT AVAILABLE

1. बिजुत आपूर्ति अधिनियम-2005 के खंड 9.3 के अंतर्गत इस बिल को अंतिम नोटिस माना जायेगा। वरन्दा का बुरतान न करने पर बिजली से निषेध का आदेश जारी हो सकता है। This Bill will be construed as Final Notice under Section 9.3 of Electricity Supply Code - 2005. Supply can be disconnected at any date on Non-payment of Dues.
2. 8010924203 पर मिस्ड कॉल करके बिजुत सम्बन्धी सेवाओं का आह्वान पर प्राप्ति करें। To get electricity related services on Whatsapp give a missed call on 8010924203
3. वरन्दा कर अलग बिल का बुरतान बिजुत कार्यालयों, रहान की दुकान, जलपुर्चक केन्द्र, बिजुत लक्की, मीटर रीडरों के माध्यम से तथा ऑनलाईन वेबसाइट 'www.upplc.org' एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर हो सकता है। / Consumers can pay bills through Department Offices, Fair Price Shops, Janasiksha Kendra, Vidhut Sakshi, Meter Readers and by visiting online website 'www.upplc.org' & mobile app 'UPPCL Consumer App'.
4. वरन्दा कर स्वयं सेवकों का स्वीकृत मत पर बैंक वेबसाइट 'www.upplc.org' एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर बढ़ा सकते हैं। Consumers can themselves increase contracted load of their connection through the website 'www.upplc.org' or through the mobile app 'UPPCL Consumer App'.
5. बैंक चेक हेतु प्राप्ति करें। Pay DD Cheque in favour of - **EXECUTIVE ENGINEER-EUDD, RAJBHAWAN**
6. हर दिन में बिजली बचाव। Energy Saved is Energy Produced.

“पीएम सवॉर पर मुफ्त बिजली योजना” का लाभ पाने हेतु ज़रूरी स्टॉप से “पीएम सवॉर पर” APP डाउनलोड करें और उस पर Apply करें

विद्युत बीजक / Electricity Bill

ग्राहक सं./Account No.: 6132418670			
नाम/Name:	M/S HCL TECHNOLOGIES LTD	खंड/Division:	DRV312614
विल पति का नाम/Husband/Father:	NA	खंड का ईमेल/Email of Division:	
पता/Address:	CGCT CHAK GAJARIA FARM SULTANPUR ROAD Lucknow/UP 226010 IND	उपखंड/Subdivision:	SD03126149
मोबाइल/Mobile No.:	xxxxxx5862	सेक्शन भार/Section Load:	1980 kW
ई-मेल/Email:	xxxxxxxxxxwari@hcl.com	विल डिमांड/Billed Demand:	1800.00
संयोजन तिथि/Connection Date:	23-FEB-2017	टैरिफ/Tariff:	HV1 MV Commercial
विल संख्या/Bill Number:	613456083154	सप्लाय टाइप/Supply Type:	HL2
इंफार्मेटिव राशि/Informative Amount:	0.00	रक्षा प्रतिशुल्क/Security Deposit:	3800000
प्रगामी सब्सिडी/Progressive Subsidy:	0.00	विलिंग लैट्यूड/Billing Latitude:	0.00
मीटर प्रकार/Meter Type:	POSTPAID	विलिंग लॉन्ग्यूड/Billing Longitude:	0.00
		मीटर संख्या/Meter Number:	UPP76529

विल तिथि / Bill Date	04-NOV-2024	विल आधार / Bill Basis	OK	Scan & Pay your Bill स्कैन करें और अपने बिल का भुगतान करें 
देय तिथि / Due Date	18-NOV-2024	देय धनराशि/ Payable Amount	6415014	
विच्छेदन तिथि Disc. Date	25-NOV-2024	देय तिथि तक छूट / Due Date Rebate (□)	64933.20	
नेट बिल्ड यूनिट / Net Billed Unit	711000.00	देय तिथि तक धनराशि/ Payable by Due date	6350080	

हमसे संपर्क करने के लिए हमें customer.care@uppccl.org पर ईमेल करें, www.uppccl.org पर जाएं या हमें <https://t.me/uppccl> पर वॉट्सएप करें।

विवरण / Details	प्रमाणित (Amount (-))			विवरण / Details	प्रमाणित/Amount
	कुल प्रमाणित /Gross Amount	समिद्ध प्रमाणित /Subsidy Amount (-)	शेष प्रमाणित /Net Amount		
उर्जा प्रभार / Energy Charges	5773320.00	0.00	5773320.00	नवीन वित्तिय धुलान अधिभार /Current LPSC	0.00
सोप प्रभार / Demand Charges	720000.00	0.00	720000.00	पूर्व वित्तिय धुलान अधिभार / Previous LPSC	0.00
न्यूनतम प्रभार / Minimum Charges	0.00	0.00	0.00	नेट करंट बिल Net Current Bill	6415013.16
ग्रीन उर्जा शुल्क / Green Energy Charges	0.00		0.00	सरकार द्वारा हट्ट / Subsidy by Govt. (-)	0.00
विद्युत कर / Electricity Duty	0.00		0.00	समिद्धकृत बिल / Subsidized Bill	0.00
अतिरिक्त सोप प्रभार / Excess Demand Penalty	0.00		0.00	अग्रिम प्रमाणित / Arrear Amount	0.37
कम पावर फ्याक्टर Low PF Surcharge	0.00		0.00	शेष प्रमाणित / Payable Amount	6415014
विविध चार्ज / Misc. Charges	-78306.84		-78306.84	शब्दों में / In Words: Sixty Four Lakh Fifteen Thousand Fourteen Rupees Only	

मीटर मेक एवं मॉडल	ऊर्जा प्रकार	मीटर स्थिति	पढ़ी मांग	पिछली Previous		वर्तमान Current		भेद	मीटर प्रकार	मीटर इकाई	अवधि (माह)	मीटर टिप्पणी
Meter Make & Number	Energy Type	Meter Status	Recorded Demand	दिनांक Date	पढ़ाई Read	दिनांक Date	पढ़ाई Read	Diff.	M.F.	Meter Units	Period (Months)	Meter Remark
UPP70523	KWH	A		01-OCT- 2024 17:53	168.65	01-NOV- 2024 00:00	192.22	23.57	30000	707100 KWH	1	OK
UPP70323	KVAH	A		01-OCT- 2024 17:53	171.95	01-NOV- 2024 00:00	195.65	23.7	30000	711600 KVAH	1	OK
UPP70523	KVA	A	0.06						30000	1800 KVA	1	OK

निर्वाचित युनिट/ Assessed Unit(A)	0.00	मीटर युनिट/ Meter Units(C)	711000	प्रारंभिक अधिशेष सौर युनिट/ Opening Surplus Solar Units	0.00	अंतिम अधिशेष सौर युनिट/ Closing Surplus Solar Units	0.00
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IMAGE NOT AVAILABLE

1. बिजुत आपूर्ति अधिनियम-2005 के खंड 9.3 के अंतर्गत इस बिल को अंतिम नोटिस माना जायेगा। वरन्दा का बुरतान न करने पर बिजली से निषेध का आदेश जारी हो सकता है। This Bill will be construed as Final Notice under Section 9.3 of Electricity Supply Code - 2005. Supply can be disconnected at any date on Non-payment of Dues.
2. 8010924203 पर मिस्ड कॉल करके बिजुत सम्बन्धी सेवाओं का आह्वान पर प्राप्ति करें। To get electricity related services on Whatsapp give a missed call on 8010924203
3. वरन्दा कर अलग बिल का बुरतान बिजुत कार्यालयों, रहान की दुकान, जलपुर्चक केन्द्र, बिजुत लक्की, मीटर रीडरों के माध्यम से तथा ऑनलाईन वेबसाइट 'www.upplc.org' एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर हो सकता है। / Consumers can pay bills through Department Offices, Fair Price Shops, Jansewa Kendra, Vidhut Sakshi, Meter Readers and by visiting online website 'www.upplc.org' & mobile app 'UPPCL Consumer App'.
4. वरन्दा कर स्वयं सेवकों का स्वीकृत मत पर बैंक वेबसाइट 'www.upplc.org' एवं मोबाइल एप 'UPPCL Consumer App' पर जाकर बढ़ा सकते हैं। Consumers can themselves increase contracted load of their connection through the website 'www.upplc.org' or through the mobile app 'UPPCL Consumer App'.
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विभिन्न चार्जों का विवरण / Details of Miscellaneous Charges

Sr. No.	विवरण / Detail	प्रमाणित Amount (₹)	Sr. No.	विवरण / Detail	प्रमाणित Amount (₹)
1	अप्रतिम समायोजन Provisional Adjustment (₹)	0.00	10	अप्रतिम चेक प्रमाणित Dishonor Cheque (₹)	0.00
2	दरिज समायोजन / Tariff Adjustments (₹)	0.00	11	अप्रतिम चेक प्रसार / Dishonor Cheque Charge (₹)	0.00
3	क्रेडिट / Credit (₹)(-)	0.00	12	प्रतिभुति ब्याज Interest on Security (₹)(-)	0.00
4	डेबिट / Debit (₹)	0.00	13	रक प्रतिभुति / Due Security (₹)	0.00
5	छूट / Rebate (₹)(-)	0.00	14	टी.डी.एस. राशि / TDS Amount (₹)	0.00
6	किस्त / Installment (₹)	0.00	15	टी.सी.एस. राशि / TCS Amount (₹)	0.00
7	अर्माई केबल शुल्क / Armoured Cable Cost (₹)	0.00	16	अग्रिम भुगतान पर ब्याज / Interest on Advance Payment (₹)(-)	0.00
8	मीटर चार्ज / Meter Charges (₹)(-)	0.00	17	रक तिथि छूट समायोजन / Due date rebate adjustment (₹)(-)	18306.84
9	पुनर्भरण राशि / Compensation Amt (₹) (-)	0.00	18	AC शुल्क / Charges for AC	0.00

चिप्टन चोरी/अनियमितता का तत्काल निपटारा / Theft/UUE Revenue Assessment

अंतिम भुगतान का विवरण / Last Payment Details

प्रुतान ररररर /Payment Date	प्रुतान ररररर /Payment Amount (₹)	प्रुतान ररररर /Payment Mode	रररर रररर /Receipt No.
15-OCT-2024	7754374.00	payment via internet	613506451644

विगत छः माह का उपभोग / Last Six month's Consumption

Sr. No.	मास / Month	रिकॉर्डेड डिमांड / Recorded Demand (kW / kVA)	इस्तेमाल / Consumption in Units (kWh / kVAh)
1	OCT-2024	1800.00	\$75700.00
2	SEP-2024	1800.00	\$51100.00
3	AUG-2024	1800.00	\$74500.00
4	JUL-2024	1800.00	\$79900.00
5	JUN-2024	1800.00	\$46800.00
6	MAY-2024	1800.00	710700.00

गणना विवरण / Calculation Detail

Sr. No.	विवरण Details		युनिट Unit	दर Rates (₹)	कुल प्रमाण Gross Amt. (₹)	समिद्ध दर Subsidy Rates (₹)	समिद्ध प्रमाण Subsidy Amt. (₹)	नेट प्रमाण Net Amt. (₹)
1	ऊर्जा शुल्क Energy Charges	Energy	2500.00	8.12	20300.00	0.00	0.00	20300.00
1	ऊर्जा शुल्क Energy Charges	Energy	106500.00	8.12	5753020.00	0.00	0.00	5753020.00
2	स्थिर मांग शुल्क Fixed Demand Charges		1800.00	400.00	720000.00	0.00	0.00	720000.00
3	समय और डे शुल्क Time of Day(ToD)Charges	TOD-1	0.00	0.000,0.000	0.00	0.00	0.00	0.00
		TOD-2	0.00	0.000,0.000	0.00	0.00	0.00	0.00
		TOD-3	0.00	0.000,0.000	0.00	0.00	0.00	0.00
		TOD-4	0.00	0.000,0.000	0.00	0.00	0.00	0.00
4	विद्युत ड्यू Electricity Duty		0.00	0.00	0.00	0.00	0.00	0.00
5	अतिरिक्त मांग शुल्क Excess Demand Penalty		0.00	0.00	0.00	0.00	0.00	0.00

ABBREVIATION	FULL FORM	ABBREVIATION	FULL FORM	ABBREVIATION	FULL FORM
PF	Power Factor	LPSC	Late Payment Surcharge	MF	Multiplying Factor
ToD	Time of Day	MU	Meter Units	IDF	Identified Defective
RDF	Reading Defective	CDF	Ceiling Defective	ASS	Assessment
TDS	Tax Deducted at Source	CGST	Central Goods & Services Tax	SGST	State Goods & Services Tax
TCS	Tax Collected at Source	Misc.	Miscellaneous		A/C: 04/24/07/05/1/00000001

Printed By:

Bill Type

Print Date: 28/11/2024 10:49:04 AM

ENERGY & SUSTAINABILITY AUDIT REPORT (Gap Assessment Study)

Prepared for

HCLTech

HCL TECHNOLOGIES LIMITED

HCL IT City,
Sultanpur Road,
Lucknow – 226 016

Prepared by



Johnson Controls India Private Limited (JCIPL)

March – 2024

ACKNOWLEDGEMENT

The JOHNSON CONTROLS INDIA PRIVATE LIMITED, Central Plant Energy Services department wishes to thank all the staff and Management of HCL TECHNOLOGIES LIMITED, HCL IT CITY, SULTANPUR ROAD, LUCKNOW – 226 016, for the kind cooperation and assistance extended to our Energy Auditors during the course of the Audit.

Their site experience and knowledge has provided valuable insight to the system and the information they shared on the operating parameters has helped to formulate JCI's recommendations.

We would also like to thank all the team members of HCL TECHNOLOGIES LIMITED and Johnson controls Building Technology Solution team for their support, hard work, and guidance throughout the project.

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List of Abbreviations

SEZ	Special Economic Zone
HVAC	Heating Ventilation Air Conditioning
PAC	Precision Air Conditioning
SDC	Software Development Centre
SEGR	Specific Energy Generation Ratio
MVVNL	Madhyanchal Vidyut Vitaran Nigam Ltd
SPC	Specific Power Consumption
FRP	Fibre Reinforced Plastic
COP	Co-efficient of Performance
DE	Drive End
NDE	Non-Drive End
DBOOM	Design Build Operate Own Maintain
BEP	Best Efficiency Point
WCC	Water Cooled Chiller
ACC	Air Cooled Chiller
HRW	Heat Recovery Wheel
AHU	Air Handling Unit
D.G	Diesel Generator
VPF	Variable Primary Flow
SEC	Specific Energy Consumption
CSS	Compact Secondary Substation
EE	Energy Efficient
DX	Direct Expansion cooling
UPS	Uninterruptible Power Supply
CFM	Cubic Feet Per Minute
RH	Relative Humidity
CHW	Chilled Water
CW	Condenser Water
PPM	Parts per million
THDA	Total Harmonics Distortion Current
THDV	Total Harmonics Distortion Voltage

INTRODUCTION

It is indeed a pleasure for Johnson Controls India (JCI) Private Limited to take up this detailed energy study at HCL Technology Ltd, Lucknow.

JCI, after the detailed depth study of all utility operations at HCL Technology Ltd, Lucknow had identified several opportunities for reduction of consumption and cost of energy. This report contains the details of the various energy savings proposals identified during the depth study at HCL Technology Ltd, Lucknow.

The energy savings projected in this report are based on measurements and Observations made during the JCI survey and inputs from the plant personnel on operating conditions, throughput rates, operating hours and other operating parameters.

The details of the proposals presented in this report were discussed in detail with the HCL Technology Ltd, Lucknow executives, and only such of those energy savings proposals which have been jointly confirmed as feasible are summarized and presented in this report. Implementation can therefore be taken up expeditiously by JCI. It is suggested that before implementing the energy savings proposals JCI should thoroughly check on the engineering and safety implication which are not within the scope of the present assignment of JCI.

From JCI's experience, all the proposals presented in this report are proven ones and will result in quantifiable energy savings.

We place on record our appreciation of the courtesies extended to us by the HCL executives, for completion of the depth audit study. The interest, co-operation and assistance given by the HCL executives are gratefully acknowledged.

HCL Technology Ltd, Lucknow is proactive and on its own had implemented several energy savings projects and achieved substantial energy savings, from time to time. JCI had successfully completed energy audit studies at HCL Technology Ltd, Lucknow, with excellent results and it is indeed a pleasure to continue the happy association.

Sum Up

With an excellent background of translating identified proposals into actual savings, there is every reason to believe that HCL Technology Ltd, Lucknow would easily surpass the identified savings potential.

ABOUT JOHNSON CONTROLS

We take this opportunity for introducing ourselves as the Largest Independent Supplier of Heating, Ventilation, Air Conditioning and Refrigeration (HVAC & R) products in the world. With our Head office in USA, we have presence in more than 135 countries worldwide. Our 34 Global manufacturing facilities in various countries and a dedicated professional team of 140,000 plus employees worldwide cater our ever-increasing clientage to their fullest expectations and satisfaction.

Johnson Controls has expanded remarkably since Professor Warren Johnson founded the company to manufacture his invention, the electric room thermostat. Since its start in 1885, Johnson Controls has grown into a global leader in automotive experience, building efficiency and power solutions.

Leading full-line service provider of mechanical equipment as well as systems that control heating, ventilating, air conditioning (HVAC), lighting, security, and fire management in non-residential buildings. World leader in integrated facility management for Fortune 500 companies, managing more than one billion square feet worldwide.

Johnson Controls through its Energy Solutions group provides Energy Performance Contracting and Energy Supply Contracting services across the world as well as Energy auditing, Energy Management, and DBOOM (Design Build Operate Own & Maintain) solutions.

Johnson Controls mission is to unleash the full potential of Energy Efficiency in buildings in order to help customers reduce energy consumption and contribute to limiting climate change.

Johnson Controls India [P] Ltd, is one of the Energy Service Companies (ESCOs) Grade 1 empanelled with BEE out of 62 listed Grade 1 ESCOs in India

JCI India provides the below services to their customers,

- Technical services
- Specialist Engineering Services
- Annual maintenance contract, specialised services
- Energy and Technical audits.

KEY RESULTS AREAS FOR ENERGY SAVINGS AND ESTIMATED POTENTIAL ALONG WITH BROAD COST BENEFIT

List of Energy Conservation Measures (ECM) Identified at HCL Lucknow						
ECM no.	Description	Annual savings			Investment	Return On Investment
		Energy, kWh	Cost, INR	CO ₂ (Tons)	INR	Years
A. No/low investment proposals (Payback between 0-1 years)						
1	Surrender the 500 KVA demand for NSEZ to MVVNL and to reduce the billing demand and save demand cost	-	2,001,364	-	NIL	Immediate
2	Installation of Wet Based Sensor for The (SEZ Area) Cooling Tower To Optimize Fan Power	16,065	153,903	13.22	25,000	0.16
3	Downsize the overcapacity UPS to Right sized UPS - NSEZ Area	109,936	3,114,326	90.48	1,920,000	0.62
4	Replace the Existing CHW Pumping system (SEZ Area) with Variable Primary Pumping system to optimize the CHW Pumping Energy Consumption	234,600	2,247,468	193.08	1,500,000	0.67
5	Replace the Existing CHW Pumping system (NSEZ) with Variable Primary Pumping system to optimize the CHW Pumping Energy Consumption	46,494	545,840	38.26	500,000	0.92
6	Replacement of SEZ Condenser Cooling water pumps with Correct Duty EE Pumps	100,249	960,386	82.50	1,000,000	1.04
7	Downsize the overcapacity UPS to Right sized UPS - SEZ Area	248,329	4,860,841	204.38	5,200,000	1.07
B. Medium investment proposals (Payback between 1-3 years)						
8	Install Voltage Regulator for Cafeteria - SEZ Area	2,224	21,301	1.83	30,000	1.41
9	Replacement of NSEZ Condenser Cooling water pumps with Correct Duty EE Pumps	30,223	354,813	24.87	500,000	1.41
10	Replace Cooling Tower Fan Blades with FRP blades - SEZ Area	8,791	84,219	7.24	120,000	1.42
11	Install Occupancy Sensor for Rest Rooms - SEZ Area	8,424	80,702	6.93	180,000	1.23
12	Install 50 KW Solar PV - NSEZ Area	73,000	857,020	60.08	2,000,000	2.33
13	Install 250 KW Solar PV - SEZ Area	365,000	3,496,700	300.40	10,000,000	2.86
14	Install Occupancy Sensor for Rest Rooms - NSEZ Area	2,016	23,668	1.66	70,000	2.96
C. High investment proposals (Payback above 3 years)						
15	Replace Cooling Tower Fan Blades with FRP blades - NSEZ Area	866	10,168	0.71	40,000	3.93
16	Install EC fans for AHU and DX AHU - NSEZ Area	11,113	130,469	9.1	800,000	6.13
17	Install EC fans for AHU and DX AHU - SEZ Area	133,132	1,275,401	109.6	9,800,000	7.68
18	Operational cost reductions by implementing Digital enhancement	115,468	1,241,549	95.9	10,389,691	8.37
Total		1,506,930	21,460,137	1,240	44,074,691	2.05



ECM_Lucknow.xlsx

Link for the ECM Backup:

RISKS AND UNCERTAINTIES

The conclusions and recommendations contained within this assessment report are based on observations made during the site survey. It is believed that these observations are representative of normal working hours, but this should be confirmed before implementing measures, particularly where they involve substantial capital expenditure. Similarly, it should be noted that the quoted savings and cost figures are budget estimates only and should be confirmed prior to committing to expenditure.

Further assistance may be available from the Johnson Controls on request and mutually agreed terms.

Note: Investment is considered as approximate or budgetary cost. Final BOQ and Investment cost will provide the final investment based on business case approval.

EXECUTIVE SUMMARY

Project Background

The company has engaged the energy auditing to accelerate the energy efficiency under energy saving initiative in the building sector, Government of India which helps the organization to develop best & advanced techniques which is also referred as the BAT for the cluster.

The Detailed Audit Report is prepared after exhaustive verification of the data and detailed process related energy audit study for each and every area of the unit. During the energy audit study detailed information (about all the areas) such as the critical units as they can be defined as chillers, pumps, lighting, Air Handling Units, battery bank and DG, Transformer etc. specifications (number, type, make, age, and rating), water requirements / consumption, type of data monitoring, has been collected and analysed.

This Detailed Audit Report is prepared to provide an insight to the energy savings options that can be explored for the future cycle in consultation with the key personnel and make the necessary for making investments in implementing energy efficiency measures on the mentioned areas. This intervention would lead to lower energy supply on the unit, and hence, could result in the reduction of the SEC and by way of which the GHG reduction will take place.

In following sections, it is discussed how the various options provides an opportunity for energy savings to the unit and its techno-economic viability

Site Based Data Verification and Analysis

1. We have studied the utility section comprising of the Chillers, Pumps, Air Handling Units, Lighting, UPS system, Transformer, DG sets, ACs etc.
2. As per data collected and analysis of motors on the loading, we can work out the under loaded with suitable drives for the requirements.
3. The details of the design, operating data are verified of various operating equipment's.
4. We have identified the 100% or more intensive energy areas consuming electricity and Fuel have taken a closer look at them for the energy savings that could be implemented.

Energy Efficiency Measures:

1. Chiller system to be studied and to be optimization of chiller plant energy consumption.
2. Pumping system to be studied and identify the potential for energy saving.
3. Optimization of energy consumption in HVAC system like chillers, pumps, AHU's, and AC's
4. Lighting system to be studied and to control the lighting system by operational basis.
5. We identified the energy savings in all installed AHU fans.



CHAPTER – 1: INTRODUCTION

1.1 PREAMBLE

- HCL Technologies Limited, doing business as HCL Tech (formerly Hindustan Computers Pvt. Limited), is an Indian multinational information technology (IT) consulting company headquartered in Noida. The founder of HCL Tech is Shiv Nadar. It was spun out in 1991 when HCL entered into the software services business. The company has offices in 52 countries and over 225,944 employees.
- HCL Technologies Ltd (HCL) is a provider of software and IT infrastructure services. The company offers a diverse range of solutions in IT infrastructure management services, digital process operations, cloud-native services, cybersecurity services, digital and analytics services, DRYICE, IoT works, HCL software services, SIAM/XaaS products & advanced services, industry software services, and engineering and R&D services. HCL offers its services to financial services, manufacturing, telecom, retail and consumer packaged goods services, media and entertainment, life sciences, insurance services, capital markets services, banking services, mining, and natural resources. It also serves the oil and gas, aerospace and defence, automotive, chemical and process industries, hi-tech, industrial manufacturing, energy and utility, healthcare, travel, transport, hospitality, and logistics sectors. The company operates global offshore infrastructure and a network of offices across the Americas, Asia-Pacific, the Middle East, Africa, and Europe.

1.2 OBJECTIVES

- To undertake an energy audit so as to identify areas for energy saving, both without and with investment.
- To prioritise distinct areas identified for energy savings depending upon saving potential, skills, and time frame for execution, investment cost, paybacks etc.
- To design an "Energy Monitoring System" for effective monitoring of energy consumption and analysis of energy efficiency.

Summary of Site Observations:

S. No	Location	Equipment	Observation & Recommendation
1.	Building	UPS	Most of the UPS are operating in under loaded condition. It is recommended to downsize the UPS to reduce the Energy loss.
2.	Utility Building	Chillers	Based on the performance test, all chillers are slightly derated from the design values due to chances of ageing.
3.	Utility Building	Condenser Pump - Water Cooled Chiller	Design head of pump is mismatched with the site actual conditions and results in high energy consumption. It is recommended to replace the pump with correct Head to achieve Energy Savings
4.	Utility Building	Secondary Pumps	All Secondary pumps are installed with VFD but operated by manual VFD settings. It is recommended to operate the VFD in auto mode based on DP.
5.	Utility Building	Cooling Towers	C.T fans VFD are set at manually Frequency based on C.T outlet temperature of 29°C at fixed setting. It is recommended to install the Wet Bulb based sensor; the Installation of Wet bulb in cooling tower fans will be very effective in optimizing chiller & Fan Energy consumption.
6.	Building	AHUs	AHU's CHW actuators are not connected to the BMS system. Existing AHUs in IT-01 & IT-03 are operated by belt driven conventional blowers with VFD by manual frequency setting. It is recommended to operate the AHUs VFD automatically or retrofit with EC fans.



CHAPTER – 2: BACK DROP ON ENERGY SCENE

2.1 ENERGY: SOURCES & UTILIZATION

- The Primary energy source is Uttar Pradesh Madhyanchal Vidyut Vitran Nigam Limited and DG Sets. Electricity is consumed mainly for UPS system, utility equipment motors, pumps, HVAC system, lighting, and other equipment's.



Figure 1: Source wise % utilization – 2023.

- During audit period, observed plant has installed energy meters section wise and recorded the energy data from energy meters.

2.2 ENERGY BREAKS UP DETAILS

The percentage energy breaks up details are as follows.

SEZ Area:

Table 1: SEZ Area_ Percentage energy breaks up details.

S. No	Parameters	% of load	% of load
1	IT-01 Energy consumption, kWh	2610359	33
2	IT-02 Energy consumption, kWh	444753	6
3	IT-03 Energy consumption, kWh	1384645	17
4	SEZ_HVAC High side, kWh	1564739	20
5	SEZ_Chiller pumps, kWh	761254	10
6	SEZ_HVAC Low side, kWh	1240319	15

The details of breakup given in below chart.

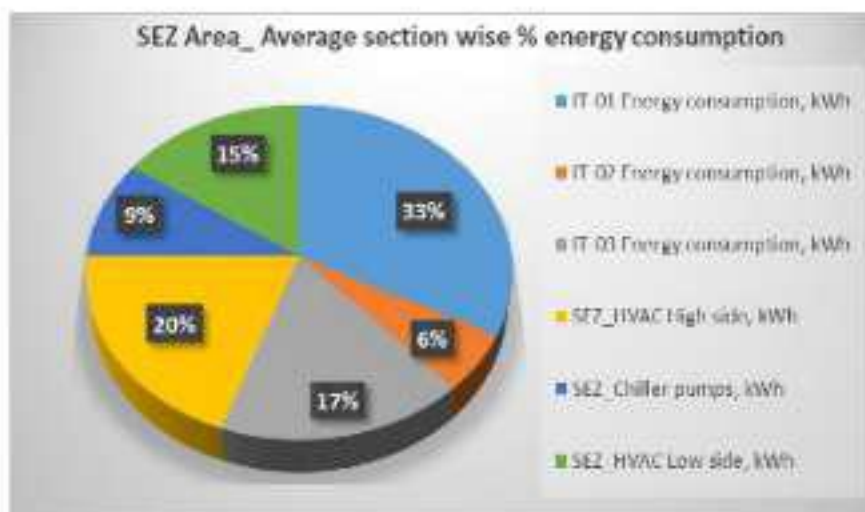


Figure 2: SEZ Area_ Average section wise % energy consumption.

NSEZ Area:

Table 3: NSEZ Area_ Percentage energy breaks up details.

S. No	Parameters	% of load	% of load
1	SDC-01 Energy consumption, kWh	324433	13
2	SDC-02 Energy consumption, kWh	1088821	44
3	NSEZ_HVAC High side, kWh	408844	17
4	NSEZ_Chiller pumps, kWh	176864	7
5	NSEZ_HVAC Low side, kWh	477175	19

The details of breakup given in below chart.

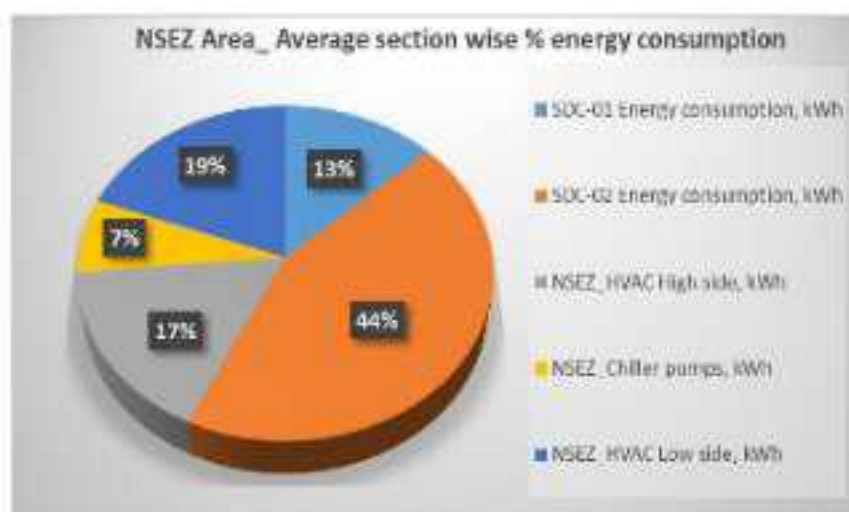


Figure 3: SEZ Area_ Average section wise % energy consumption.

2.3 ELECTRICITY BILL DETAILS

2.3.1 SEZ EB BILL

The SEZ area electricity bill details have been analysed for one year and details are as follows:

Table 2: SEZ area electricity bill details:

Month/Year	Permitted demand, kW	Billing demand, kW	Recorded demand, kW	% of Demand Utilization	Power factor	Consumed Units, kWh	Consumed Units, kWh	Demand Charge, INR	Cost charge, INR/kWh	Energy Charge, INR	Total bill, INR	SEZ, INR/kWh
Jan-23	1990	1650	966	49	0.97	663711	106660	660000	8.12	4126443	4802241	10.33
Feb-23	1990	1650	NA	NA	0.91	615278	657634	660000	8.12	2717631	4485634	10.71
Mar-23	1990	1650	NA	NA	0.97	615278	830830	660000	8.12	3120718	3780718	9.43
Apr-23	1990	1650	NA	NA	0.97	615278	830830	660000	8.12	3120718	3780718	9.43
May-23	1990	1650	NA	NA	0.97	617704	840840	660000	8.12	6827621	7487621	9.18
Jun-23	1990	1650	NA	NA	0.99	789969	797969	660000	8.12	6479907	7146907	9.06
Jul-23	1990	1650	NA	NA	0.98	821020	836508	728840	8.12	6776173	7516045	9.18
Aug-23	1990	1772	1772	90	0.99	825167	836888	708960	8.12	6799314	7128399	8.64
Sep-23	1990	1788	1788	90	0.98	792014	779223	713200	8.12	6294809	7012418	9.20
Oct-23	1990	1741	1741	88	0.97	839350	882084	896480	8.12	3546713	8144448	9.47
Nov-23	1990	1650	1288	66	0.96	643668	672293	660000	8.12	2489006	6125259	9.23
Dec-23	1990	1650	1288	66	0.91	626056	674817	660000	8.12	3855516	4630031	10.37
Total/Average	1990	1659	1429	72	0.96	7837508	8144569	8156800	8.12	66152275	75992619	9.58

Remarks:

- The permitted demand of the facility is 1990 kW and average billing demand is around 1659 kW.
- The average recorded demand of the facility is 1429 kW which is 72 % of demand utilization.
- The average power factor is 0.96 which leads to least amount paid for the lesser kWh Consumed
- The average energy cost is around 9.58 (INR)/kWh.

Month Vs Recorded demand, kVA.

The graphical representation of recorded demand for the one year is as follows.



Figure 4: Month Vs Recorded demand, kVA.

The maximum demand is recorded in the month September 2023 and minimum is recorded in the month of January 2023.

Month Vs Energy consumption, kWh

The graphical representation of energy consumption for the one year is as follows.

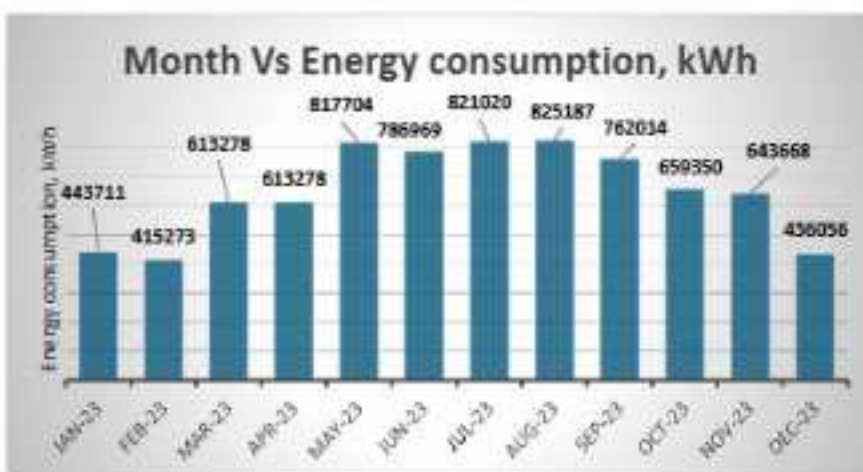


Figure 5: Month Vs Energy consumption, kWh.

The maximum energy consumption is recorded in the month August 2023 and minimum is recorded in the month of February 2023.

Month Vs Specific energy consumption

The graphical representation of Specific energy consumption for the one year is as follows.

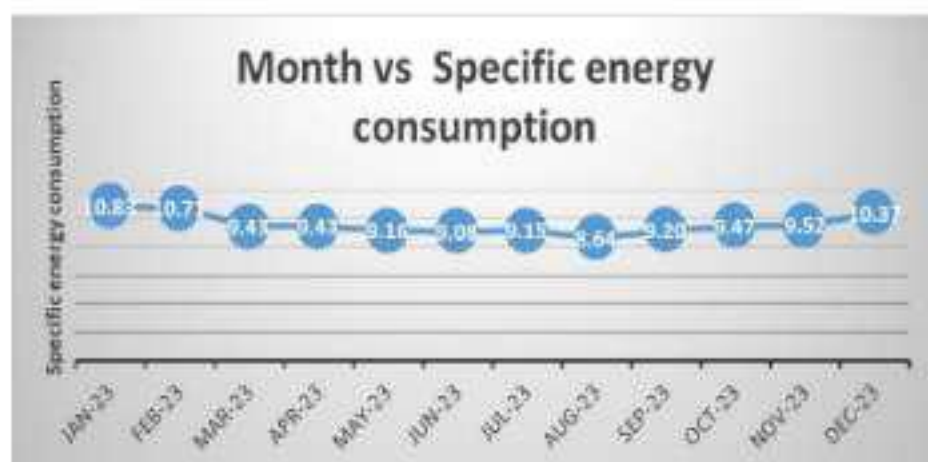


Figure 6: Month Vs SEC.

The maximum specific energy consumption is recorded in the month December 2023 and minimum is recorded in the month of June 2023.

2.3.2 NSEZ EB BILL

The NSEZ area electricity bill details have been analysed for one year and details are as follows.

Table 2: NSEZ area electricity bill details.

Month/Year	Permitted demand, kVA	Billing demand, kVA	Recorded demand, kVA	% of Demand utilisation	Power factor	Consumed kWh	Consumed units, kWh	Demand charges, INR	Unit charges, INR/kWh	Energy charges, INR	Total bill, INR	SEC, INR/kWh
Jan-23	1886	1182	240	18	0.92	124551	148110	455552	8.12	1217128	1800720	12.28
Feb-23	1886	1182	484	24	0.89	171089	193441	455552	8.12	1562921	2180833	11.87
Mar-23	1886	1182	626	33	0.91	188295	225505	455552	8.12	1827712	2280129	12.02
Apr-23	1886	1182	694	36	0.91	181249	219900	455552	8.12	1624185	2282265	12.88
May-23	1886	1182	522	40	0.95	224770	267416	455552	8.12	1907816	2541292	11.82
Jun-23	1886	1182	527	39	0.97	249710	267679	455552	8.12	2060707	2712189	10.87
Jul-23	1886	1182	983	59	0.97	246417	279221	455552	8.12	2122678	2853406	10.79
Aug-23	1886	1182	517	38	0.97	267040	274780	455552	8.12	2181119	2976879	10.92
Sep-23	1886	1182	517	38	0.97	292072	246094	455552	8.12	2160255	2619487	10.36
Oct-23	1886	1182	516	38	0.94	216158	236048	455552	8.12	1939964	2468842	11.41
Nov-23	1886	1182	454	34	0.91	302918	236179	455552	8.12	1820382	2439624	11.98
Dec-23	1886	1182	484	32	0.89	140291	157745	455552	8.12	1250292	1364520	12.15
Total/Average	1886	1182	820	47	0.94	2467028	2624920	5466904	8.12	21296647	22469941	11.74

Remarks:

- The permitted demand of the facility is 1886 kW and average billing demand is around 1182 kVA.
- The average recorded demand of the facility is 480 kVA which is 87% of demand utilisation.
- The average power factor is 0.88 which leads to extra amount paid for the latter kWh consumed.
- The average energy cost is around 11.74 INR/kWh.

Month Vs Recorded demand, kVA.

The graphical representation of recorded demand for the one year is as follows.



Figure 7: Month Vs Recorded demand, kVA.

The maximum demand is recorded in the month August and September 2023 and minimum is recorded in the month of January 2023.

Month Vs Energy consumption, kWh

The graphical representation of energy consumption for the one year is as follows.

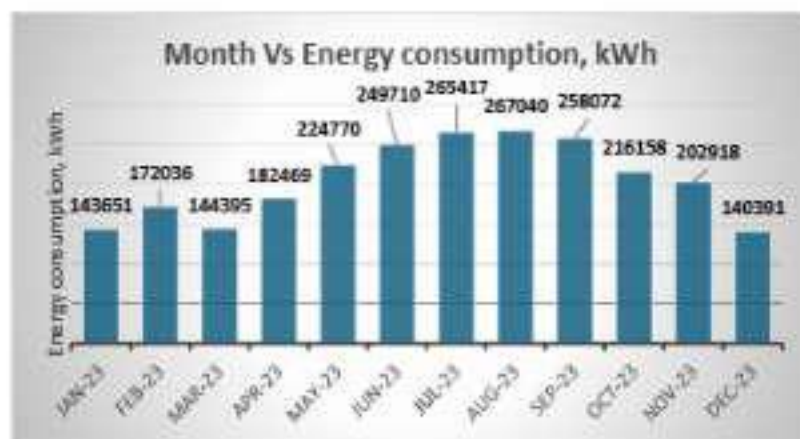


Figure 8: Month Vs Energy consumption, kWh.

The maximum energy consumption is recorded in the month August 2023 and minimum is recorded in the month of December 2023.

Month Vs Specific energy consumption

The graphical representation of Specific energy consumption for the one year is as follows.

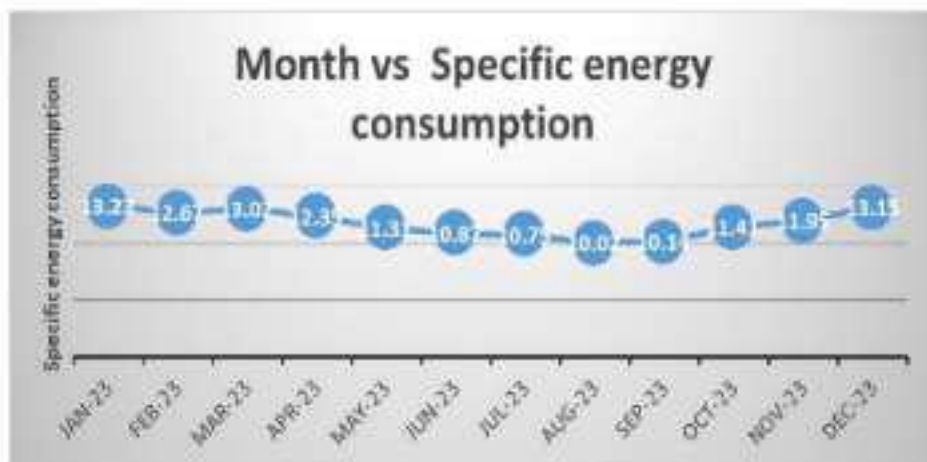


Figure 9: Month Vs SEC.

The maximum specific energy consumption is recorded in the month January 2023 and minimum is recorded in the month of August 2023.

2.4 DG GENERATION DETAILS

The DG name plate details are as follows.

Table 4: DG name plate details.

Equipment	DG name	Capacity, kVA	Make	Model
Diesel Generator	NSEZ_1010 kVA DG-1	1010	CUMMINS	KTA-38-G5
Diesel Generator	NSEZ_380 kVA DG-2	380	CUMMINS	QSN-14-G2
Diesel Generator	NSEZ_1010 kVA DG-3	1010	CUMMINS	KTA-38-G5
Diesel Generator	SEZ_1500 kVA DG-1	1500	CUMMINS	KTA-50-G8-I
Diesel Generator	SEZ_1500 kVA DG-2	1500	CUMMINS	KTA-50-G8-I
Diesel Generator	SEZ_1500 kVA DG-3	1500	CUMMINS	KTA-50-G8-I
Diesel Generator	SEZ_1500 kVA DG-4	1500	CUMMINS	KTA-50-G8-I

SEZ Area:

The DG generation details for one year and details are as follows.

Table 5: SEZ Area, DG generation and fuel consumption details.

Month	Unit generation, kWh	Fuel consumption, (Liters)	Total cost, INR	SEC, kWh/L	Cost per Unit, INR/kWh
Jan-23	9600	3310	314483	2.90	33
Feb-23	1450	560	53200	2.59	37
Mar-23	8577	2958	280971	2.90	33
Apr-23	1590	600	57000	2.65	36
May-23	6890	2715	257925	2.54	37
Jun-23	2085	800	76000	2.61	36

Month	Unit generation, kWh	Fuel consumption, (Liters)	Total cost, INR	SEC, kWh/L	Cost per Unit, INR/kWh
Jul-23	478	190	18050	2.52	38
Aug-23	1710	655	62225	2.61	36
Sep-23	15489	4946	469870	3.13	30
Oct-23	8257	3413	324235	2.42	39
Nov-23	1449	600	57000	2.42	39
Dec-23	4658	2134	202730	2.18	44
Total/Average	62233	22881	2173688	2.62	37

Remarks:

- Total DG generation for the year is around 62233 kWh.
- Total Fuel consumption of the year is 22881 Liters.
- The SEC of DG is around 2.62 kWh/Litres.
- The average cost per unit is around 37 INR/kWh.

The graphical representation details for the diesel generation are as follows.



Figure 10: SEZ Area_ DG units generated, kWh.

The maximum DG unit generated in the month of September 2023 and minimum units generated in the month of July 2023.

The graphical representation details for the monthly variation of DG Specific energy cost are follows.



The maximum SEC in the month of September 2023 and minimum SEC in the month of December 2023.

NSEZ Area:

The DG generation details for one year and details are as follows.

Month	Unit generation, kWh	Fuel consumption, (Liters)	Total cost, INR	SEC, kWh/L	Cost per Unit, INR/kWh
Jan-23	3006	1037	98472	2.90	33
Feb-23	800	280	26600	2.86	33
Mar-23	8828	3044	289193	2.90	33
Apr-23	1100	400	38000	2.75	35
May-23	2461	1025	97375	2.40	40
Jun-23	855	310	29450	2.76	34
Jul-23	185	70	6650	2.64	36
Aug-23	1300	490	46550	2.65	36
Sep-23	5774	1920	182400	3.01	32
Oct-23	2968	1156	109820	2.57	37
Nov-23	117	50	4750	2.34	41
Dec-23	350	135	12825	2.59	37
Total/Average	27744	9917	942086	2.70	35

Remarks:

- Total DG generation for the year is around 27744 kWh.
- Total Fuel consumption of the year is 9917 Liters.
- The SEC of DG is around 2.70 kWh/Litres.
- The average cost per unit is around 35 INR/kWh.

The graphical representation details for the diesel generation are as follows.



The maximum DG unit generated in the month of March 2023 and minimum units generated in the July of July 2023.

The graphical representation details for the monthly variation of DG Specific energy cost are follows.



The maximum SEC in the month of September 2023 and minimum SEC in the month of November 2023.

2.5 TOTAL POWER CONSUMPTION AND COST DETAILS:

The power consumption of the facility are as follows:

Month/Year	MVVNL (SEZ+NSEZ), kWh	DG energy (SEZ+NSEZ), kWh	Total energy consumption, kWh	Total cost, INR	SEC INR/kWh
Jan-23	587362	12606	599968	7116934	11.86
Feb-23	587309	2250	589559	6708747	11.38
Mar-23	757673	17405	775078	8231002	10.62
Apr-23	795747	2690	798437	8128951	10.18
May-23	1042474	9351	1051825	10384182	9.87
Jun-23	1036679	2940	1039619	9965289	9.59
Jul-23	1086437	663	1087100	10391151	9.56
Aug-23	1092227	3010	1095237	9914513	9.05
Sep-23	1020086	21263	1041349	10280373	9.87
Oct-23	875507	11225	886732	9144343	10.31
Nov-23	846586	1566	848152	8612627	10.15
Dec-23	576447	5008	581455	6581266	11.32
Total	10304536	89977	10394513	105459378	10.31

Table 6: Total power consumption and cost details.

Remarks:

- The average power cost is around 10.31 INR/Unit.

The graphical representation of total consumption and cost details are as follows.

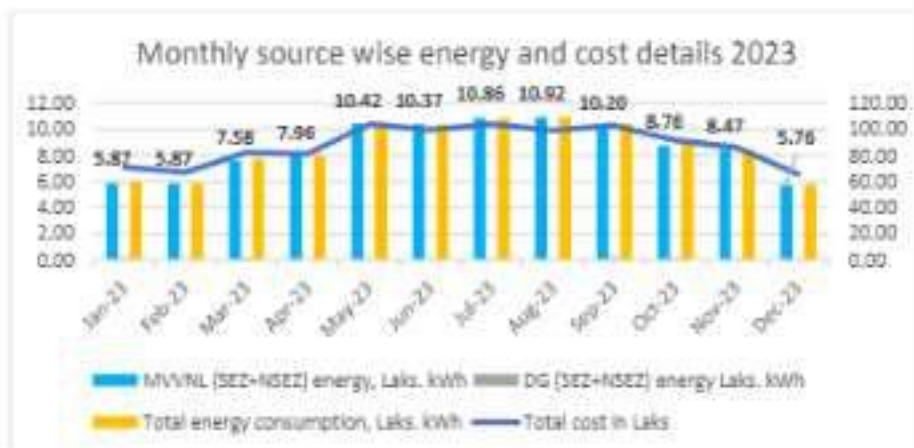


Figure 11: Monthly source wise energy and cost details 2023.

2.6 TRANSFORMER PERFORMANCE STUDY

The facility has installed 12 Transformer for step down the voltage for all utilities.

SEZ Area transformer name plate details:

Parameters	Unit	SEZ AREA_ 33/11 KV 6300KVA TRANSFORMER 1	
Make	-	VOLTAMP	
Type of cooling	-	ONAN	ONAF
Rating	kVA	6300	8000
No load voltage	HV (V)	33000	
	LV (V)	11000	
Current	HV (A)	110.22	139.96
	LV (A)	330.66	419.89
Phases	HV	3	
	LV	3	
Impedance voltage	%	6.76	
Frequency	Hz	50	
Core and winding Wt.	Kgs	7700	
Weight of oil	Kgs	3750	
Oil quantity	Ltrs.	4215	
Total weight	Kgs	18550	
Transport weight	Kgs	15770	
Year of manufacture	-	2016	
Transformer serial number	-	46011/1	
Vector group	-	Dyn11	

Table 7: SEZ Area transformer name plate details

Table 8: SEZ Area transformer name plate details.

Parameters	Unit	IT-03_1500 kVA CSS TRANSFORMER 01	IT-03_1500 kVA CSS TRANSFORMER 02	IT-01_2000 kVA CSS TRANSFORMER 03	IT-01_2000 kVA CSS TRANSFORMER 04
Make	-	VOLTAMP	VOLTAMP	VOLTAMP	VOLTAMP
Total losses at 50% load	kW	5.9	5.9	7.5	7.5
Total losses at 100% load	kW	15.8	15.8	20	20
Rating	kVA	1500	1500	2000	2000
No load voltage	HV (kV)	11	11	11	11
	LV (kV)	0.433	0.433	0.433	0.433
Current	HV (A)	78.73	78.73	104.97	104.97
	LV (A)	2000.06	2000.06	2666.74	2666.74
Phase	-	3	3	3	3
Frequency	Hz	50	50	50	50
Cooling	-	AN	AN	AN	AN
Insulation class	-	F	F	F	F
Maximum ambient temperature	°C	50	50	50	50
Maximum temperature rise winding	°C	90	90	90	90
Impedance voltage	%	5.77	5.82	5.98	5.98
Total weight	Kgs	3950	3950	4590	4590
Protection class	-	IP-00	IP-00	IP-00	IP-00
Type of installation	-	INDOOR	INDOOR	INDOOR	INDOOR
Year of manufacture	-	2016	2016	2016	2016
Transformer serial number	-	JNC 62912	JNC 62912	JNC 62911	JNC 62911
Vector group	-	Dyn11	Dyn11	Dyn11	Dyn11

NSEZ Area transformer name plate details:

Table 9: NSEZ Area transformer name plate details.

Parameters	Unit	NSEZ_2500 KVA TRANSFORMER 1	NSEZ_2500 KVA TRANSFORMER 2
Make	-	VOLTAMP	VOLTAMP
Standard	-	IS 1180 (PART 1): 2014	IS 1180 (PART 1): 2014
Rating	kVA	2500	2500
No load voltage	HV (V)	33000	33000
	LV (V)	415	415
Current	HV (A)	43.73	43.73
	LV (A)	3478.01	3478.01
Frequency	Hz	50	50
Vector group	-	Dyn11	Dyn11
Impedance voltage	%	5.89	5.89
Tapping's	-	OLTC	OLTC
Energy efficiency level	-	LEVEL 1	LEVEL 1

Maximum total losses at 50% rated load	W	6987.5	6987.5
Maximum total losses at 100% rated load	W	21500	21500
Types of cooling	-	ONAN	ONAN
Temperature rise oil	°C	40	40
Temperature rise winding	°C	45	45
Mass of oil	Kg	2425	2425
Total mass	Kg	9725	9725
Volume of oil	Ltr.	2725	2725
Year of manufacture	-	2016	2016
Transformer serial number	-	46010	46010

The transformer performance has been carried out using power analyser for 30 minutes and details are as follows.

Table 33: Transformer performance.

Parameters		Wave	Voltage	Current	Apparent power	Real power	loading	No load losses	Load losses (Full load)	Total losses	Optimum loading	efficiency
Unit		-	V	A	kVA	kW	%	kW	kW	kW	%	%
332 AREA, 33/11 KV 6300KVA TRANSFORMER 1	Rated value	VOLTAMP	33000	110	8.500	3.040	-	-	-	-	-	-
	Measured value		22270	62	888	817	14.08	4.86	37.14	4.86	26.17	99.40
IT-02_ 1000 KVA CSS TRANSFORMER 01	Rated value	VOLTAMP	432	2,000	1,300	1,300	-	-	-	-	-	-
	Measured value		416	121	86	83	6.76	2.60	19.93	2.60	26.24	96.94
IT-02_ 1600 KVA CSS TRANSFORMER 02	Rated value	VOLTAMP	432	2,000	1,300	1,300	-	-	-	-	-	-
	Measured value		412	283	193	179	12.85	2.60	19.93	2.64	26.24	98.54
IT-01_ 3000 KVA CSS TRANSFORMER 03	Rated value	VOLTAMP	432	2,887	2,000	1,800	-	-	-	-	-	-
	Measured value		412	300	204	193	10.18	3.10	21.00	3.22	29.04	98.36
IT-01_ 3000 KVA CSS TRANSFORMER 04	Rated value	VOLTAMP	432	2,887	2,000	1,800	-	-	-	-	-	-
	Measured value		416	365	174	165	8.70	3.10	21.00	3.21	29.04	98.11
IT-02_ 1250 KVA CSS TRANSFORMER 05	Rated value	VOLTAMP			1,250	1,000	-	-	-	-	-	-
	Measured value		424	71	47	42	3.74	1.80	13.30	1.80	26.79	95.88

Parameters:		Make	Voltage	Current	Apparent power	Real power	Loading	No load losses	Load losses (Full load)	Total losses	Optimum loading	Efficiency
Unit		-	V	A	kVA	kW	%	kW	kW	kW	%	%
S2 AREA_ 2500 KVA CHILLER TRANSFORMER-1	Rated value	VOLTAMP	415	8.475	3.500	3.000	-	-	-	-	-	-
	Measured value		390	791	300	480	20.11	1.20	14.20	1.20	20.00	99.52
S2 AREA_ 2500 KVA CHILLER TRANSFORMER-2	Rated value	VOLTAMP	415	8.475	3.500	3.000	-	-	-	-	-	-
	Measured value		410	312	257	340	14.20	1.20	14.30	1.32	20.70	99.33
N2E2_ 2500 KVA TRANSFORMER 1	Rated value	VOLTAMP	415	8.475	3.500	3.000	-	-	-	-	-	-
	Measured value		420	300	270	260	11.02	2.40	14.20	2.42	40.22	99.11
N2E2_ 2500 KVA TRANSFORMER 2	Rated value	VOLTAMP	415	8.475	3.500	3.000	-	-	-	-	-	-
	Measured value		430	410	294	287	11.70	2.40	14.82	2.40	41.04	99.34

Remarks:

S2 AREA_ 55/11 KV 8000KVA TRANSFORMER 1

- Efficiency is calculated to be 99.40%.
- Transformer loading is calculated to be 14.00% which is very low. It is recommended to load the transformer near optimum loading percentage 20.17%.
- No load and load loss taken from transformer test certificate.

IT-03_ 1500 kVA CSS TRANSFORMER 01:

- Efficiency is calculated to be 96.94%.
- Transformer loading is calculated to be 5.76% which is very low. It is recommended to load the transformer near optimum loading percentage 36.24% to improve the efficiency.
- No load and load losses taken form BEE standard value.

IT-03_ 1500 kVA CSS TRANSFORMER 02:

- Efficiency is calculated to be 98.54%.
- Transformer loading is calculated to be 12.85% which is very low. It is recommended to load the transformer near optimum loading percentage 36.24%.
- No load and load losses taken form BEE standard value.

IT-03_ 2000 kVA CSS TRANSFORMER 03:

- Efficiency is calculated to be 98.36%.
- Transformer loading is calculated to be 10.19% which is very low. It is recommended to load the transformer near optimum loading percentage 39.04%.
- No load and load losses taken form BEE standard value.

IT-03_ 2000 kVA CSS TRANSFORMER 04:

- Efficiency is calculated to be 98.12%.
- Transformer loading is calculated to be 8.70% which is very low. It is recommended to load the transformer near optimum loading percentage 39.04%.
- No load and load losses taken form BEE standard value.

IT-02_ 1250 kVA CSS TRANSFORMER 01:

- Efficiency is calculated to be 95.88%.
- Transformer loading is calculated to be 3.74% which is very low. It is recommended to load the transformer near optimum loading percentage 36.79% to improve the transformer efficiency.
- No load and load losses taken form BEE standard value.

SEZ AREA_ 2500 kVA CHILLER TRANSFORMER-1:

- Efficiency is calculated to be 99.52%.

- Transformer loading is calculated to be 20.11%. It is recommended to load the transformer near optimum loading percentage 39.80%.
- No load and load losses taken from transformer test certificate.

SEZ AREA_ 2500 KVA CHILLER TRANSFORMER-2:

- Efficiency is calculated to be 99.33%.
- Transformer loading is calculated to be 14.28%. It is recommended to load the transformer near optimum loading percentage 39.76%.
- No load and load losses taken from transformer test certificate.

NSEZ_ 2500 KVA TRANSFORMER 1:

- Efficiency is calculated to be 99.11%.
- Transformer loading is calculated to be 11.02% which is very low. It is recommended to load the transformer near optimum loading percentage 40.52%.
- No load and load losses taken from transformer test certificate.

NSEZ_ 2500 KVA TRANSFORMER 2:

- Efficiency is calculated to be 99.14%.
- Transformer loading is calculated to be 11.76% which is very low. It is recommended to load the transformer near optimum loading percentage 41.04%.
- No load and load losses taken from transformer test certificate.

Distribution transformer study results:



Figure 12: Transformer loading.

2.7 DIESEL GENERATORS (DG) PERFORMANCE ANALYSIS:

The facility has installed 4 Nos of DG of 1300 KVA for SEZ area, 2 Nos of DG of 1010 KVA and 1 No of DG of 300 KVA for NSEZ area as power back up.

The diesel generator performance study has been carried out for one hour using the power analyser for all DGs and details are as follows.

Table 11: Diesel generators performance

Description	Units	NSEZ_300KVA DG-1	NSEZ_300 KVA DG-2	NSEZ_1010 KVA DG-3	SEZ_1300 KVA DG-4	SEZ_1300 KVA DG-5	SEZ_1300 KVA DG-6	SEZ_1300 KVA DG-7
Make	-	CUMMINS	CUMMINS	CUMMINS	CUMMINS	CUMMINS	CUMMINS	CUMMINS
Model	-	KT4-58-Q3	Q3N-14-Q2	KT4-58-Q3	KT4-50-Q3-H	KT4-50-Q3-H	KT4-50-Q3-H	KT4-50-Q3-H
Serial Number	-	57345	63101	23434061	23417912	23417919	23417820	23417819
Rated KVA	KVA	300	300	1010	1300	1300	1300	1300
Initial tank volume	Litres	860	129	946	648	630	629	628
Final tank volume	Litres	755	134	868	585	576	628	643
Diesel consumed	Litres	105	4	87	205	148	110	189
Starting reading	KWH	0	0	0	0	0	0	0
Ending reading	KWH	318	11	333	858	864	738	883
Energy generated	KWH	318	11	333	858	864	738	883
Loading	%	27	8	29	65	68	58	62
SFC	KWH/Litres	3.01	2.76	3.45	3.44	3.62	3.51	3.86

Remarks:

NSEZ_300KVA DG-1

- The loading of DG is around 27% and SFC is calculated to be 3.01 KWH/Litres.

NSEZ_380 kVA DG-2

- The loading of DG is around 4% and SPC is calculated to be 2.75 kWh/Litres due to very low loading 4% because of limited loads operation during the D.G Performance Study.

NSEZ_1010 kVA DG-3

- The loading of DG is around 39% and SPC is calculated to be 3.45 kWh/Litres.

SEZ_1500 kVA DG-1

- The loading of DG is around 55% and SPC is calculated to be 3.44 kWh/Litres.

SEZ_1500 kVA DG-2

- The loading of DG is around 68% and SPC is calculated to be 3.53 kWh/Litres.

SEZ_1500 kVA DG-3

- The loading of DG is around 58% and SPC is calculated to be 3.51 kWh/Litres.

SEZ_1500 kVA DG-4

- The loading of DG is around 52% and SPC is calculated to be 3.56 kWh/Litres.
- The performance of DG is found to be satisfactory. The SPC can be further increased by increasing the loading of generator.

2.8 UPS PERFORMANCE

The UPS performance details are as follows:

Table 5.2: UPS performance

S. No	Location	Rated capacity, kVA	Input			Output			Loading, %	Efficiency, %	Application
			Measured voltage, V	Measured power, kW	Measured power, kVA	Measured voltage, V	Measured power, kW	Measured power, kVA			
1	S02 IT 1, Ground floor, UPS 01, 200 kVA	200	415	90.7	16.5	400	12.5	16.5	15	71	Work station
2	S02 IT 1, Ground floor, UPS 02, 200 kVA	200	410	10.8	16.0	390	8.2	16.1	6	71	Work station
3	S02 IT 1, Ground floor, UPS 01, 100 kVA	100	415	2.6	11.7	399	0.8	11.8	3	8	Lab
4	S02 IT 1, Ground floor, UPS 02, 200 kVA	200	412	12.8	21.2	400	12.0	22.0	6	71	Server Room
5	S02 IT 1, Ground floor, UPS 04, 800 kVA	800	413	16.9	23.1	400	13.8	25.5	4	60	Server Room
6	S02 IT 1, 1st floor, UPS 05, 300 kVA	300	415	2.0	11.0	400	0.0	10.0	0	0	Lab
7	S02 IT 1, 1st floor, UPS 05, 300 kVA	300	413	17.7	10.5	400	10.5	12.9	4	65	Server Room
8	S02 IT 1, 1st floor, UPS 05, 300 kVA	300	412	16.0	21.8	400	11.0	22.2	6	67	Server Room
9	1000, S02 01, Ground floor, UPS 05, 60 kVA	60	415	1.5	9.0	400	0.9	1.1	2	67	Server Source 1
10	1000, S02 01, Ground floor, UPS 05, 60 kVA	60	414	2.0	3.5	410	0.9	1.1	2	62	Server Source 1
11	1000, S02 01, Ground floor, UPS 05, 60 kVA	60	415	1.8	9.0	390	0.7	0.8	1	65	Server Source 2
12	1000, S02 01, Ground floor, UPS 05, 60 kVA	60	414	1.9	3.0	397	0.8	1.0	1	62	Server Source 3
13	1000, S02 01, Ground floor, UPS 05, 60 kVA					Off					
14	1000, S02 01, Ground floor, UPS 05, 60 kVA	60	414	0.0	7.4	390	0.4	3.4	8	70	Work station

S. No.	Location	Rated capacity, kVA	Input			Output			Loading, %	Efficiency, %	Application
			Measured voltage, V	Measured power, kW	Measured power, kVA	Measured voltage, V	Measured power, kW	Measured power, kVA			
10	1000, 200 02, Ground Floor, UPS 02, 120 kVA	120	424	7.4	10.0	299	2.9	3.1	0	24	Server Room
18	1000, 200 02, Ground Floor, UPS 02, 120 kVA	120	428	7.6	13.0	428	8.1	8.8	9	28	Server Room
17	1000, 200 02, Ground Floor, UPS 02, 120 kVA	120	422	12.2	16.0	400	10.0	10.8	0	26	Server Room
16	1000, 200 02, Ground Floor, UPS 02, 120 kVA	80	420	8.0	8.0	400	8.0	8.1	8	80	Work station
19	1000, 200 02, Ground Floor, UPS 04, 80 kVA	80	420	0.0	0.0	299	0.0	4.1	0	01	Work station
20	500 IT 2, Ground Floor, UPS 01, 120 kVA	120	428	11.7	18.8	401	8.0	9.0	8	80	Server Room, Source 1
21	500 IT 2, Ground Floor, UPS 02, 120 kVA	120	428	11.2	14.0	400	8.0	9.9	0	87	Server Room, Source 1
22	500 IT 2, Second Floor, UPS 02, 120 kVA	120	428	12.8	18.8	401	8.8	9.8	8	80	Server Room, Source 2
23	500 IT 2, Second Floor, UPS 04, 120 kVA	120	427	11.1	15.0	402	10.0	11.4	10	70	Server Room, Source 2
24	500 IT 2, Second Floor, UPS 01, 120 kVA	120	428	0.0	12.8	299	0.1	9.0	0	88	Work station
25	500 IT 2, Second Floor, UPS 02, 120 kVA	120	427	15.7	17.0	400	11.5	11.4	10	87	Work station
26	500 IT 2, Second Floor, UPS 02, 120 kVA	120	428	10.8	12.2	400	7.8	10.0	0	87	Work station
37	Cartron Area, second floor, UPS 01, 30 kVA	30	423	2.8	2.8	400	2.2	2.8	11	60	Cartron Area
28	500 IT 2, Second Floor, UPS 04, 180 kVA	180	422	0.1	4.2	418	2.7	1.8	1	07	SDS/DR Source
29	500 IT 2, Second Floor, UPS 05, 180 kVA	180	422	4.8	5.0	400	2.7	5.4	0	88	SDS/DR Source

Remarks:

- The loading of the UPS is lesser than 10 % for all UPS.
- The efficiency of the UPS is lower due to low loading of UPS & Few UPS output power is measured to be zero.



CHAPTER – 3: POWER QUALITY STUDY FOR CRITICAL FEEDERS

ACTUAL CURRENT HARMONICS CALCULATION

S.No	Transformer	Actual Measurements						Full Load Condition		Actual Load Condition		
		Rated kVA	Pri Volts	Sec Volts	Impedance, %	FLA (IL)	ISC (L-L)	ISC/IL	Harmonics limit	A (IL)	ISC/IL	Harmonics limit
1	SEZ (6300 kVA) Transformer-1	6300	33000	11000	6.76	331	4892	15	5	15.06	325	15
2	SEZ (2500 kVA) Chiller Transformer-1	2500	11000	415	6.11	3478	56925	16	5	751.0	76	12
3	SEZ (2500 kVA) Chiller Transformer-2	2500	11000	415	6.11	3478	56925	16	5	512.0	111	15
4	SEZ IT-03 (1500 kVA) CSS TRANSFORMER-1	1500	11000	433	5.77	2000	34664	17	5	151.2 3	229	15
5	SEZ IT-03 (1500 kVA) CSS TRANSFORMER-2	1500	11000	433	5.77	2000	34664	17	5	288.0 2	120	15
6	SEZ IT-01 (2000 kVA) CSS TRANSFORMER 03	2000	11000	433	5.98	2667	44596	17	5	300.0 1	149	15
7	SEZ IT-01 (2000 kVA) CSS TRANSFORMER 04	2000	11000	433	5.98	2667	44596	17	5	264.6 5	169	15
8	SEZ IT-02 (1250 kVA) CSS TRANSFORMER 01	1250	11000	433	5.68	1667	29344	18	5	71.0	413	15
9	NSEZ (2500 kVA) TRANSFORMER 1	2500	33000	415	5.89	3478	59051	17	5	398.0	148	15
10	NSEZ (2500 kVA) TRANSFORMER 2	2500	33000	415	5.89	3478	59051	17	5	417.5	141	15

POWER QUALITY ANALYSIS SUMMARY

S.No	Location	Feeder ID	Observation
1.	SEZ Area	Main H.T Incomer For SEZ	Average current harmonics is around 16.83% THDA with impact of 5 th , 7 th order harmonics due to non-linear loads such as Variable frequency drive in the motors, Servers & workstation UPS, VRF, LED lights etc., & The average power factor is around 0.90 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
2.	SEZ Area	Incomer For IT 01 RHS	Average current harmonics is around 37.13% THDA with impact of 5 th , 7 th order harmonics level due to UPS, VFD fitted AHU & VRF units in SEZ section
3.	NSEZ Area	Main H.T Incomer For NSEZ	Average current harmonics is around 8.47% THDA with impact of 5 th , 7 th order harmonics due to non-linear loads such as Variable frequency drive in the motors, Servers & workstation UPS, VRF, LED lights etc., & The average power factor is around 0.89 leading Power Factor from Low Loading of UPS around 1 to 8 % in NSEZ section
4.	SEZ Area	Incomer For IT 01 LHS	Average current harmonics is around 27.2% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRF units in SEZ section & The average power factor is around 0.89 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section

5.	SEZ Area	Incomer For IT 02 From CSS-1	Average current harmonics is around 21.5% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.87 leading Power Factor from Low Loading of UPS around 1 to 2 % in SEZ section
6.	SEZ Area	Incomer For IT-03 RHS	Average current harmonics is around 30.6% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.88 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
7.	SEZ Area	Incomer For IT-03 LHS	Average current harmonics is around 25.19% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.79 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
8.	NSEZ Area	Incomer For SDC 1 LHS	Average current harmonics is around 25.5% THDA with impact of 5 th & 7 th order harmonics level due to UPS, VFD fitted AHU & VRV units in NSEZ section & The average power factor is around 0.86 leading Power Factor from Low Loading of UPS around 1 to 8 % in NSEZ section
9.	NSEZ Area	Incomer For SDC 2 Source 2	Average current harmonics is around 16.3% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRV units in NSEZ section & The average power factor is around 0.89 leading Power Factor from Low Loading of UPS around 1 to 8 % in NSEZ section
10.	SEZ Area	SEZ Area_ 33/11 Kv 6300 KVA Transformer 1	Average current harmonics is around 23.46% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.91 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
11.	SEZ Area	IT-03_ 1500 KVA CSS Transformer-1	Average current harmonics is around 18.43% THDA with impact of 5 th , 7 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.92 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
12.	SEZ Area	IT-03_ 1500 KVA CSS Transformer-2	Average current harmonics is around 26.2% THDA with impact of 5 th , 7 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.91 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
13.	SEZ Area	IT-01_ 2000 KVA CSS Transformer-3	Average current harmonics is around 20.64% THDA with impact of 5 th , 7 th & 11 th order harmonics level

			due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.94 leading Power Factor from Low Loading of UPS around 2 to 13 % in SEZ section
14.	SEZ Area	IT-01_ 2000 KVA CSS Transformer-4	Average current harmonics is around 25.56% THDA with impact of 5 th , 7 th & 11 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section
15.	SEZ Area	IT-02_ 1250 KVA CSS Transformer-1	Average current harmonics is around 18.9% THDA with impact of 3 rd , 5 th & 7 th order harmonics level due to UPS, VFD fitted AHU & VRV units in SEZ section & The average power factor is around 0.89 leading Power Factor from Low Loading of UPS around 1 to 2 % in SEZ section

Power Quality Summary:

Scope of Work	Description
Voltage & Current	To see if the parameters are within the specified limits.
Frequency	To see if the frequency is within the specified limits.
Power Factor study	To analyses the running Power factor in the Transformer within the specified limit
Harmonics	Measures and records harmonics and inter harmonics up to the 50th. Related data such as THD (Total Harmonic Distortion), and K- factor are measured. Harmonics are periodic distortions of voltage, current, or power sine waves.
Flicker	Flicker quantifies the luminance fluctuation of lamps caused by supply voltage variations.
Dips & Swells	Dips & Swells records Dips, Interruptions, Rapid Voltage Changes, and Swells. Dips (Sags) and Swells are fast deviations from the normal voltage. The occurrence of Dips (Sags) and Swells may indicate a weak power distribution system.
Power	Monitor and recording of power consumption.
Unbalance	The ratio of the negative sequence voltage component to the positive sequence voltage component
Transients	Transients are fast spikes on the voltage waveform. Transients can have so much energy that sensitive electronic equipment can be affected or even damaged.

3.1 OVERVIEW

All electrical devices work properly without any failure, if input power is well within set limits of electrical properties. So, Power Quality Study determines the health of the electrical parameters to load ends. Without the proper power, an electrical device (or load) may malfunction, fail prematurely or not operate at all. There are many ways in which electric power can be of poor quality and many more causes of such poor-quality power.

Some of the parameters that influence power quality are explained below. Voltage, Current & frequency

Voltage and frequency should be close to the nominal values of 230 V and 50 Hz.

VOLTAGE

Permissible limits for voltage:

Phase Voltage (V)	Neutral-Ground (V)	Unbalance Voltage (%)
207-253	<2	<2%

CURRENT

Permissible limits for Current: Current unbalance should be less than 10%.

FREQUENCY

Permissible limits for Frequency: 49.5-50.5 Hz

Effects of operating equipment at lower frequency

At lower frequency the performance of component is poor in view of power, life of equipment and safety.

Motors will run slower, transformer output will reduce, harmonics will increase in the power system.

POWER FACTOR

It is recommended to maintain the Power Factor close to unity.

DIPS & SWELLS

Dips & Swells records Dips, Interruptions, Rapid Voltage Changes, and Swells. Dips (Sags) and Swells are fast deviations from the normal voltage. Magnitude may be ten up to hundreds of volts. Duration may vary from a half cycle to a few seconds as defined in EN61000-4-30.

During a dip the voltage drops; during a swell the voltage rises. The trigger conditions for dips and swells are threshold and hysteresis. Dips and swells are characterized by duration, magnitude, and time of occurrence.

The occurrence of Dips (Sags) and Swells may indicate a weak power distribution system. It may cause reset and loss of data in computer systems and process controllers. By monitoring the voltage and current trend at the power service entrance, you can find out if the cause of the voltage dip is inside or outside the building. The cause is inside the building (downstream) when voltage drops while current rises; it is outside (upstream) when both voltage and current drop.

Dips (V)	Swells (V)
< 207	> 253

Effects of Voltage Swells

Over-voltage can drive up amperage and temperature even on lightly loaded motors. Thus, motor life can be shortened by high voltage.

Operating a motor beyond its nominal range of its voltage requirements will reduce its efficiency and cause premature failure.

Variations in the voltage will have a significant impact on the motor starting torque since it will vary as the square of the flux density.

With a 10 percent increase or decrease in voltage from that given on the nameplate, the heating at rated horsepower load may increase. Such operation for extended periods of time may accelerate the deterioration of the insulation system.

Inrush current goes up with higher voltage, damaging the protective devices.

A 5% increase in voltage results in a 50% reduction in bulb life

Increase in Voltage can lead to decrease in efficiency, Power factor and Equipment life.

HARMONICS

As per CEA Regulations,

1. The total harmonic distortion for voltage at the connection point should not exceed 5% limits, with no individual harmonics higher than 3%.
2. The total harmonic distortion for current drawn from the transmission system at the connection point shall not exceed 8%.

IEEE Power Quality Standards	{	IEEE 1433	: Power Quality Definitions
		IEEE 519	: Harmonic Control in Electrical Power Systems
		IEEE 1159	: Monitoring Electric Power Quality
		IEEE P1564	: Voltage Sag Indices (Prelim)
		IEEE P1453	: Voltage flicker (Prelim)
		IEEE P446	: Emergency and standby power

Harmonics are periodic distortions of voltage, current, or power sine waves. A waveform can be considered as a combination of various sine waves with different frequencies and magnitudes. The contribution of each of these components to the full signal is measured. Readings can be given as a percentage of the fundamental, as a percentage of all harmonics combined (rms value), or as rms value. Harmonics are often caused by non-linear loads such as switched mode power supplies in computers, TV's, and adjustable speed motor drives. Harmonics can cause transformers, conductors, and motors to overheat.

The Table below represents harmonics level limit (IEE 519)

Current Distortion Limits for General Distribution Systems (120 V Through 69.000V)

Maximum Harmonic Current Distortion in Percent of I_L Individual Harmonic Order (Odd Harmonics)

I_{sc}/I_L	<11	$11<h<17$	$17<h<23$	$23<h<35$	$35<h$	TDD
$<20^*$	4.0	2.0	1.5	0.6	0.3	5.0
$20<50$	7.0	3.5	2.5	1.0	0.5	8.0
$50<100$	10.0	4.5	4.0	1.5	0.7	12.0
$100<1000$	15.0	7.0	6.0	2.5	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

Where:

I_{sc} = Maximum short-circuit current at PCC.

I_L = Maximum demand load current (fundamental frequency component) at PCC.

The Table below represents Voltage harmonics level limit:

Bus Voltage at PCC	Individual Voltage Distortion (%)	Total Voltage Distortion THD (%)
69kV and below	3	5
69.001kV thru 161kV	1.5	2.5
161kV and above	1	1.5

Table 13: Voltage harmonics level.

FLICKER

Flicker quantifies the luminance fluctuation of lamps caused by supply voltage variations. The algorithm behind the measurement meets EN61000-4-15 and is based on a perceptual model of the human eye / brain sensory system. The Analyser converts duration and magnitude of voltage variations into an 'annoyance factor' caused by the resulting flicker of a 60 W lamp. A high flicker reading means that most people would find the luminance changes irritating. The voltage variation can be relatively small.

Permissible limits (IEC 61000) PST < 1 PLT < 1

Flicker	
PST	PLT
<1	<1

TRANSIENTS

Transients are fast spikes on the voltage waveform. Transients can have so much energy that sensitive electronic equipment can be affected or even damaged. Disturbances such as transients in a power distribution system can cause malfunctions in many types of equipment. For example,

computers may reset, and equipment subjected to repeated transients can eventually fail. Events occur intermittently, making it necessary to monitor the system for a period of time to find them.

Transient (V peak)	<354
--------------------	------

3.2 HARMONICS EFFECTS OF FACILITY

- Voltage Harmonics can cause additional heating in induction and synchronous motors and generators.
- Voltage Harmonics with high peak values can weaken insulation in cables, windings, and capacitors.
- Voltage Harmonics can cause malfunction of different electronic components and circuits that utilize the voltage waveform for synchronization or timing.
- Current Harmonics in motor windings can create Electromagnetic Interference (EMI).
- Current Harmonics flowing through cables can cause higher heating over and above the heating that is created from the fundamental component.
- Current Harmonics flowing through a transformer can cause higher heating over and above the heating that is created by the fundamental component.
- Current Harmonics flowing through circuit breakers and switchgear can increase their heating losses.
- RESONANT CURRENTS which are created by current harmonics and the different filtering topologies of the power system can cause capacitor failures and/or fuse failures in the capacitor or other electrical equipment.
- False tripping of circuit breakers and protective relays.
- Resonance is the most serious consequence when connecting a power capacitor in the LV distribution system. The capacitance of the capacitor forms a resonant circuit in conjunction with the feeding transformers and cables. The self-resonant frequency of this circuit lies typically between 250 and 600Hz i.e. in the region of the 5 and 11 harmonics and leads to the following effects.
- **Overloading** of capacitors, transformers, and transmission equipment's
- **Interference** with metering, control system, computers, and electrical gear.

3.3 EFFECTS OF VOLTAGE SWELLS

- Over-voltage can drive up amperage and temperature even on lightly loaded motors. Thus, motor life can be shortened by high voltage.

- Operating a motor beyond its nominal range of its voltage requirements will reduce its efficiency and cause premature failure.
- Variations in the voltage will have a significant impact on the motor starting torque since it will vary as the square of the flux density.
- With a 10 percent increase or decrease in voltage from that given on the nameplate, the heating at rated horsepower load may increase. Such operation for extended periods of time may accelerate the deterioration of the insulation system.
- Inrush current goes up with higher voltage, damaging the protective devices.
- A 5% increase in voltage results in a 50% reduction in bulb life
- Increase in Voltage can lead to decrease in efficiency, Power factor and Equipment life.

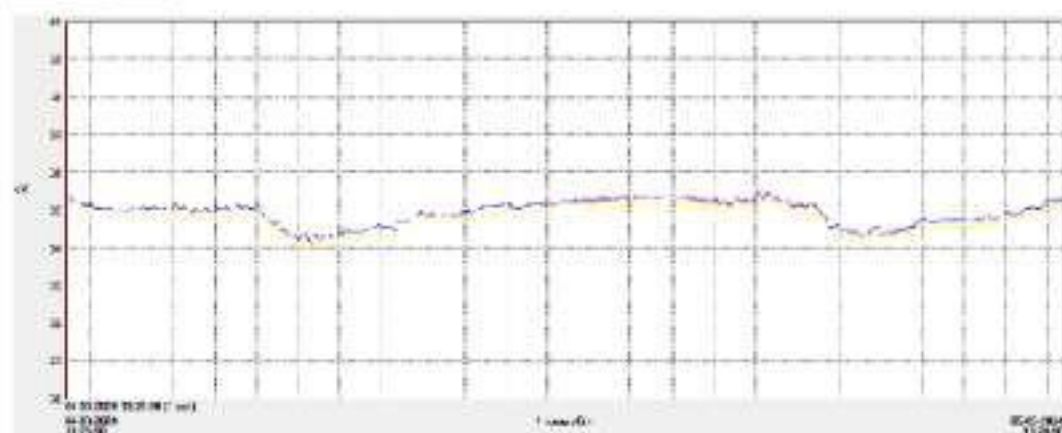
3.4 EFFECTS OF OPERATING EQUIPMENT AT LOWER FREQUENCY

- At lower frequency the performance of component is poor in view of power, life of equipment and safety.
- Motors will run slower, transformer output will reduce, harmonics will increase in the power system.

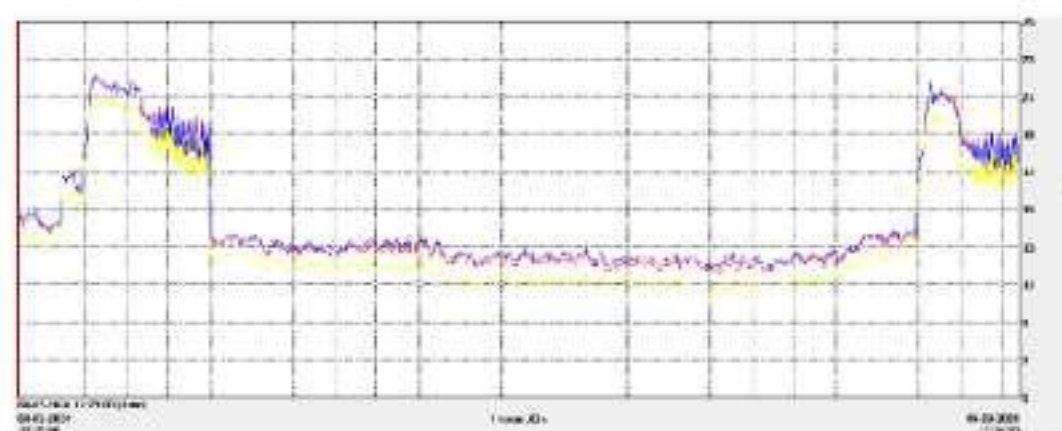
3.5 MAIN INCOMER FOR SEZ AREA

Power Quality Monitoring Summary					
Utility Name	Main Incomer for SEZ Area				
Date of Analysis	From 04-03-2024 to 05-03-2024				
Duration of Analysis	From 13:25:00 to 13:24:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.27	49.81	50.01	
RMS Voltage (VRN)	V	20473	19711	20179	
RMS Voltage (VYN)	V	20370	20318	20069	
RMS Voltage (VBN)	V	20491	19729	20179	
RMS Voltage (VRY)	V	35460	34140	34950	
RMS Voltage (VYB)	V	35280	35190	34760	
RMS Voltage (VBR)	V	35490	34170	34950	
RMS Current (IR)	Ampere	22.38	11.64	14.72	
RMS Current (IY)	Ampere	21.36	10.44	13.70	
RMS Current (IB)	Ampere	22.38	11.88	14.80	
Voltage THD (V)	%	1.5	1.5	1.5	
Current THD (I)	%	17.8	15.9	16.83	
Unbalance Voltage	%	0.4	0.4	0.3	Acceptable range.
Unbalance Current	%	7.8	4.9	2.7	Acceptable range.
Real Power	KW	1307	609.9	782.3	
Apparent Power	KVA	1339	648.4	853.5	
Reactive Power	KVAR	-120.1	-300.5	-252.6	
Average Power Factor	PF	0.97	0.86	0.90	Acceptable range.

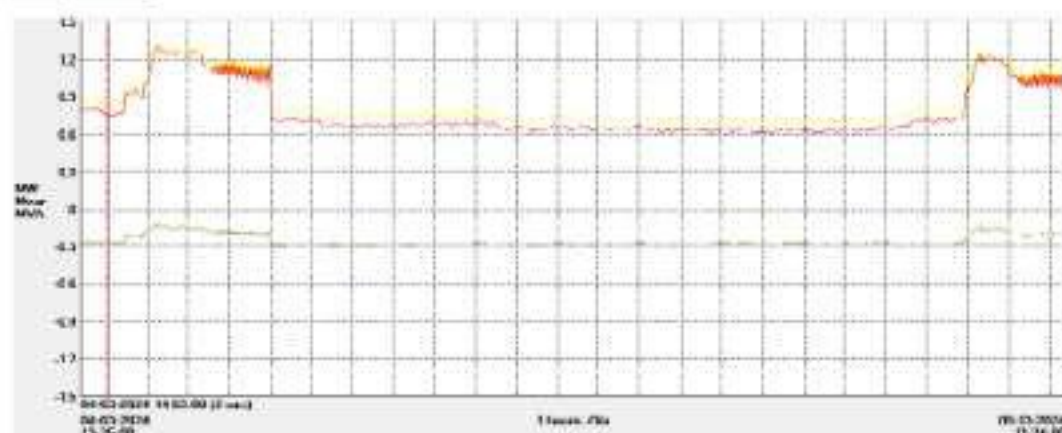
Voltage profile



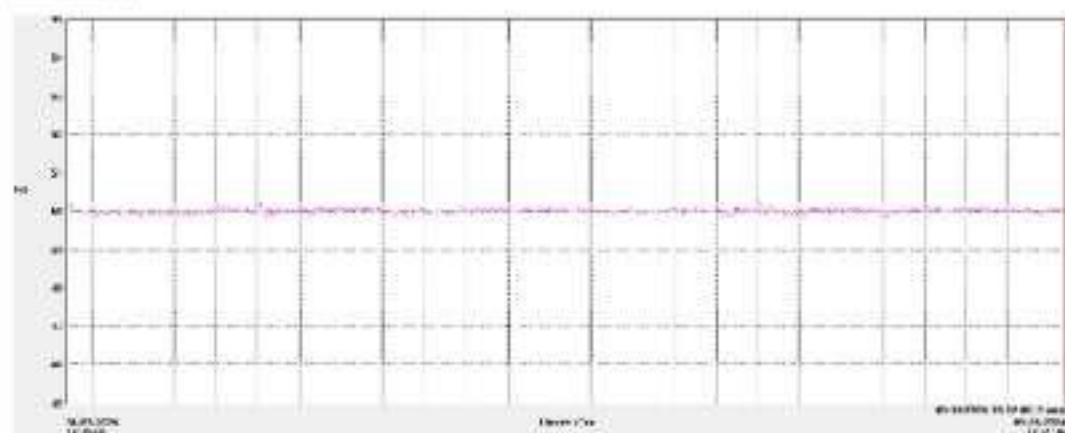
Current profile



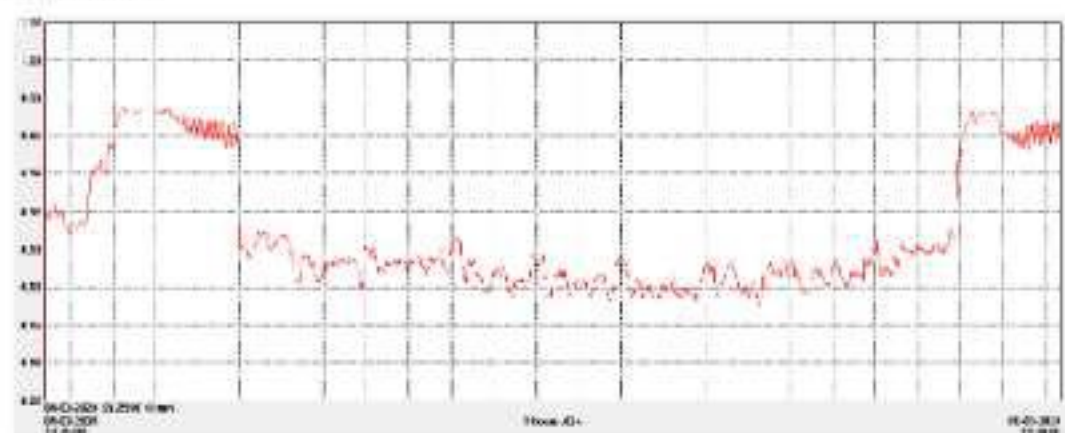
Load profile.



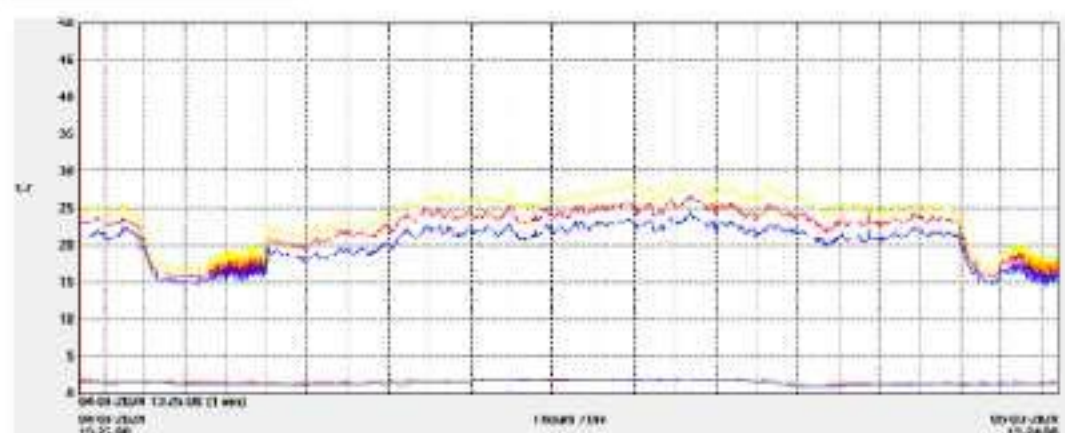
Frequency



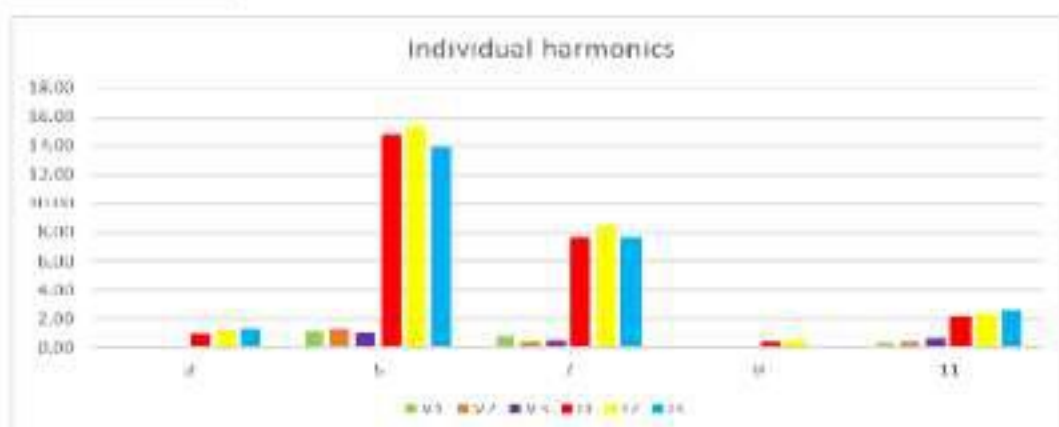
Power factor



Total harmonics distortion



Individual harmonics:



Remarks

- Observed average current harmonics level is around 16.8% due to non-linear loads such as Variable frequency drive in the motors, Servers & workstation UPS, VV, LED lights etc.,
- The average power factor is around -0.90 leading due to low loading UPS.

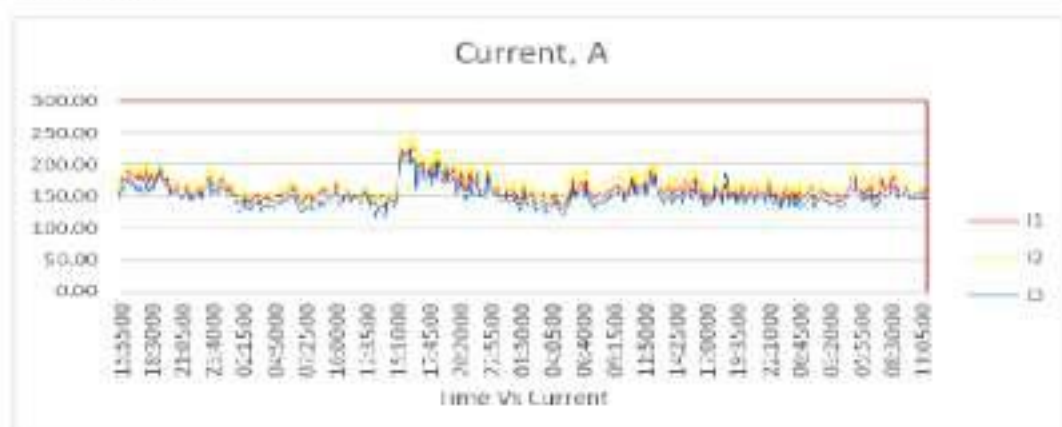
3.6 INCOMER FOR IT 01 RHS

Power Quality Monitoring Summary					
Utility Name	Incomer for IT 01 RHS				
Date of Analysis	From 08-03-2024 to 11-03-2024				
Duration of Analysis	From 15:55:00 to 11:25:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.18	49.68	49.99	
RMS Voltage (VRN)	V	247	236	243	
RMS Voltage (VYN)	V	249	238	245	
RMS Voltage (VBN)	V	246	235	243	
RMS Voltage (VRY)	V	427	408	421	
RMS Voltage (VYB)	V	431	412	425	
RMS Voltage (VBR)	V	426	412	420	
RMS Current (IR)	Ampere	229.20	130.00	160.72	
RMS Current (IY)	Ampere	243.80	136.90	171.65	
RMS Current (IB)	Ampere	218.60	117.60	150.84	
Voltage THD (V)	%	2.23	2.02	2.1	
Current THD (I)	%	40.62	34.96	37.13	
Unbalance Voltage	%	0.39	0.23	0.31	Acceptable range.
Unbalance Current	%	10.24	3.52	7.74	Acceptable range.
Real Power	kW	157.00	88.00	109.60	
Apparent Power	kVA	167.00	95.00	117.68	
Reactive Power	KVAR	52.00	-32.00	15.76	
Average Power Factor	PF	1.00	-1.00	1.00	Acceptable range.

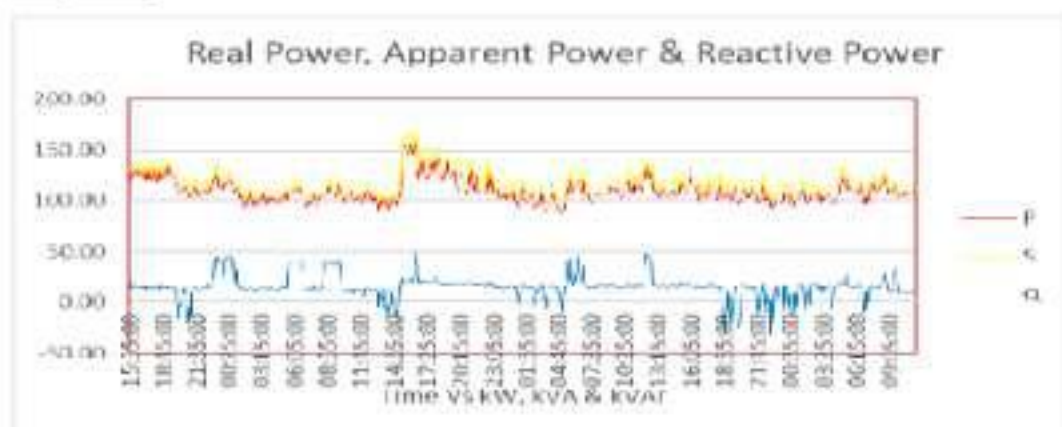
Voltage profile



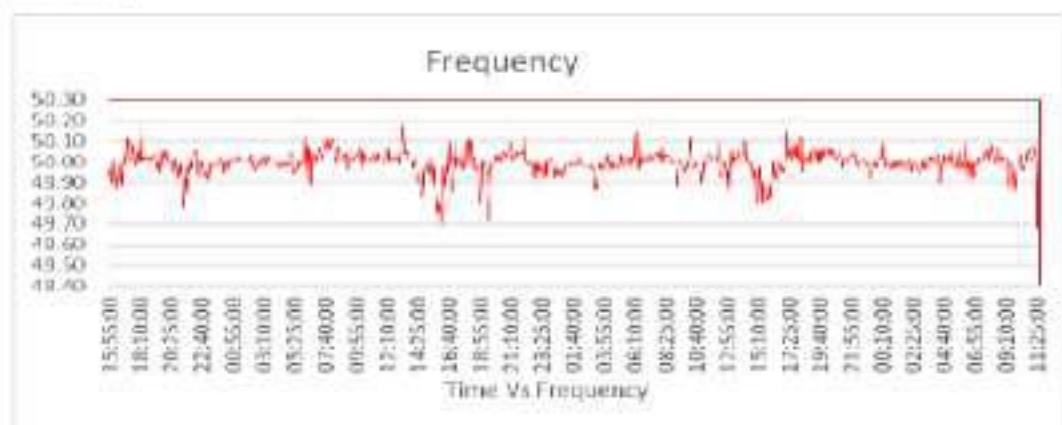
Current profile



Load profile



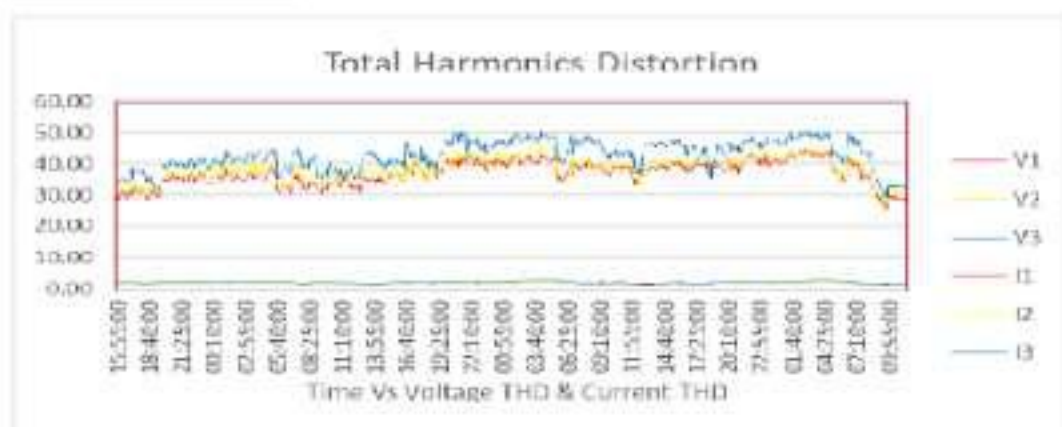
Frequency



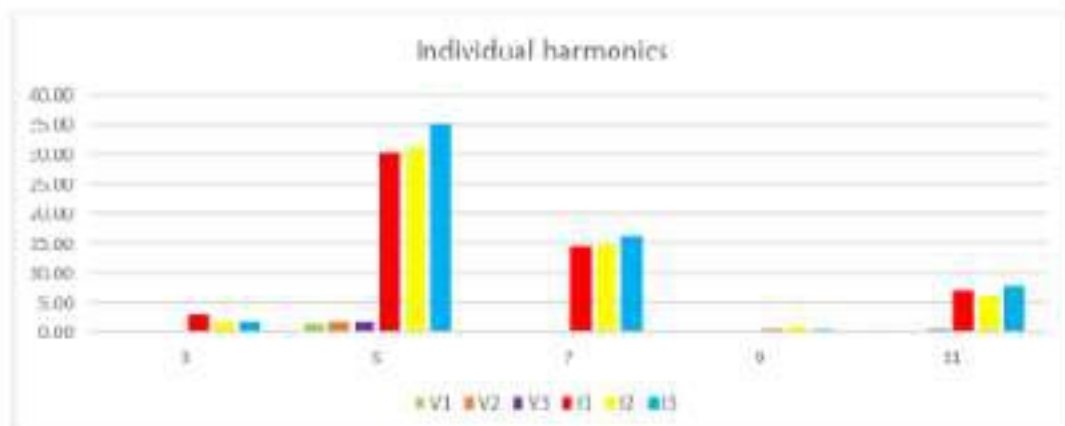
Power factor



Total harmonics distortion



Individual harmonics:



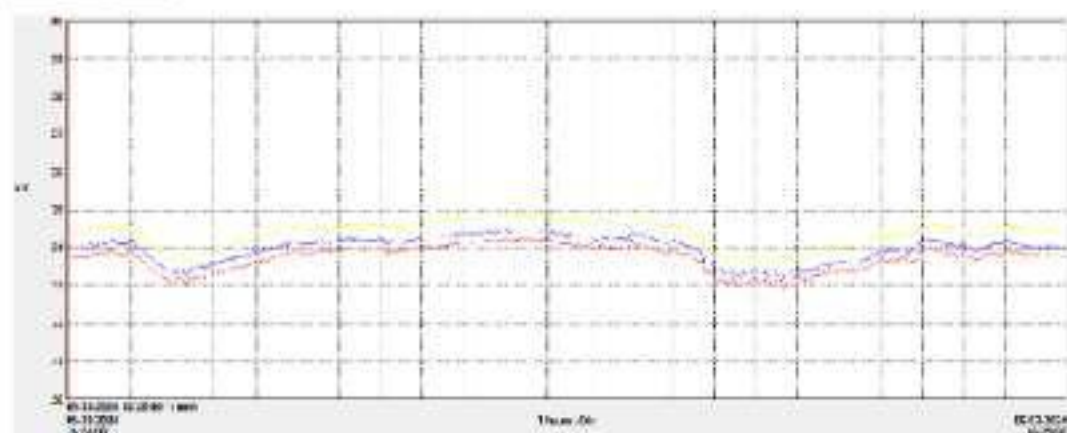
Remarks

- Observed average current harmonics level is around 37.13% due to UPS, VFD fitted AHU & VRV units.

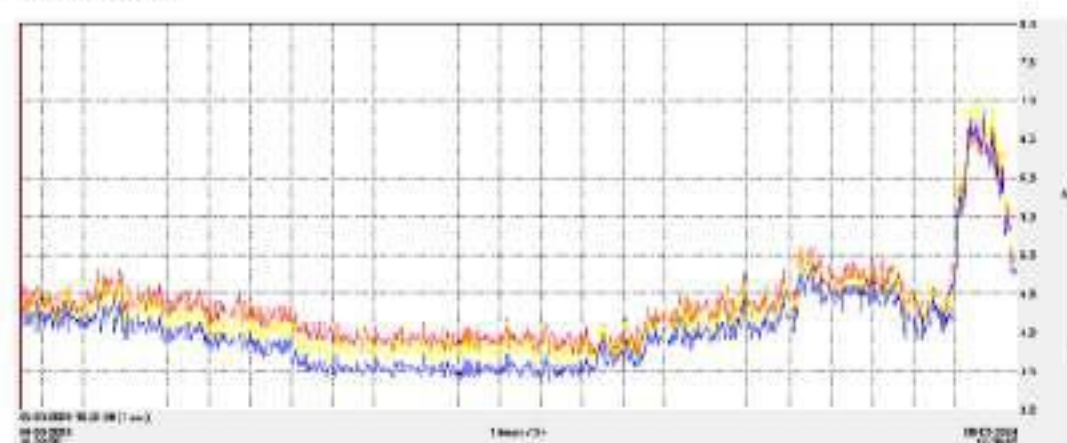
3.7 MAIN INCOMER FOR NON-SEZ AREA

Power Quality Monitoring Summary					
Utility Name	Main Incomer for HCL NON-SEZ Area				
Date of Analysis	From 05-03-2024 to 06-03-2024				
Duration of Analysis	From 16:28:00 to 16:29:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.22	49.74	49.98	
RMS Voltage (VRN)	V	19781	19018	19480	
RMS Voltage (VYN)	V	20162	19850	19850	
RMS Voltage (VBN)	V	19919	19642	19619	
RMS Voltage (VRY)	V	34260	32940	33740	
RMS Voltage (VYB)	V	34920	34380	34380	
RMS Voltage (VBR)	V	34500	34020	33980	
RMS Current (IR)	Ampere	6.72	3.64	4.38	
RMS Current (IY)	Ampere	7.07	3.50	4.28	
RMS Current (IB)	Ampere	6.86	3.36	4.09	
Voltage THD (V)	%	1.50	1.50	1.50	
Current THD (I)	%	8.90	8.00	8.47	
Unbalance Voltage	%	1.10	0.90	1.00	Acceptable range.
Unbalance Current	%	7.20	9.00	3.70	Acceptable range.
Real Power	kW	407.30	172.70	226.30	
Apparent Power	kVA	409.00	212.30	250.30	
Reactive Power	KVAR	-36.94	0.00	-5.96	
Average Power Factor	PF	0.99	0.81	0.89	Acceptable range.

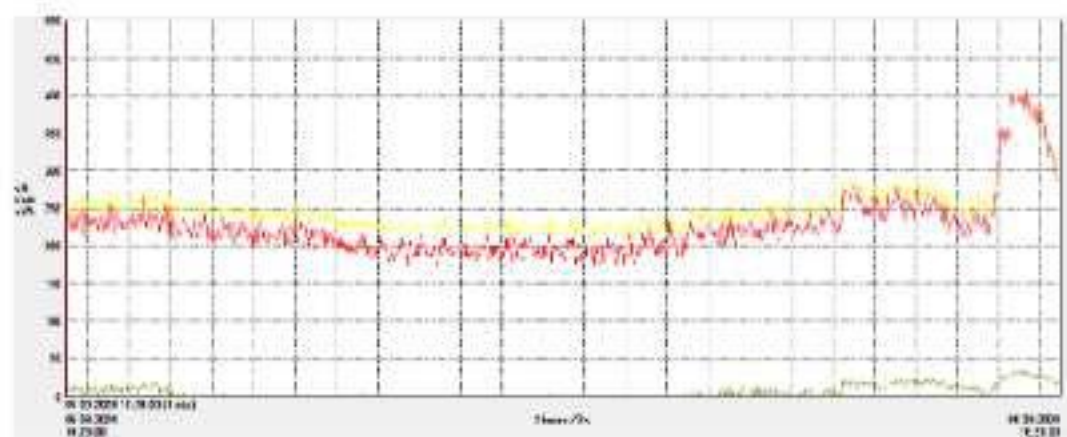
Voltage profile



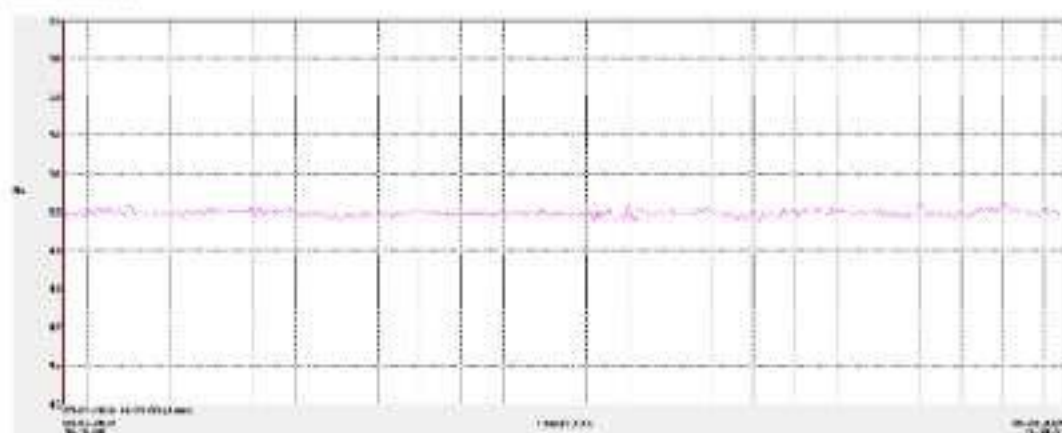
Current profile



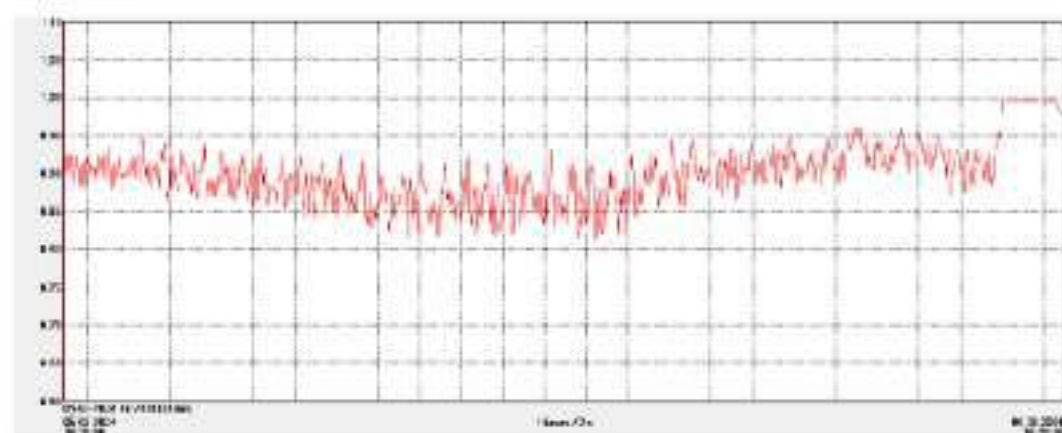
Load profile



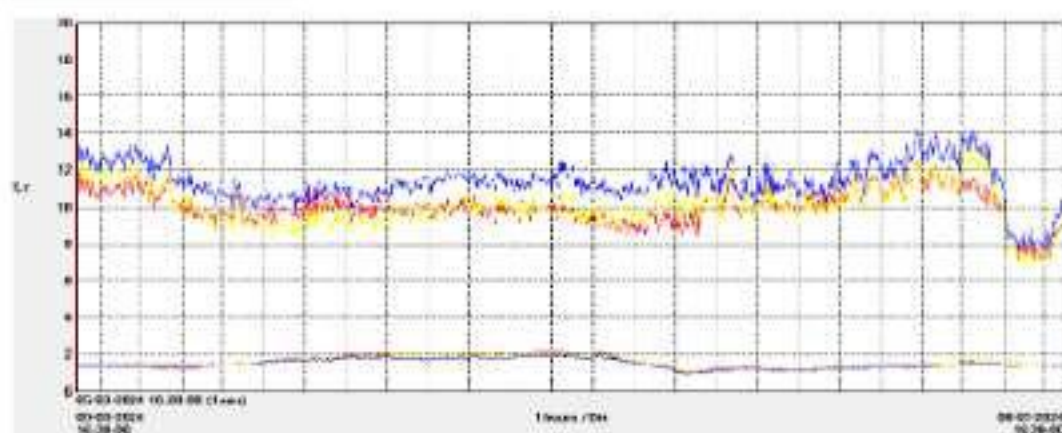
Frequency



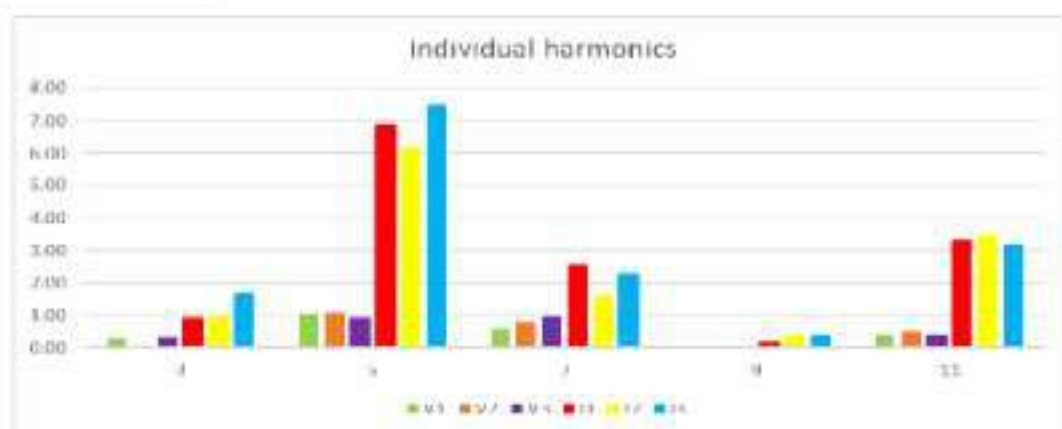
Power factor



Total harmonics distortion



Individual harmonics:



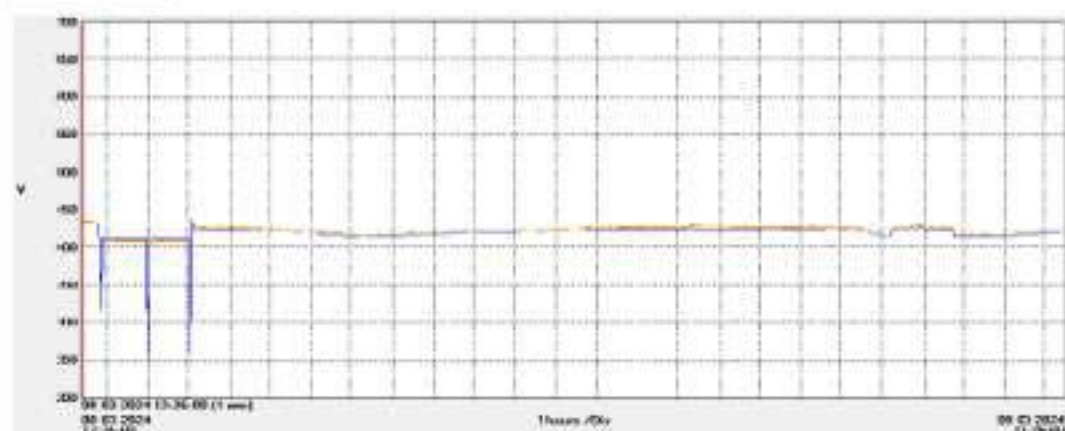
Remarks

- Observed average current harmonics level is around 8.47% due to UPS, VFD fitted AHU & VRV units.

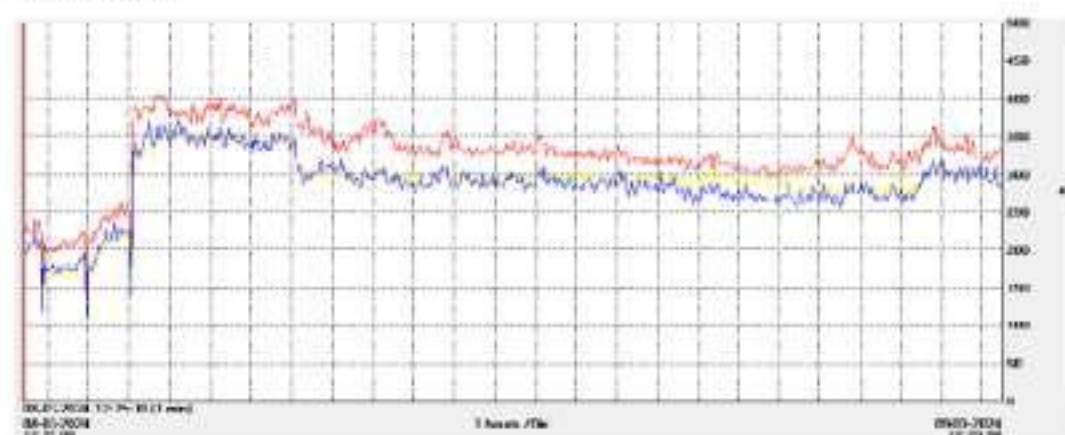
3.8 INCOMER FOR IT 01 LHS

Power Quality Monitoring Summary					
Utility Name	Incomer for IT 01 LHS				
Date of Analysis	From 08-03-2024 to 09-03-2024				
Duration of Analysis	From 12:25:00 to 12:29:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.22	49.44	49.99	
RMS Voltage (VRN)	V	253	132	244	
RMS Voltage (VYN)	V	253	131	244	
RMS Voltage (VBN)	V	252	131	243	
RMS Voltage (VRY)	V	439	228	423	
RMS Voltage (VYB)	V	439	228	422	
RMS Voltage (VBR)	V	436	227	421	
RMS Current (IR)	Ampere	411	130	329	
RMS Current (IY)	Ampere	366	108	293	
RMS Current (IB)	Ampere	373	111	289	
Voltage THD (V)	%	2.3	2.1	2.2	
Current THD (I)	%	28.5	25.0	27.2	
Unbalance Voltage	%	5.0	0.2	0.3	Acceptable range.
Unbalance Current	%	15.3	3.5	8.3	Acceptable range.
Real Power	KW	256.8	71.94	197.5	
Apparent Power	KVA	278.6	82.23	220.9	
Reactive Power	KVAR	23.94	-56.89	-42.02	
Average Power Factor	PF	0.95	0.77	0.89	Acceptable range.

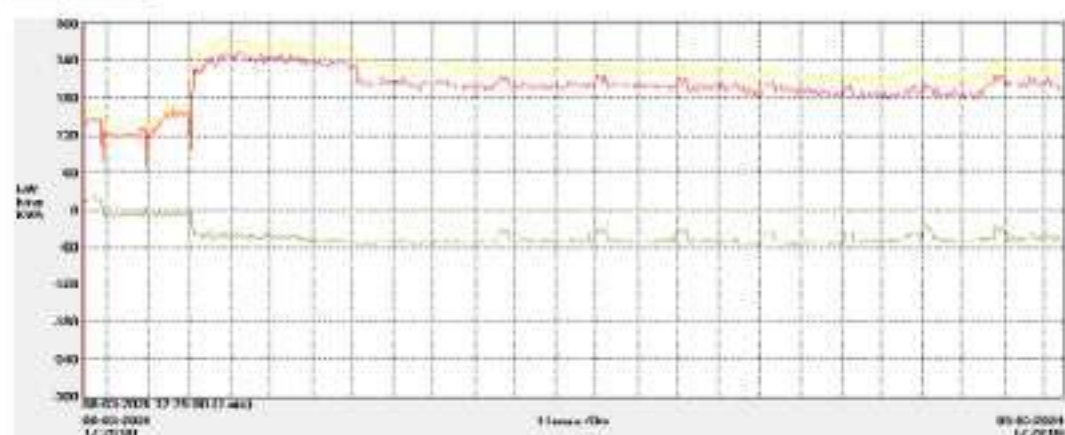
Voltage profile



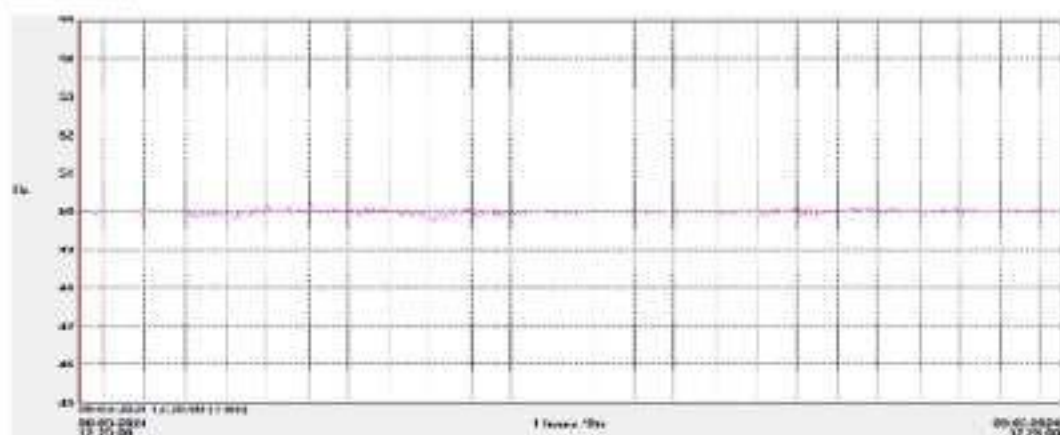
Current profile



Load profile



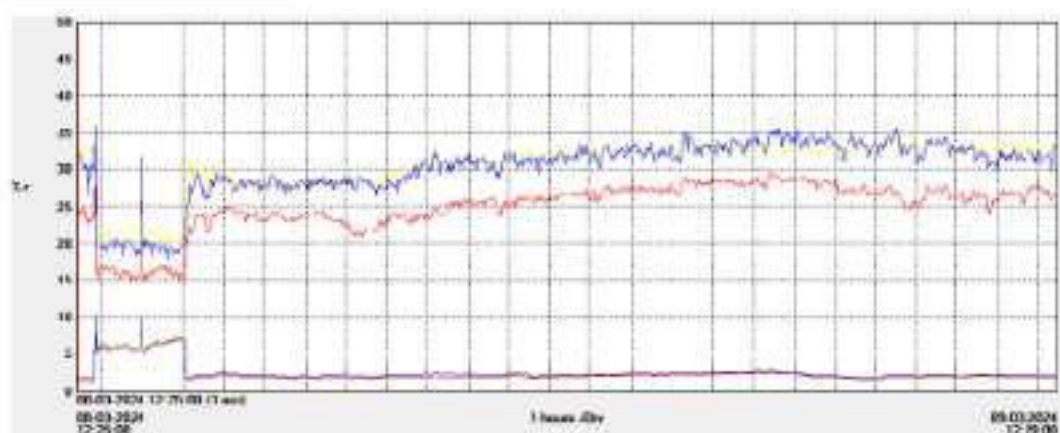
Frequency



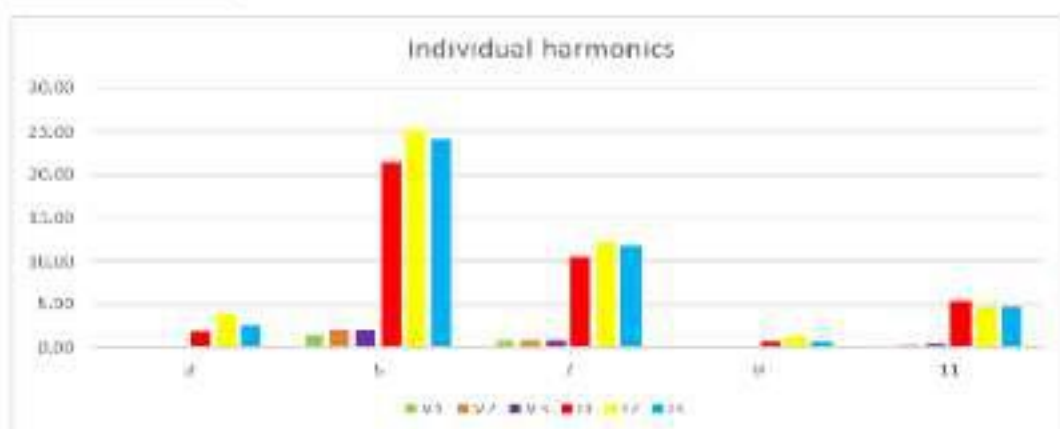
Power factor



Total harmonics distortion



Individual harmonics:



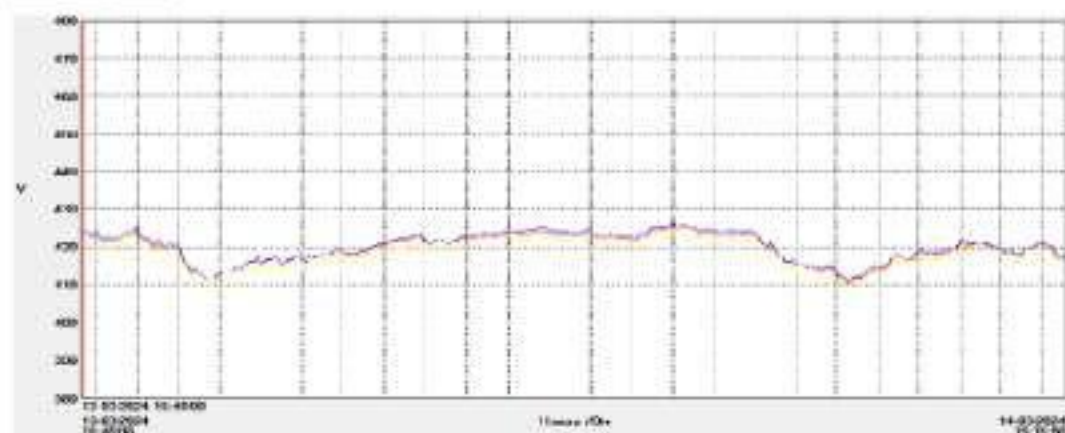
Remarks

- Observed average current harmonics level is around 27.2% due to UPS, VFD fitted AHU & VRV units.

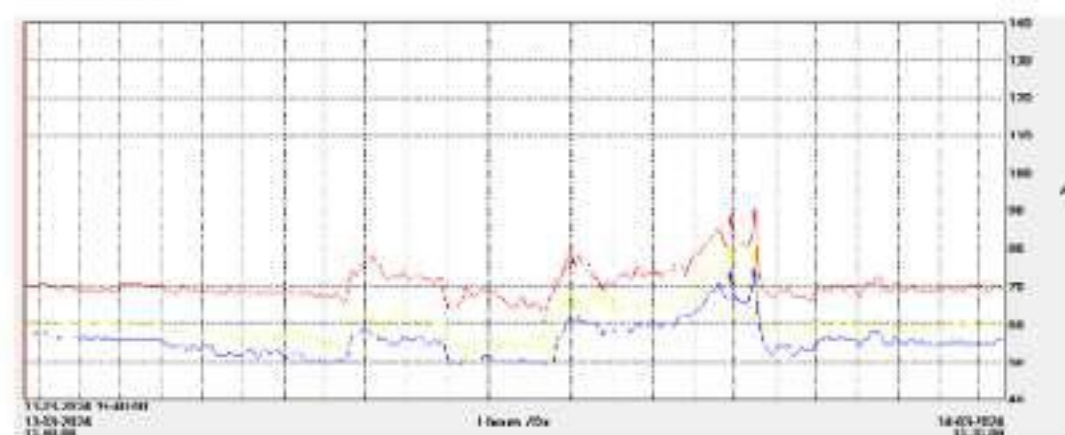
3.9 INCOMER FOR IT 02 _ FROM CSS-1

Power Quality Monitoring Summary					
Utility Name	Incomer for IT02_ From CSS-1				
Date of Analysis	From 13-03-2024 to 14-03-2024				
Duration of Analysis	From 15:40:00 to 15:35:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.18	49.81	49.99	
RMS Voltage (VRN)	V	246	237	242	
RMS Voltage (VYN)	V	245	236	241	
RMS Voltage (VBN)	V	247	237	243	
RMS Voltage (VRY)	V	427	411	420	
RMS Voltage (VYB)	V	425	409	418	
RMS Voltage (VBR)	V	427	411	420	
RMS Current (IR)	Ampere	92	61	71	
RMS Current (IY)	Ampere	81	50	60	
RMS Current (IB)	Ampere	76	49	56	
Voltage THD (V)	%	1.5	1.3	1.4	
Current THD (I)	%	24.03	25.4	21.5	
Unbalance Voltage	%	0.4	0.2	0.3	Acceptable range.
Unbalance Current	%	22.8	9.5	13.6	Acceptable range.
Real Power	KW	53.47	33.96	40.13	
Apparent Power	KVA	59.96	41.32	45.82	
Reactive Power	KVAR	-10.63	-13.79	-12.26	
Average Power Factor	PF	0.9	0.81	0.87	Acceptable range.

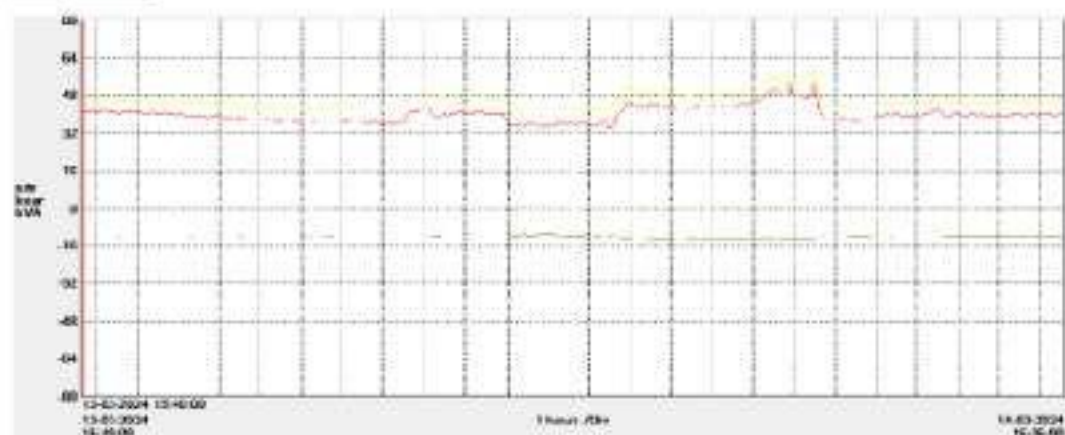
Voltage profile



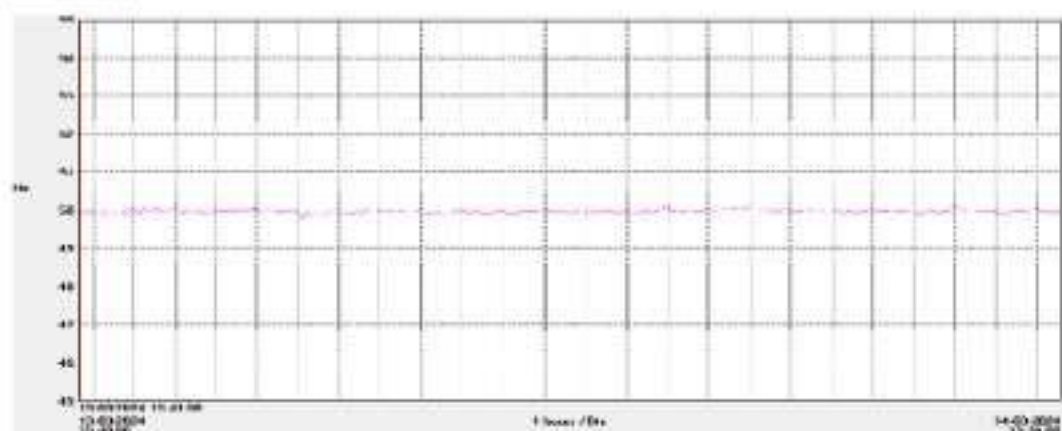
Current profile



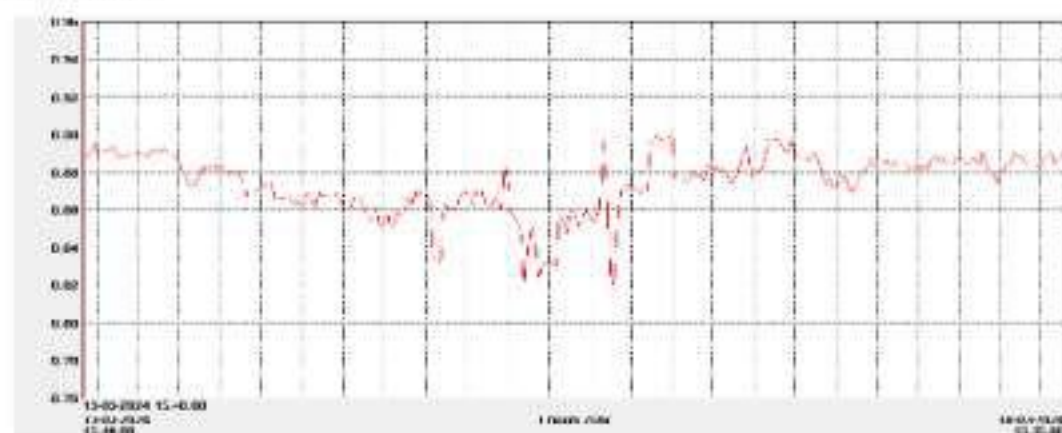
Load profile.



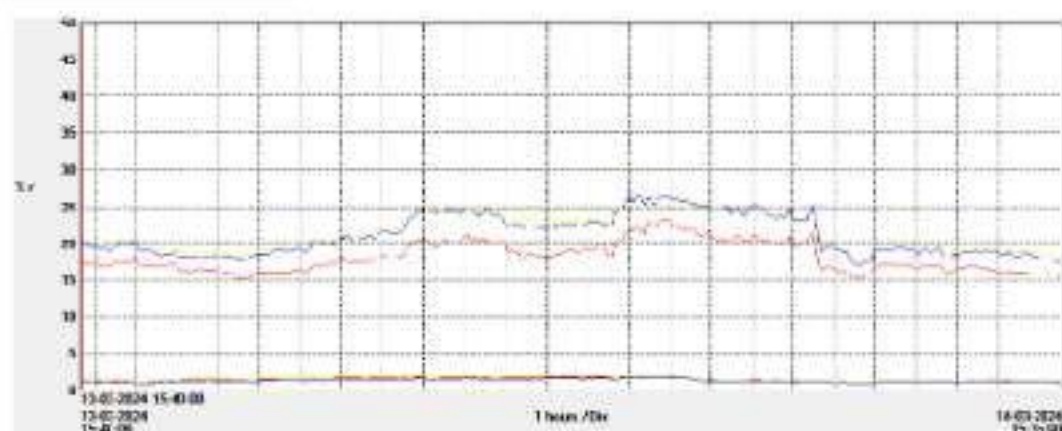
Frequency



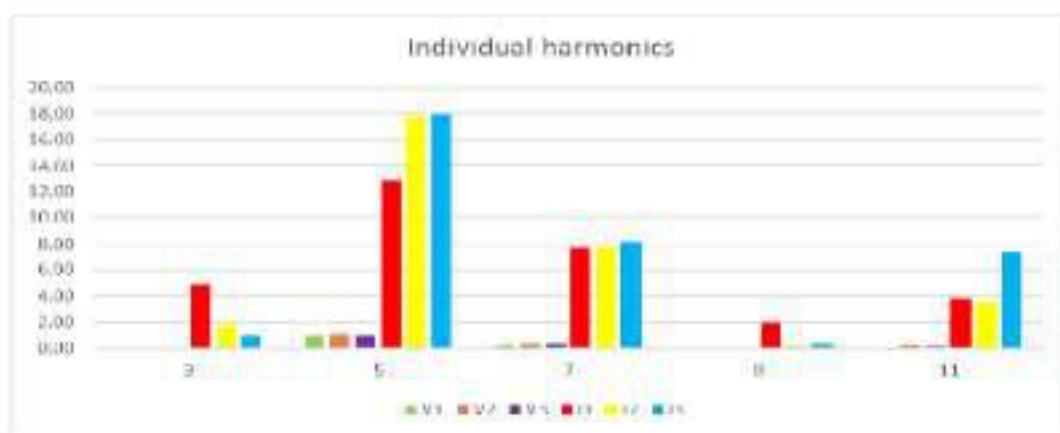
Power factor



Total harmonics distortion



Individual harmonics:



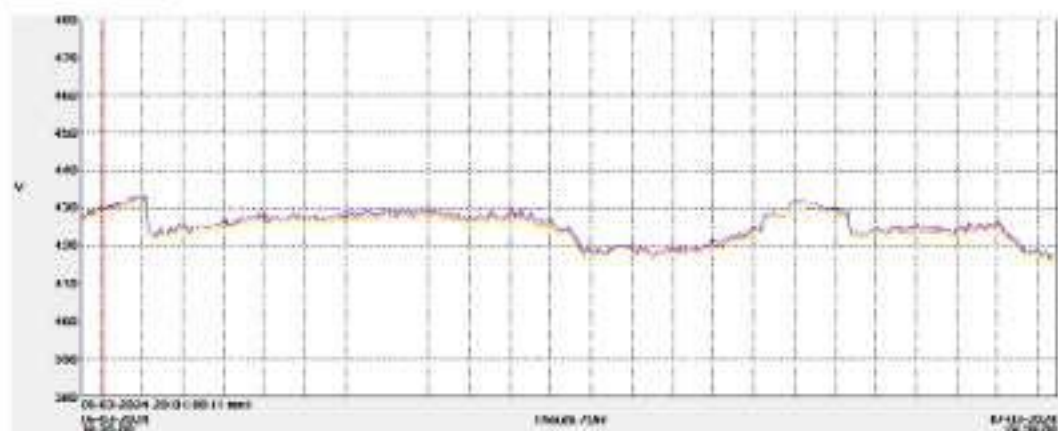
Remarks

- Observed average current harmonics level is around 21.5% due to UPS, VFD fitted AHU & VRV units.

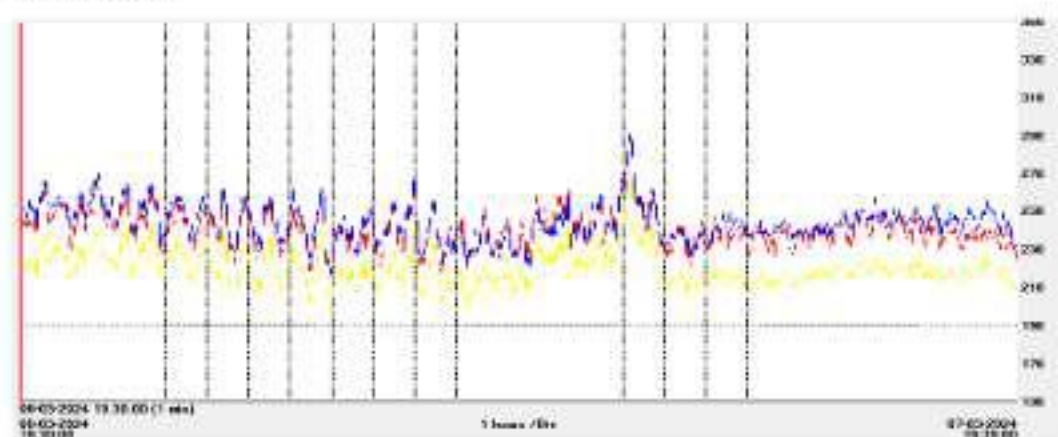
3.10 INCOMER FOR IT 03 RHS

Power Quality Monitoring Summary					
Utility Name	Incomer for IT 03 RHS				
Date of Analysis	From 06-03-2024 to 07-03-2024				
Duration of Analysis	From 14:00:00 to 13:55:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.06	49.88	49.98	
RMS Voltage (VRN)	V	242	241	242	
RMS Voltage (VYN)	V	242	240	241	
RMS Voltage (VBN)	V	243	241	242	
RMS Voltage (VRY)	V	420	417	419	
RMS Voltage (VYB)	V	419	416	418	
RMS Voltage (VBR)	V	421	418	419	
RMS Current (IR)	Ampere	303	232	254	
RMS Current (IY)	Ampere	284	214	236	
RMS Current (IB)	Ampere	305	235	256	
Voltage THD (V)	%	2.6	2.4	2.5	
Current THD (I)	%	32.8	28.6	30.6	
Unbalance Voltage	%	0.3	0.1	0.2	Acceptable range.
Unbalance Current	%	6.9	3.1	5.2	Acceptable range.
Real Power	KW	198.4	144.3	160.4	
Apparent Power	kVA	215.9	165.6	180.4	
Reactive Power	KVAR	-55.65	-61.92	-69.57	
Average Power Factor	PF	0.91	0.86	0.88	Acceptable range.

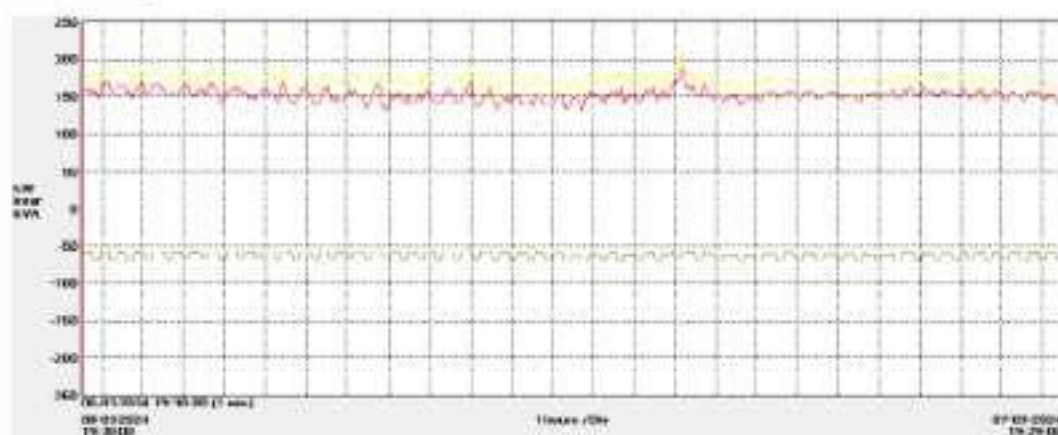
Voltage profile



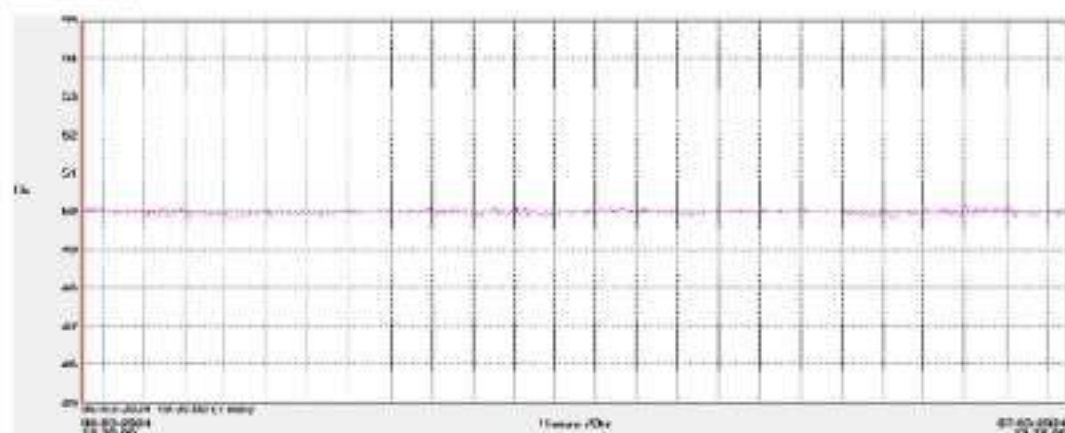
Current profile



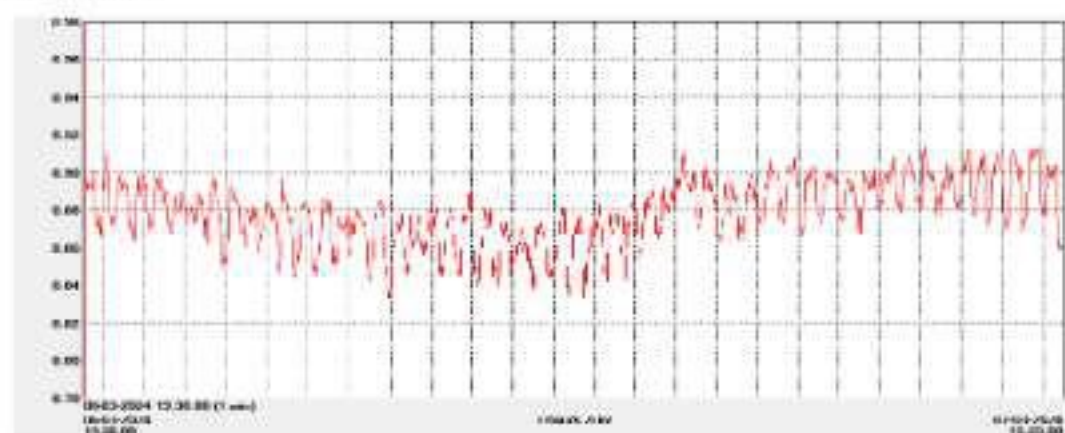
Load profile.



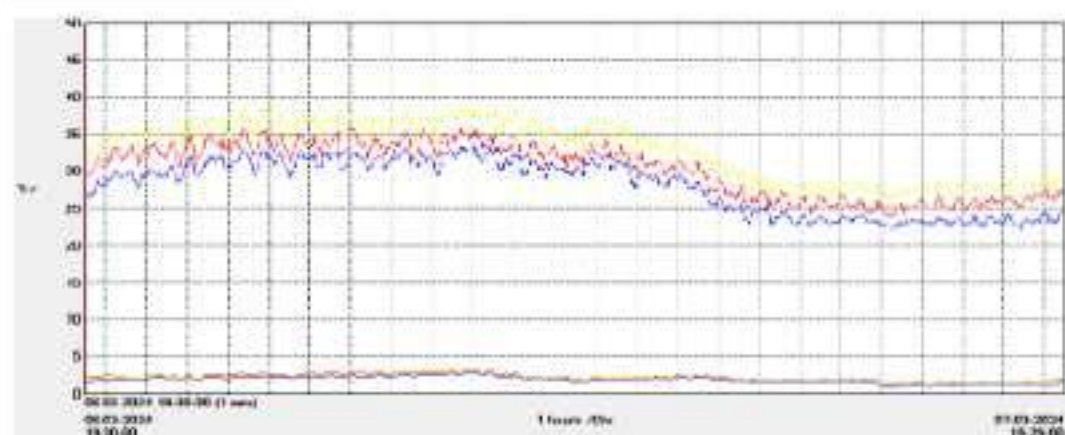
Frequency



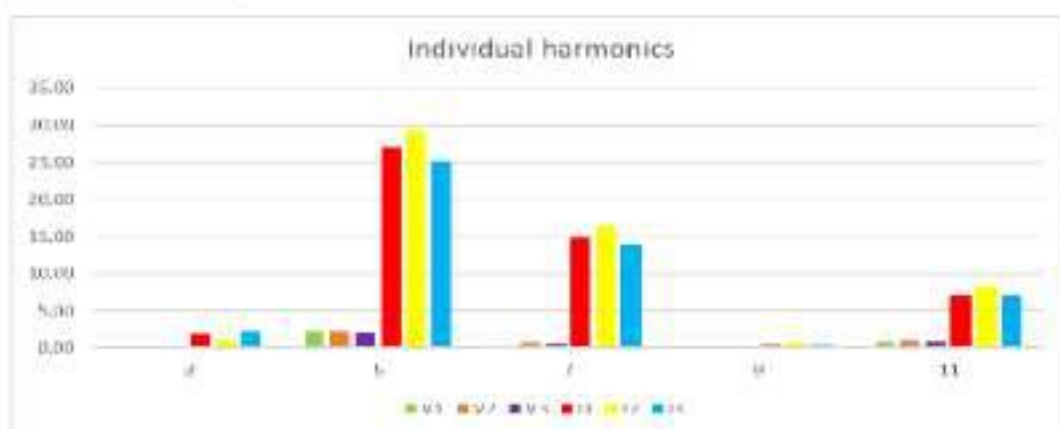
Power factor



Total harmonics distortion



Individual harmonics:



Remarks:

- Observed average current harmonics level is around 16.3% due to UPS, VFD fitted AHU & VRV units.

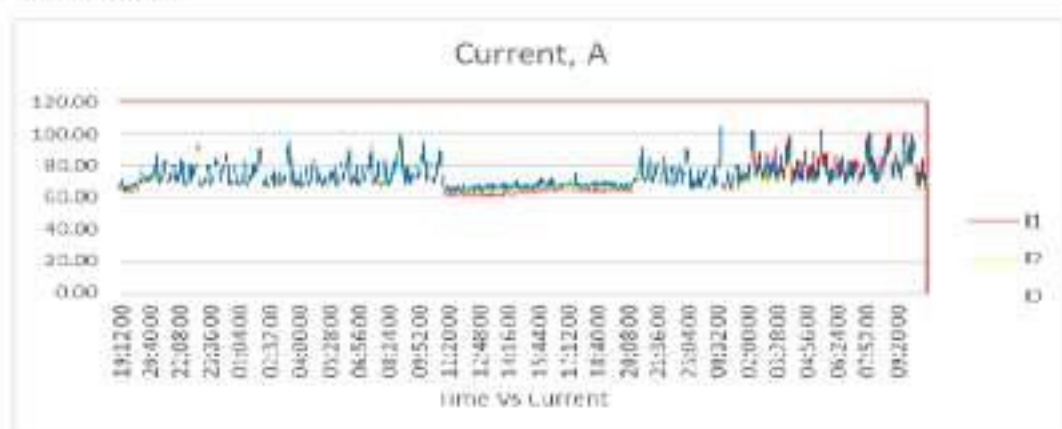
3.11 INCOMER FOR IT 03 LHS

Power Quality Monitoring Summary					
Utility Name	Incomer for IT 03 LHS				
Date of Analysis	From 06-03-2024 to 08-03-2024				
Duration of Analysis	From 19:12:00 to 10:47:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.24	49.71	49.99	
RMS Voltage (VRN)	V	251	238	245	
RMS Voltage (VYN)	V	249	237	244	
RMS Voltage (VBN)	V	251	239	246	
RMS Voltage (VRY)	V	434	413	425	
RMS Voltage (VYB)	V	432	411	423	
RMS Voltage (VBR)	V	434	411	425	
RMS Current (IR)	Ampere	106.40	61.40	73.00	
RMS Current (IY)	Ampere	103.80	63.80	72.66	
RMS Current (IB)	Ampere	105.00	64.10	73.86	
Voltage THD (V)	%	1.62	1.48	1.56	
Current THD (I)	%	26.08	24.4	25.19	
Unbalance Voltage	%	0.44	0.21	0.34	Acceptable range.
Unbalance Current	%	6.92	1.01	3.18	Acceptable range.
Real Power	kW	70.00	32.00	42.49	
Apparent Power	kVA	76.00	46.00	53.77	
Reactive Power	KVAR	-25.00	-35.00	-32.50	
Average Power Factor	PF	0.69	0.92	0.79	Acceptable range.

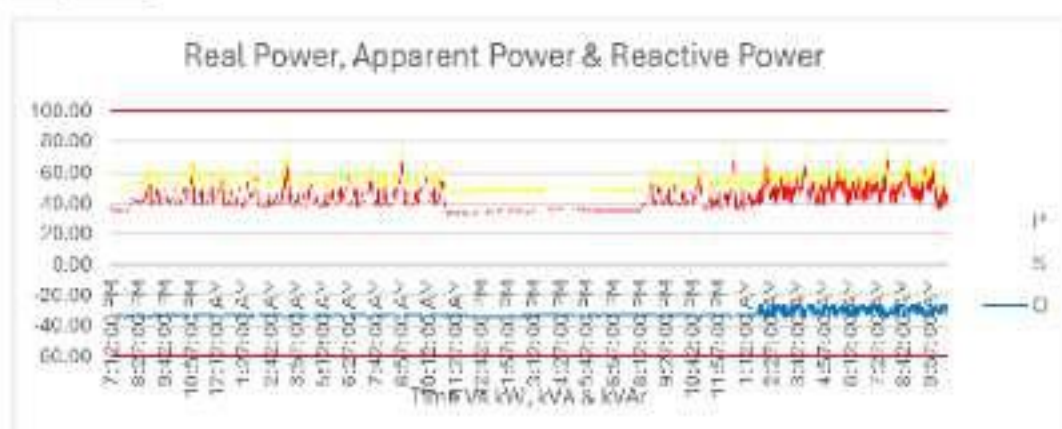
Voltage profile



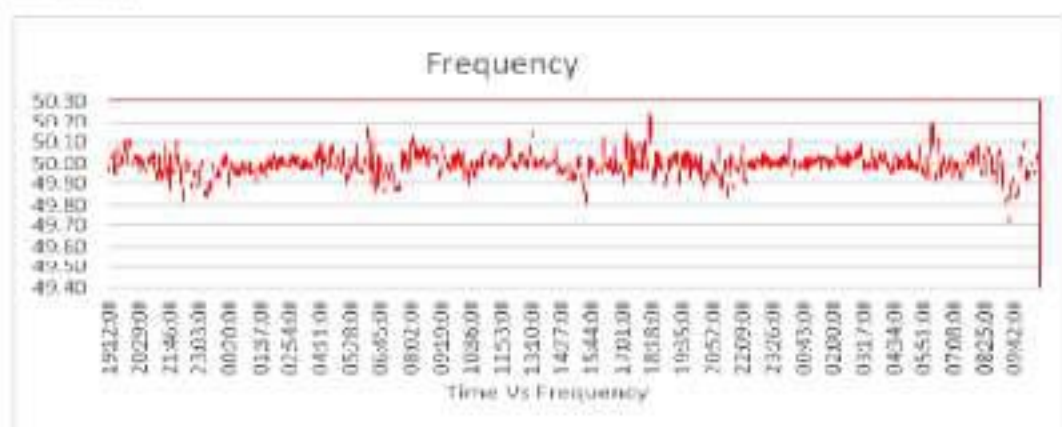
Current profile



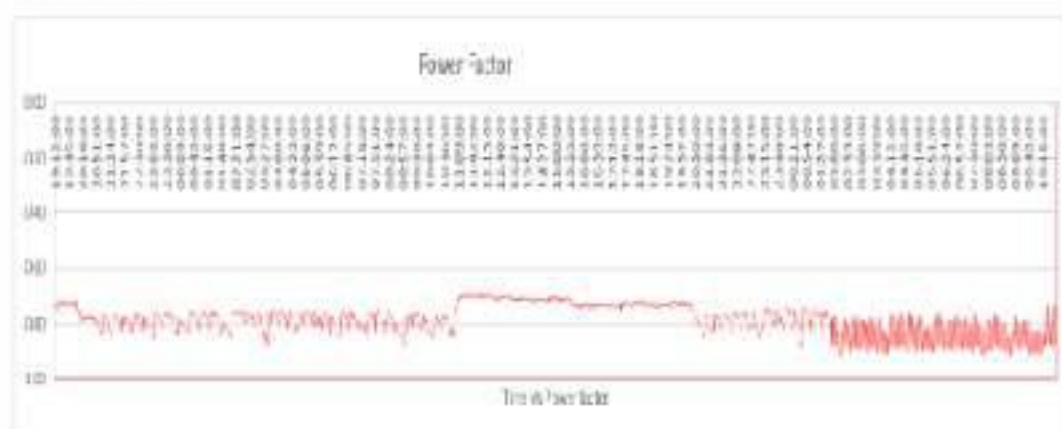
Load profile.



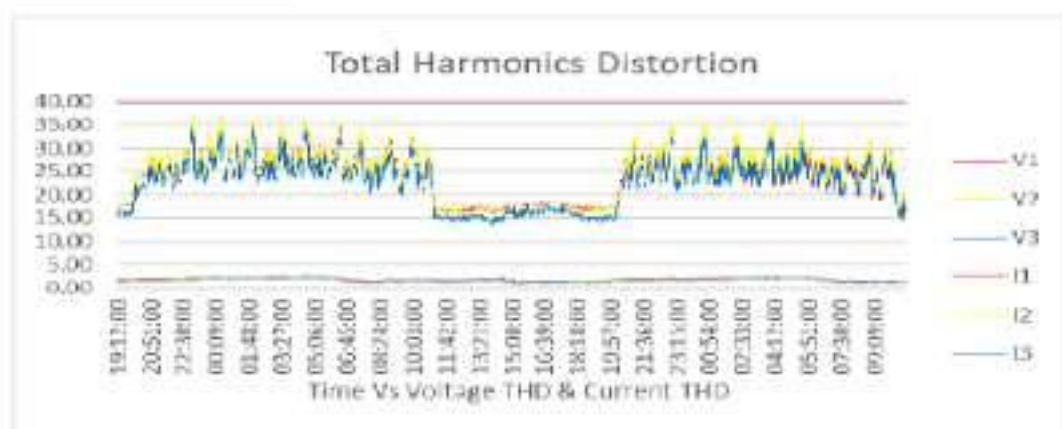
Frequency



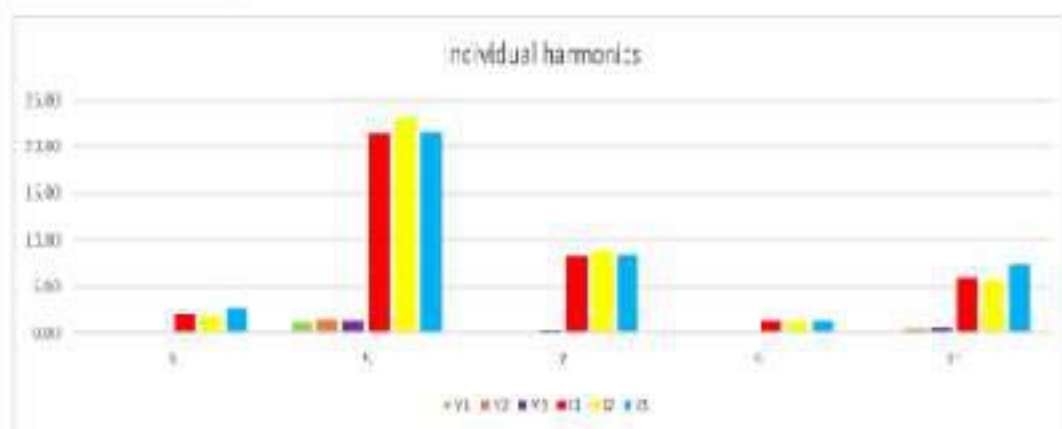
Power factor



Total harmonics distortion



Individual harmonics:



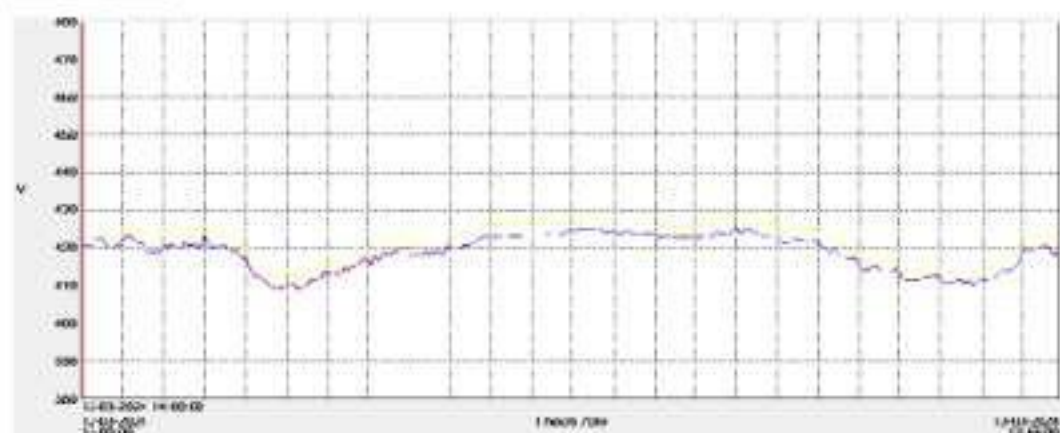
Remarks:

- Observed average current harmonics level is around 25.19% due to UPS, VFD fitted AHU & VRV units.

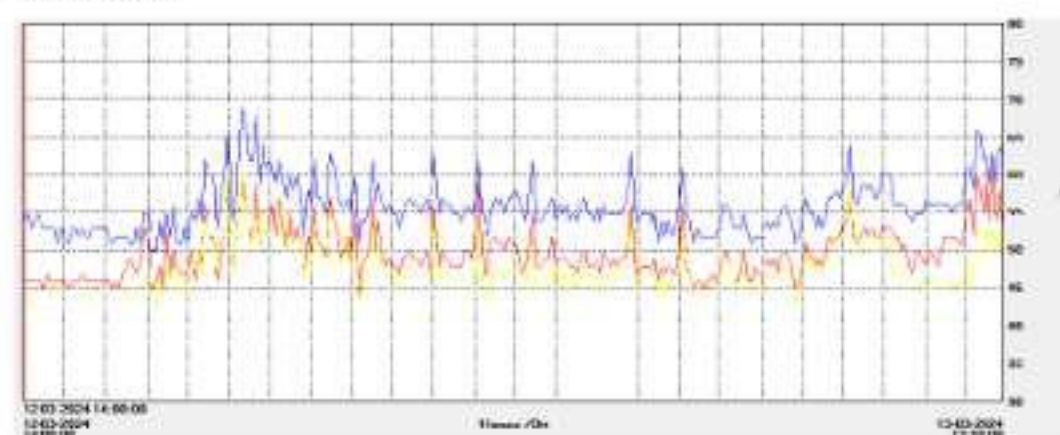
3.12 INCOMER FOR SDC 1 LHS

Power Quality Monitoring Summary					
Utility Name	Incomer for SDC 1 LHS				
Date of Analysis	From 12-03-2024 to 13-03-2024				
Duration of Analysis	From 14:00:00 to 13:55:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.2	49.81	49.98	
RMS Voltage (VRN)	V	246	236	242	
RMS Voltage (VYN)	V	248	238	244	
RMS Voltage (VBN)	V	246	236	242	
RMS Voltage (VRY)	V	426	409	419	
RMS Voltage (VYB)	V	429	412	422	
RMS Voltage (VBR)	V	426	409	419	
RMS Current (IR)	Ampere	61	44	50	
RMS Current (IY)	Ampere	61	42	48	
RMS Current (IB)	Ampere	69	50	56	
Voltage THD (V)	%	1.90	1.70	1.76	
Current THD (I)	%	26.9	23.1	25.5	
Unbalance Voltage	%	0.50	0.40	0.50	Acceptable range.
Unbalance Current	%	13.80	5.60	9.30	Acceptable range.
Real Power	kW	40.49	27.77	32.46	
Apparent Power	kVA	45.17	33.88	37.59	
Reactive Power	KVAR	-8.72	-16.07	-13.98	
Average Power Factor	PF	0.91	0.80	0.86	Acceptable range.

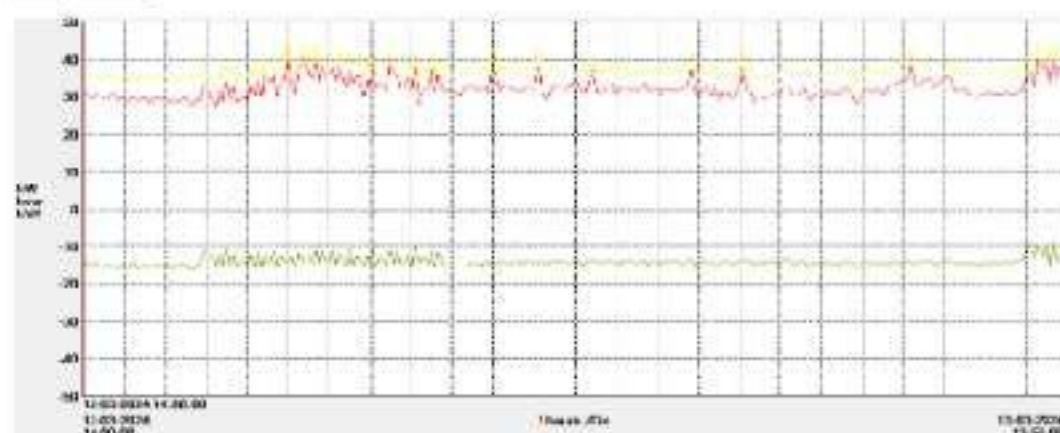
Voltage profile



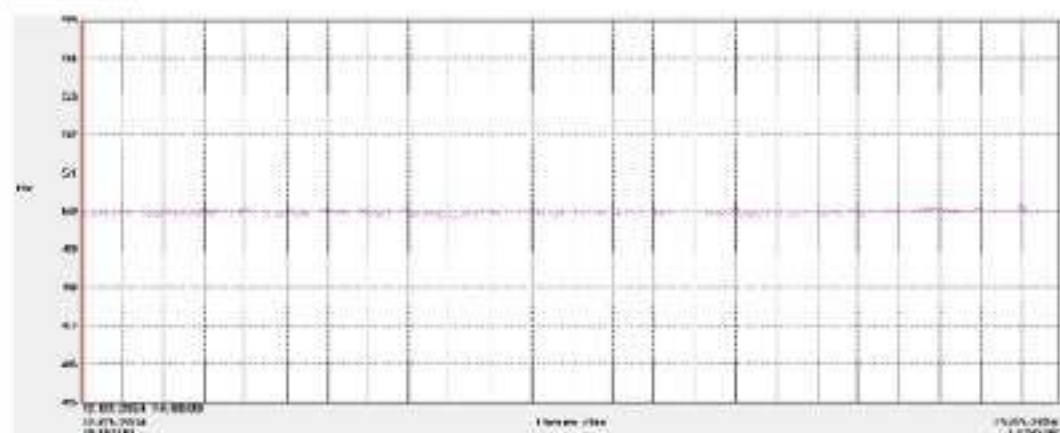
Current profile



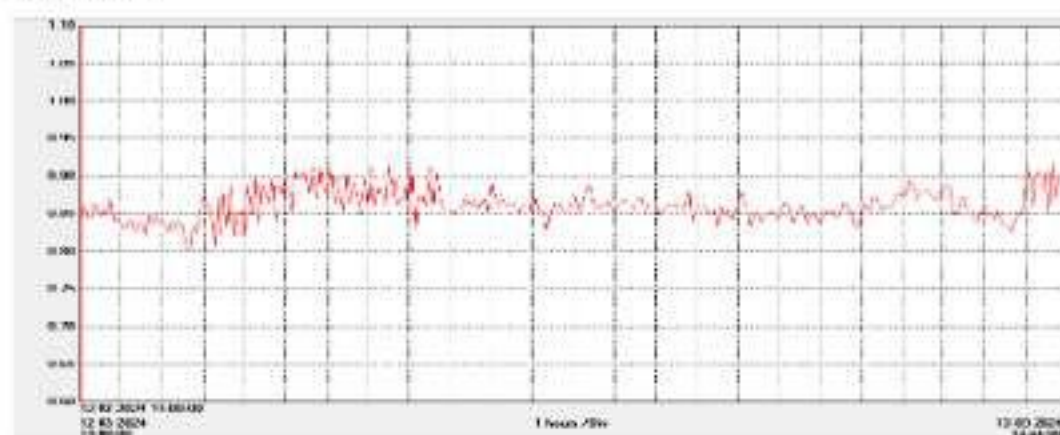
Load profile.



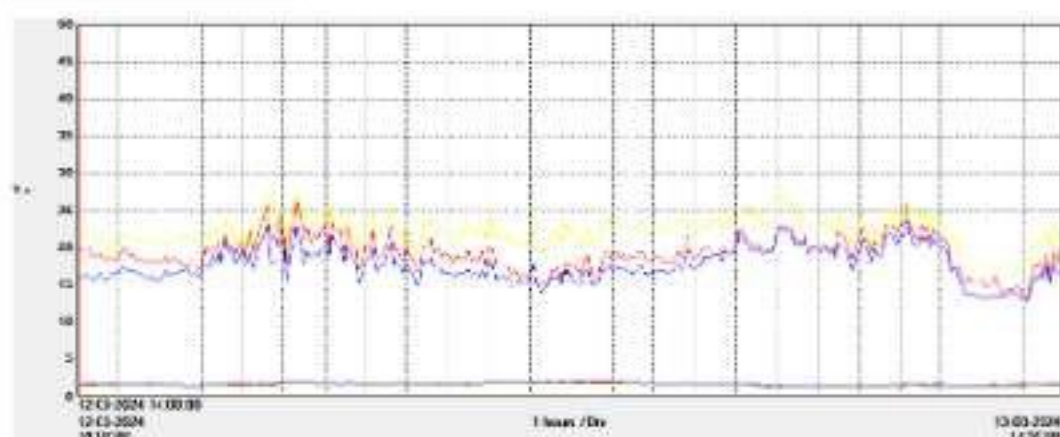
Frequency



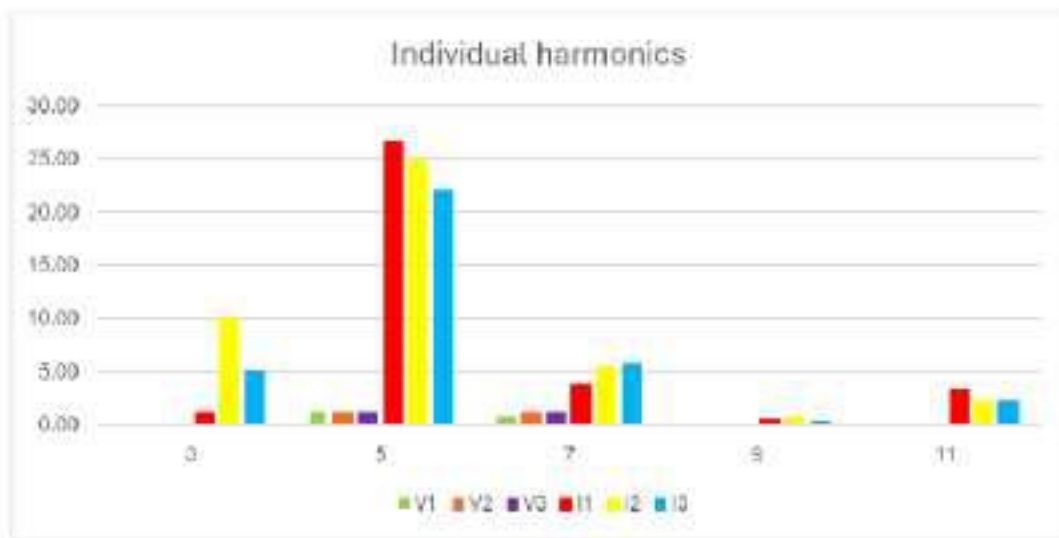
Power factor



Total harmonics distortion



Individual harmonics:



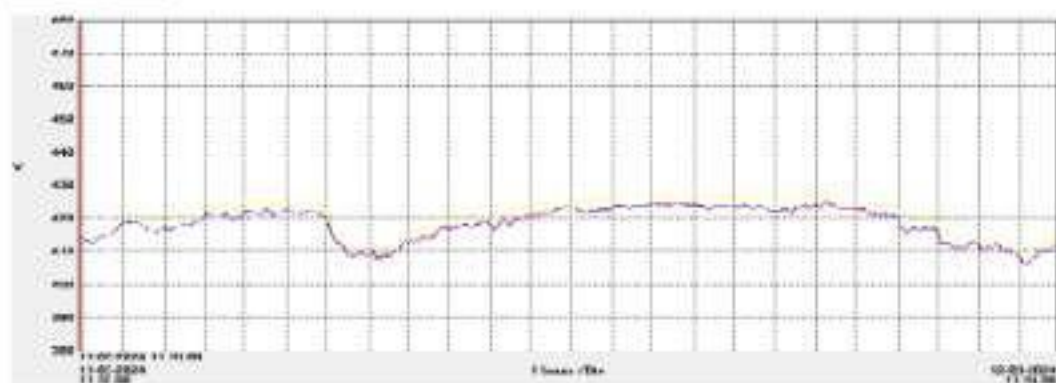
Remarks

- Observed average current harmonics level is around 25.5% due to UPS, VFD fitted AHU & VRF units.

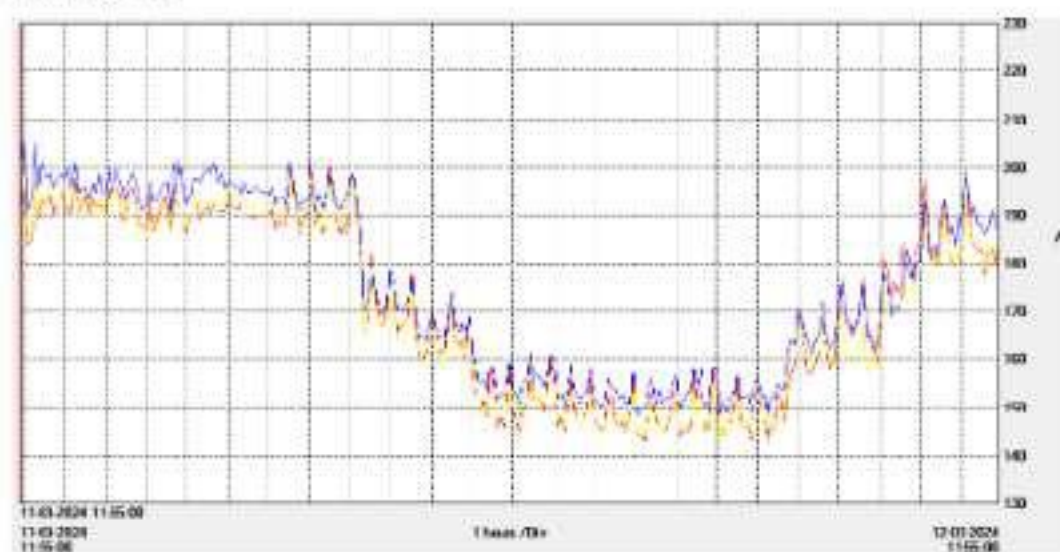
3.13 INCOMER FOR SDC 2 SOURCE 2

Power Quality Monitoring Summary					
Utility Name	Incomer for SDC 2 Source 2				
Date of Analysis	From 11-03-2024 to 12-03-2024				
Duration of Analysis	From 11:55:00 to 11:55:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.21	49.76	49.98	
RMS Voltage (VRN)	V	245	234	242	
RMS Voltage (VYN)	V	247	236	243	
RMS Voltage (VBN)	V	246	235	242	
RMS Voltage (VRY)	V	425	406	418	
RMS Voltage (VYB)	V	428	409	421	
RMS Voltage (VBR)	V	425	407	419	
RMS Current (IR)	Ampere	201	142	173	
RMS Current (IY)	Ampere	199	143	172	
RMS Current (IB)	Ampere	206	147	176	
Voltage THD (V)	%	2	1.8	1.8	
Current THD (I)	%	16.4	16.2	16.3	
Unbalance Voltage	%	0.5	0.4	0.5	Acceptable range.
Unbalance Current	%	4	0.4	1.6	Acceptable range.
Real Power	kW	134.2	90.42	113	
Apparent Power	kVA	144.5	106.8	125.7	
Reactive Power	KVAR	-35.66	-54.97	-49.4	
Average Power Factor	PF	0.94	0.84	0.89	Acceptable range.

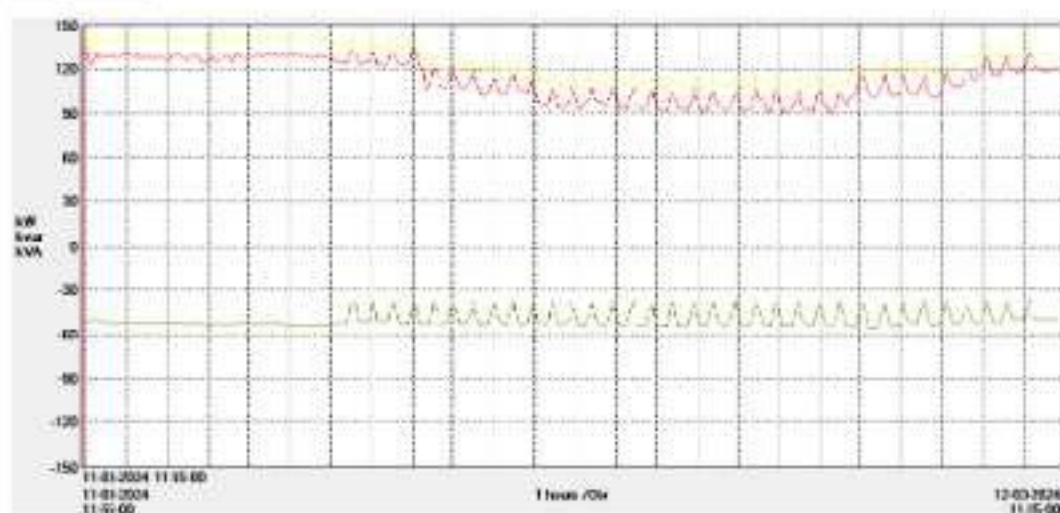
Voltage profile



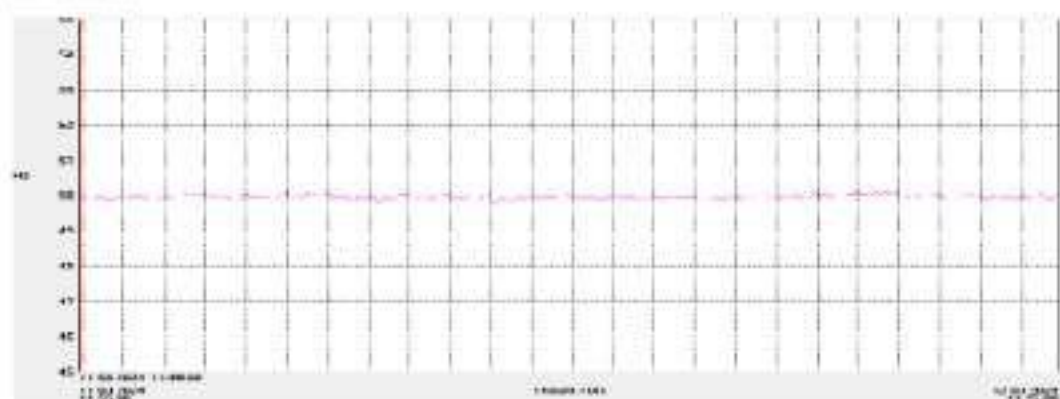
Current profile



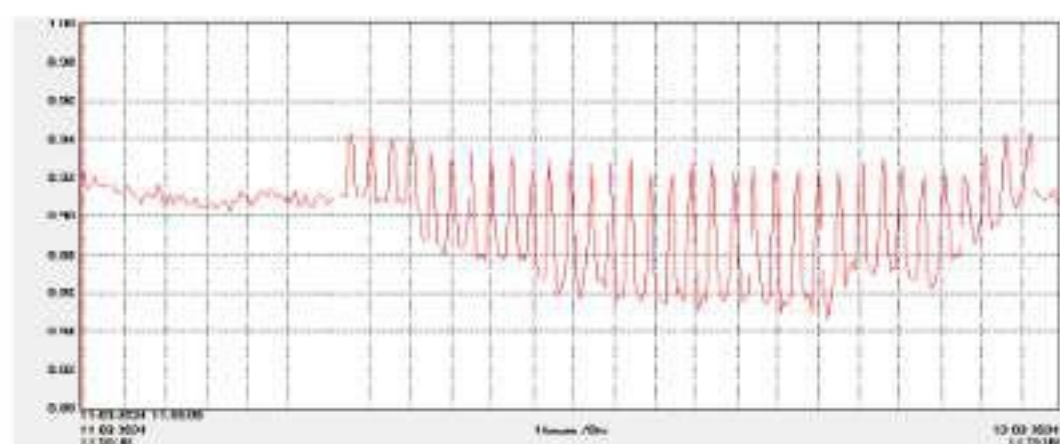
Load profile,



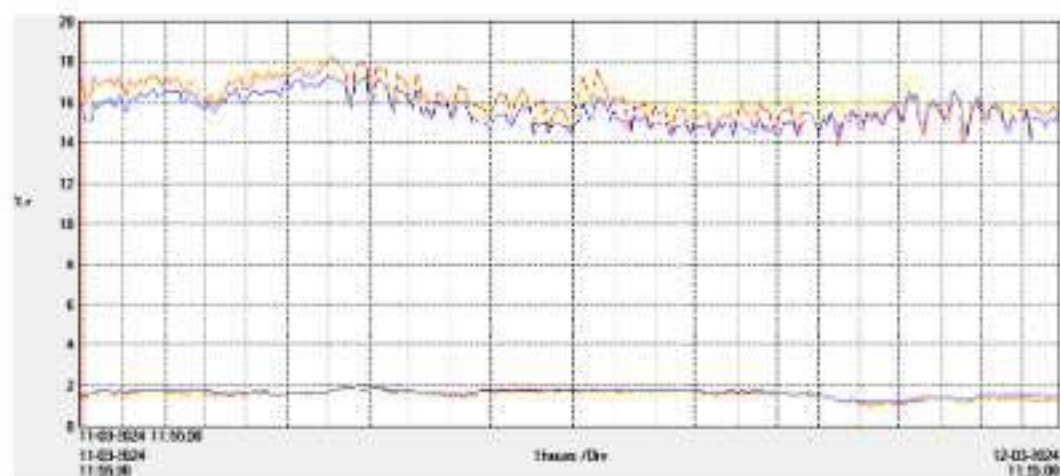
Frequency



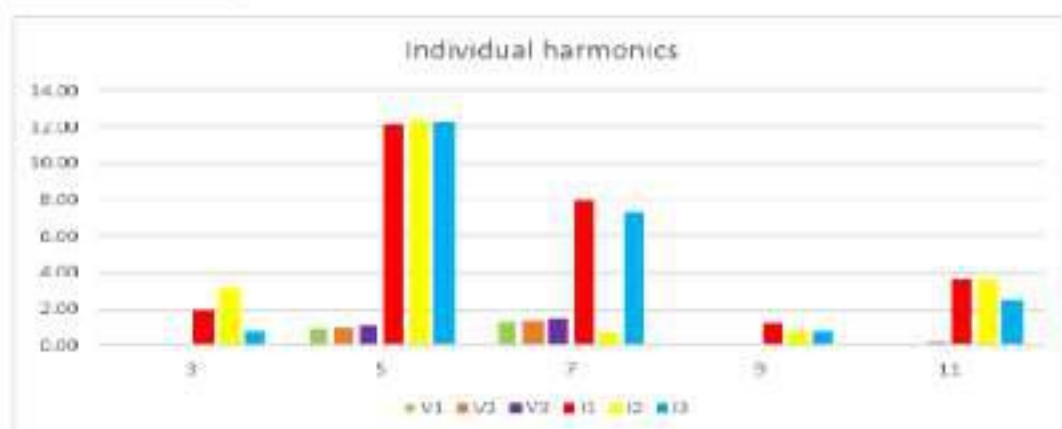
Power factor



Total harmonics distortion



Individual harmonics:



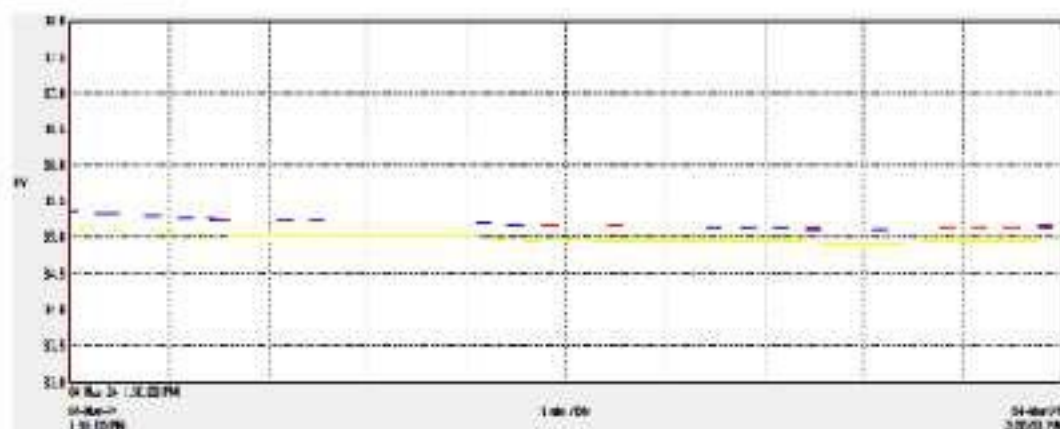
Remarks:

- Observed average current harmonics level is around 16.3% due to UPS, VFD fitted AHU & VRV units.

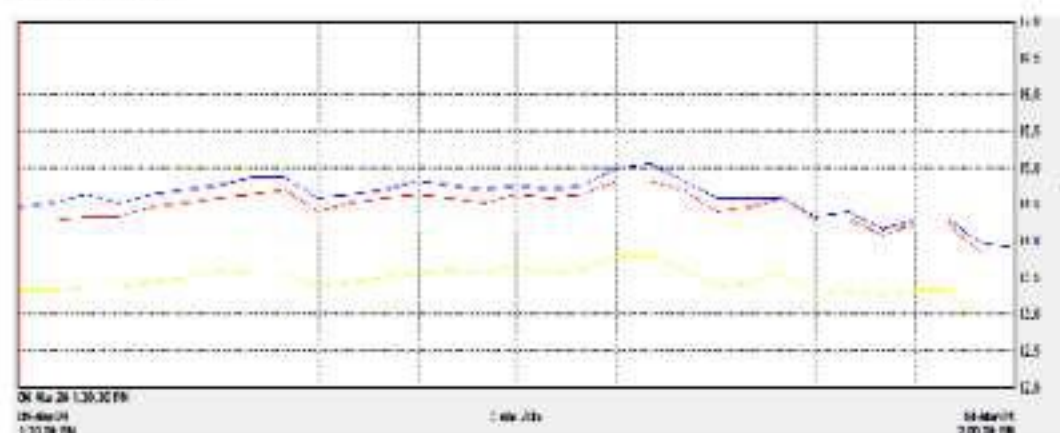
3.14SEZ AREA_ 33/11 KV 6300KVA TRANSFORMER 1

Power Quality Monitoring Summary					
Utility Name	SEZ AREA_ 33/11 KV 6300KVA TRANSFORMER 1				
Date of Analysis	04-03-2024				
Duration of Analysis	From 13:30:00 to 14:00:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.19	49.94	50.01	
RMS Voltage (VRN)	V	20421	20283	20323	
RMS Voltage (VYN)	V	20300	20162	20779	
RMS Voltage (VBN)	V	20421	20266	20318	
RMS Voltage (VRY)	V	35370	35130	35200	
RMS Voltage (VYB)	V	35160	34920	35990	
RMS Voltage (VBR)	V	35370	35100	35190	
RMS Current (IR)	Ampere	14.82	13.86	14.45	
RMS Current (IY)	Ampere	13.8	12.9	13.45	
RMS Current (IB)	Ampere	15.06	13.92	14.6	
Voltage THD (V)	%	1.5	1.3	1.4	Within permissible Limit
Current THD (I)	%	25.2	21.7	23.46	Current harmonics is higher than the acceptable level of 15% for this loading condition.
Unbalance Voltage	%	0.4	0.3	0.4	Acceptable range.
Unbalance Current	%	5.7	4.2	5	Acceptable range.
Real Power	kW	817.3	751	793	
Apparent Power	kVA	887.7	827.5	864.4	
Reactive Power	KVAR	-249.1	-275.6	-261.7	
Average Power Factor	PF	0.92	0.90	0.91	Acceptable range.

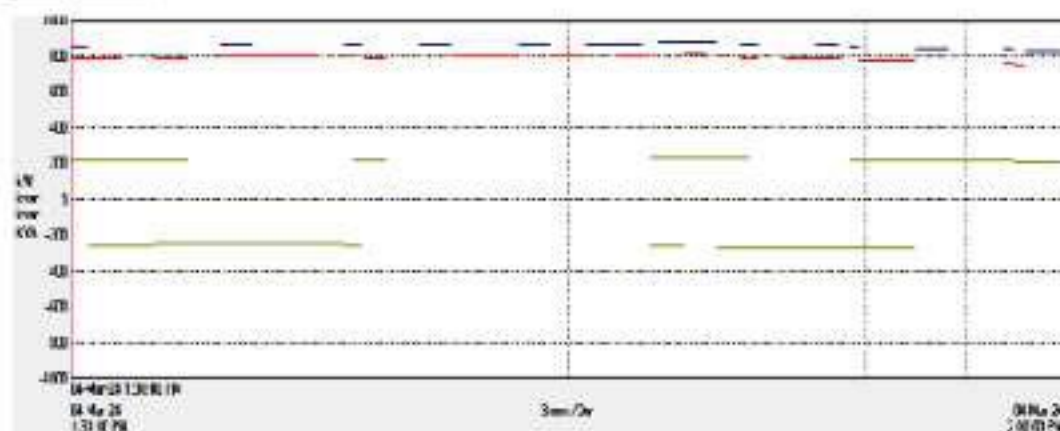
Voltage profile



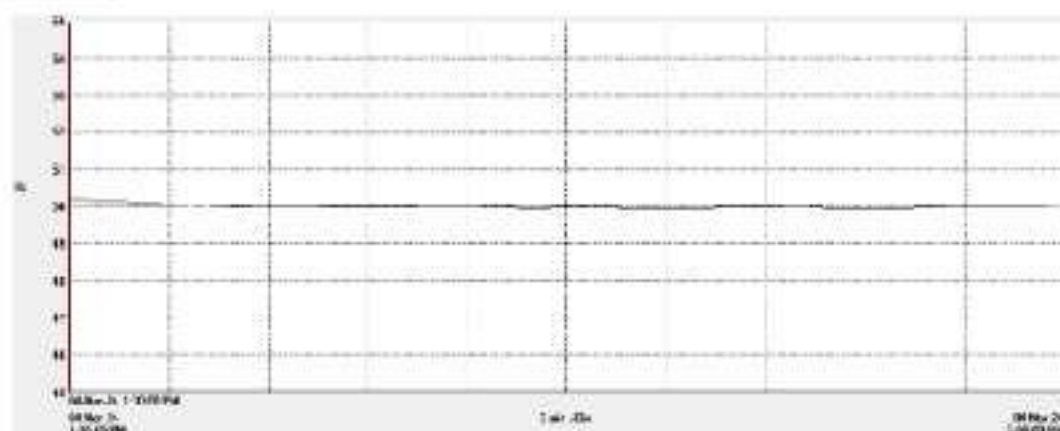
Current profile



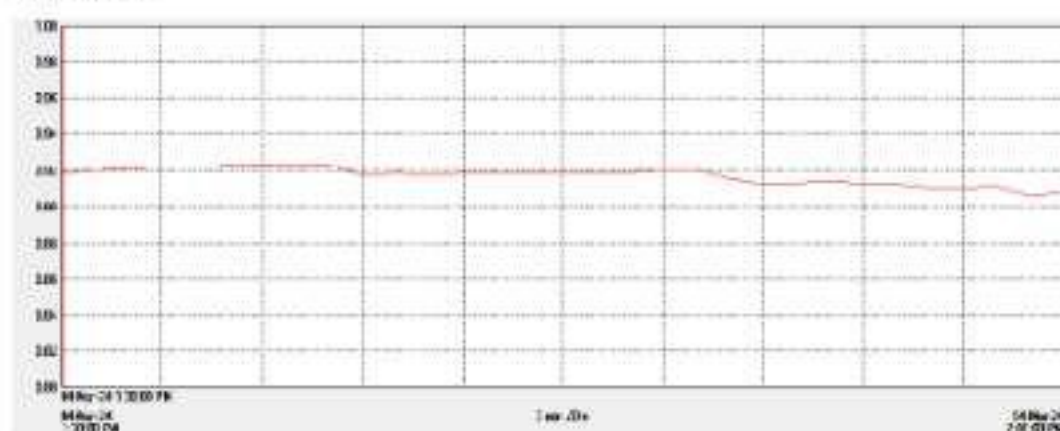
Load profile.



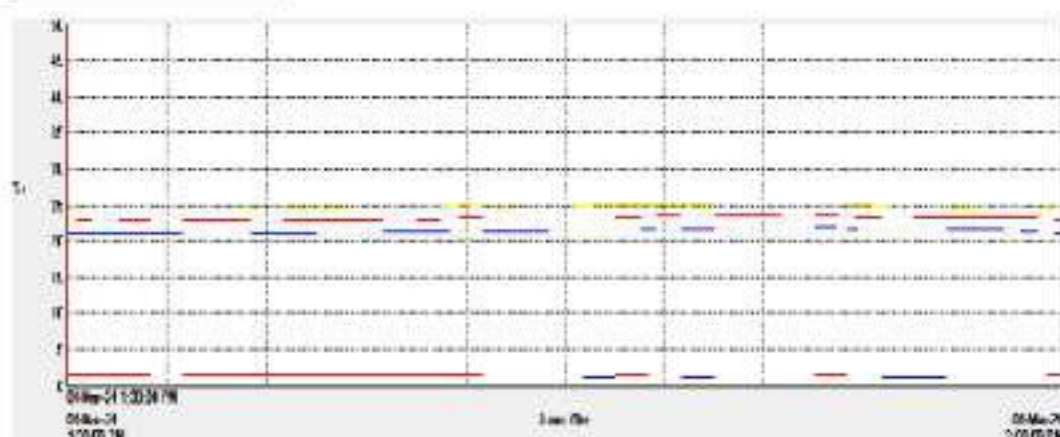
Frequency



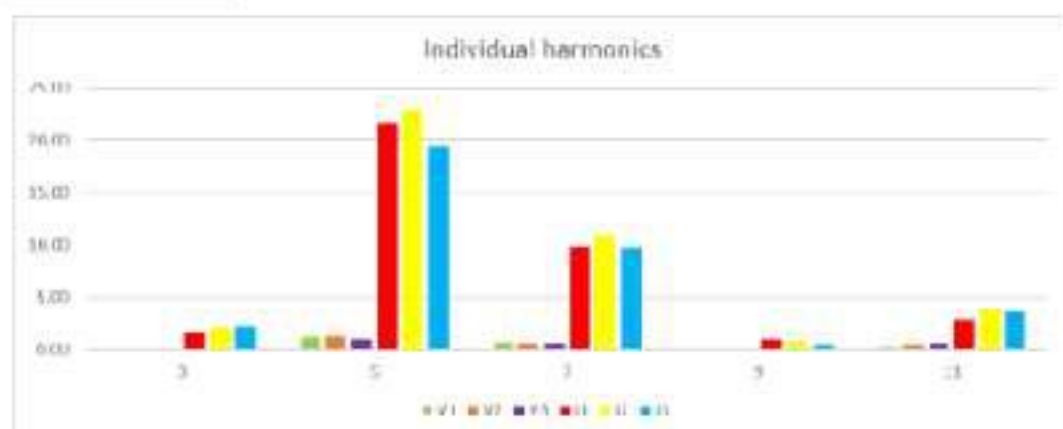
Power factor



Total harmonics distortion



Individual harmonics:



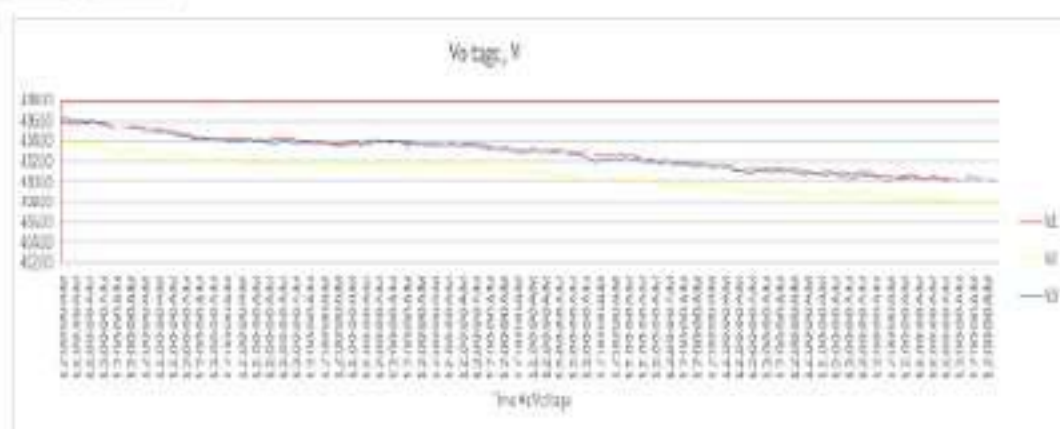
Remarks

- Current harmonics is higher than the acceptable level due to VFD installed Chiller, UPS, VFD fitted AHU & VRV units.

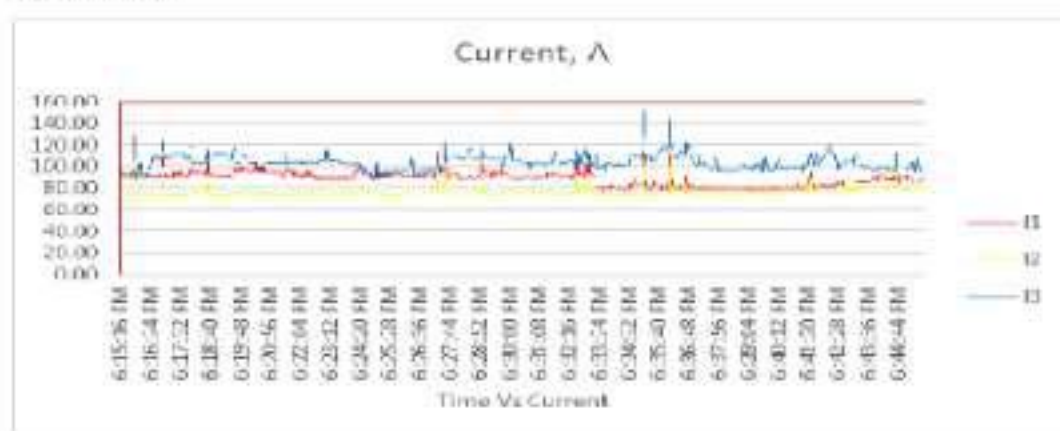
3.15 IT-03_ 1500 kVA CSS TRANSFORMER-1

Power Quality Monitoring Summary					
Utility Name	IT-03_ 1500 kVA CSS TRANSFORMER 01				
Date of Analysis	05-03-2024				
Duration of Analysis	From 18:15:16 to 18:45:48				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.18	49.94	50.01	
RMS Voltage (VRN)	V	240	237	238	
RMS Voltage (VYN)	V	239	235	237	
RMS Voltage (VBN)	V	240	235	238	
RMS Voltage (VRY)	V	416	410	413	
RMS Voltage (VYB)	V	414	408	411	
RMS Voltage (VBR)	V	416	410	413	
RMS Current (IR)	Ampere	128.04	77.20	88.73	
RMS Current (IY)	Ampere	102.57	72.47	75.31	
RMS Current (IB)	Ampere	151.23	86.62	103.28	
Voltage THD (V)	%	1.62	1.27	1.44	Within permissible Limit
Current THD (I)	%	22.57	13.46	18.43	Current harmonics is Slightly higher than the acceptable level of 15% for this loading condition
Unbalance Voltage	%	0.42	0.27	0.35	Acceptable range.
Unbalance Current	%	20.43	5.53	13.04	If possible, Phase currents shall be balanced
Real Power	kW	82.50	53.40	58.31	
Apparent Power	kVA	86.40	58.80	63.60	
Reactive Power	KVAR	-22.80	-26.10	-24.82	
Average Power Factor	PF	-0.90	-0.95	-0.92	Leading PF due to UPS & VFD units

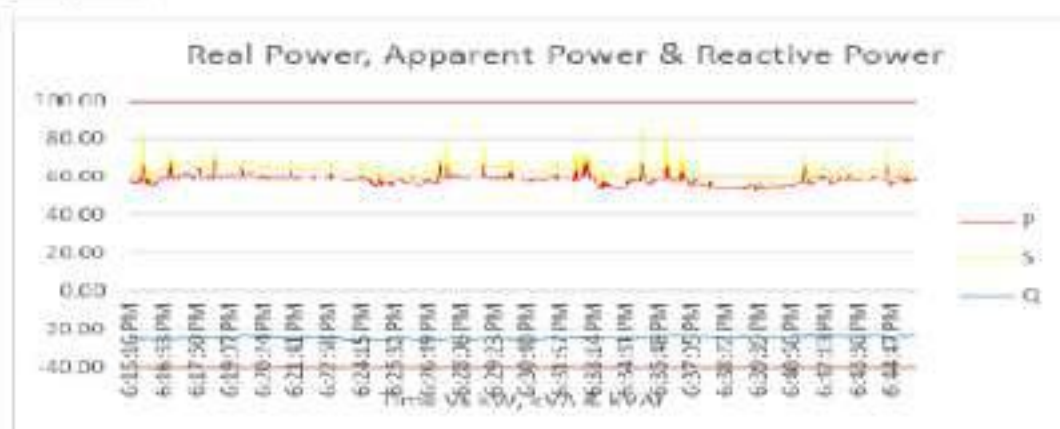
Voltage profile



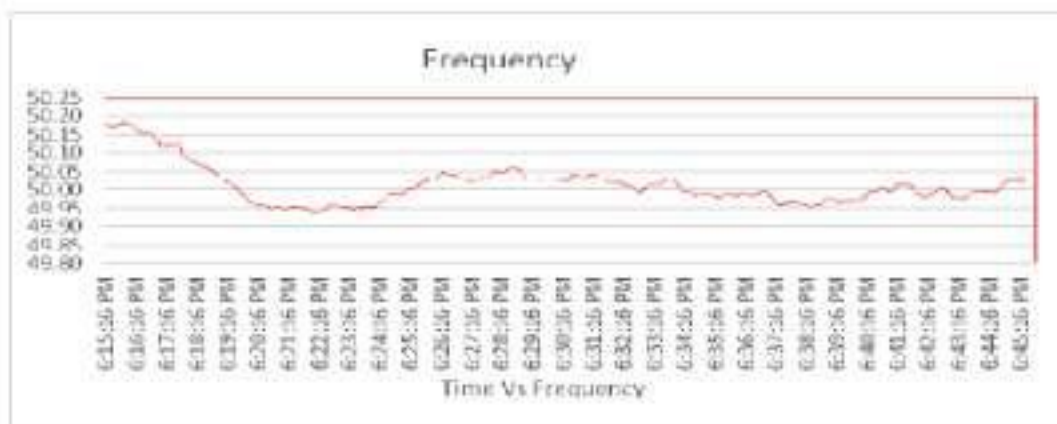
Current profile



Load profile.



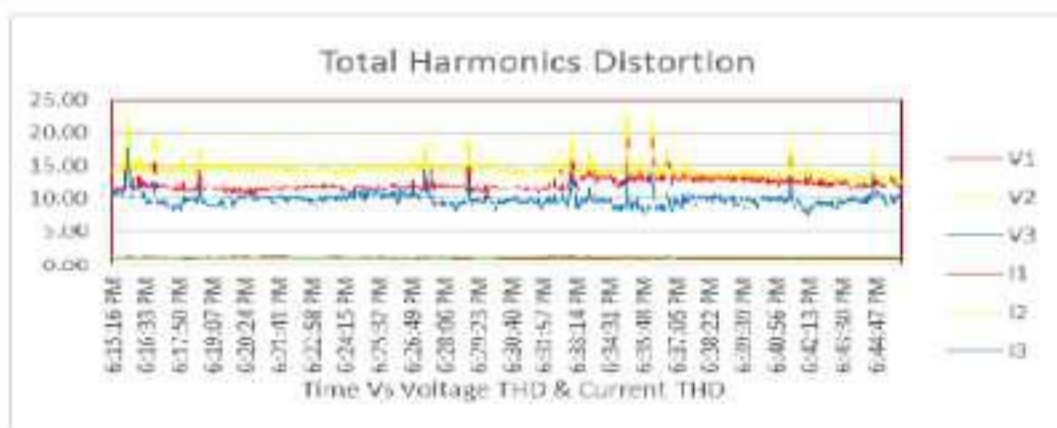
Frequency



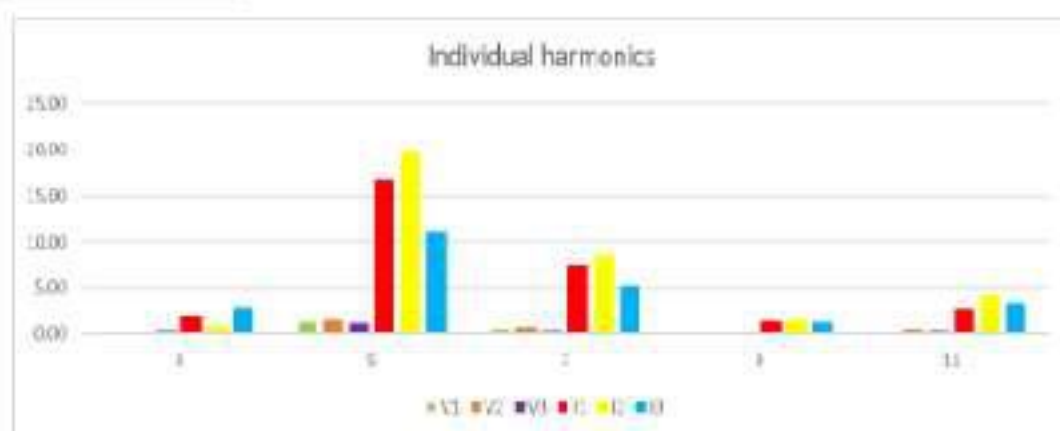
Power factor



Total harmonics distortion



Individual harmonics:



Remarks

- Current harmonics is higher than the acceptable level due to UPS, VFD fitted AHU & VRF units.

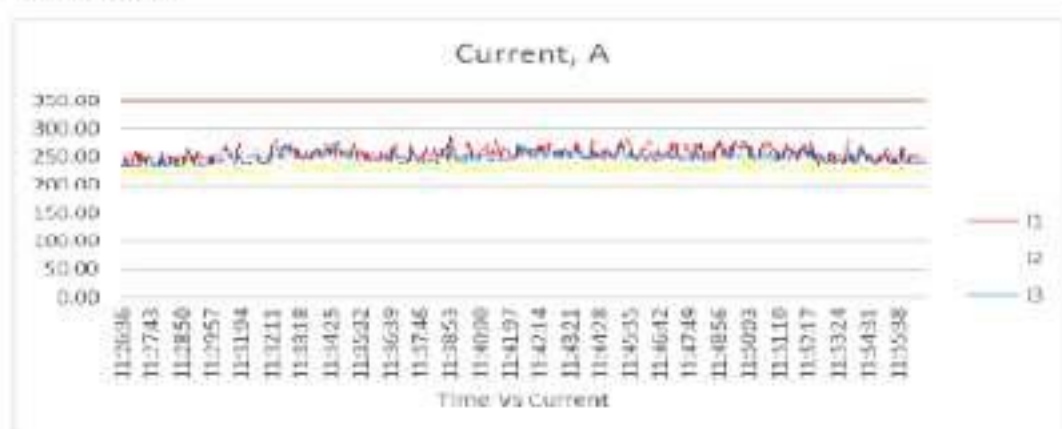
3.16IT-03_ 1500 kVA CSS TRANSFORMER-2

Power Quality Monitoring Summary					
Utility Name	IT-03_ 1500 kVA CSS TRANSFORMER 02				
Date of Analysis	06-03-2024				
Duration of Analysis	From 11:26:36 to 11:56:42				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.06	49.93	49.99	
RMS Voltage (VRN)	V	237	236	237	
RMS Voltage (VYN)	V	237	236	236	
RMS Voltage (VBN)	V	238	236	237	
RMS Voltage (VRY)	V	411	409	410	
RMS Voltage (VYB)	V	410	408	409	
RMS Voltage (VBR)	V	412	410	411	
RMS Current (IR)	Ampere	288.02	236.44	255.48	
RMS Current (IY)	Ampere	250.32	215.37	226.78	
RMS Current (IB)	Ampere	279.49	234.65	250.17	
Voltage THD (V)	%	2.27	2.06	2.14	Within permissible Limit
Current THD (I)	%	28.64	24.85	26.2	Current harmonics is higher than the acceptable level of 15% for this loading condition.
Unbalance Voltage	%	0.34	0.17	0.26	Acceptable range.
Unbalance Current	%	10.48	4.19	6.72	Acceptable range.
Real Power	kW	178.60	142.60	157.19	
Apparent Power	kVA	192.70	162.50	173.29	
Reactive Power	KVAR	-67.50	-79.10	-72.56	
Average Power Factor	PF	-0.88	-0.93	-0.91	Leading PF due to UPS & VFD units

Voltage profile



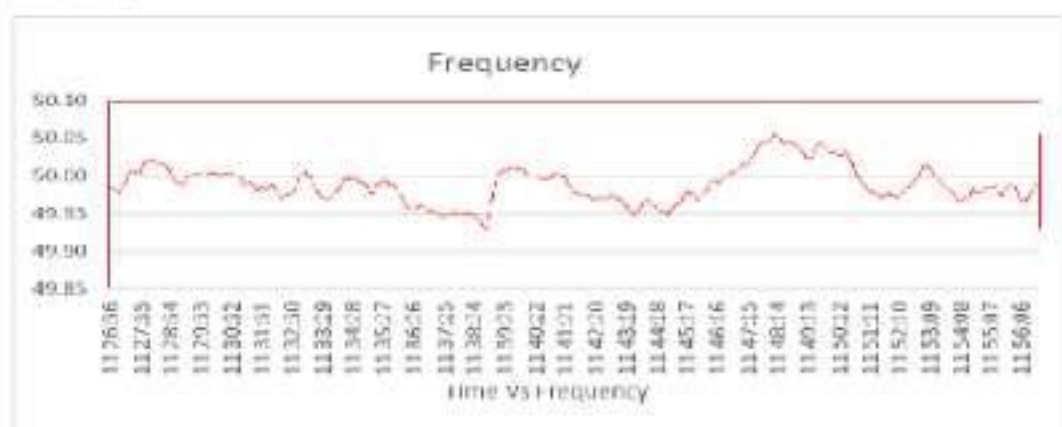
Current profile



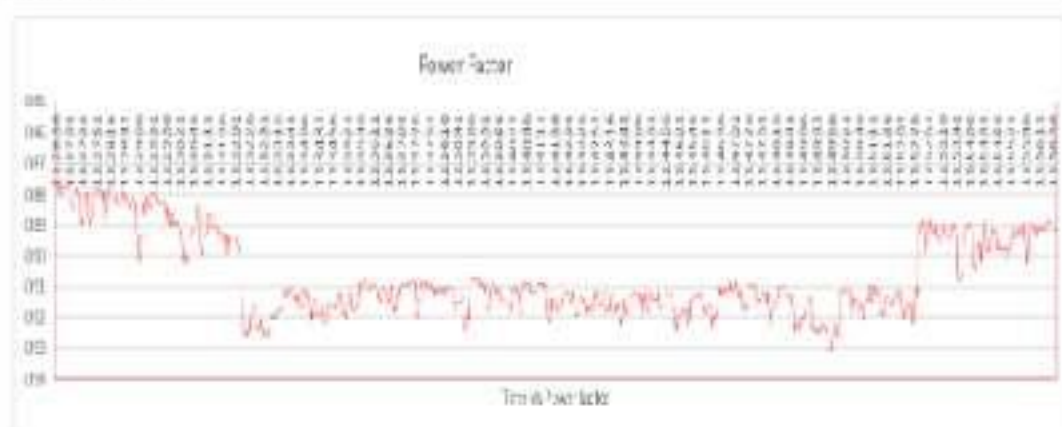
Load profile.



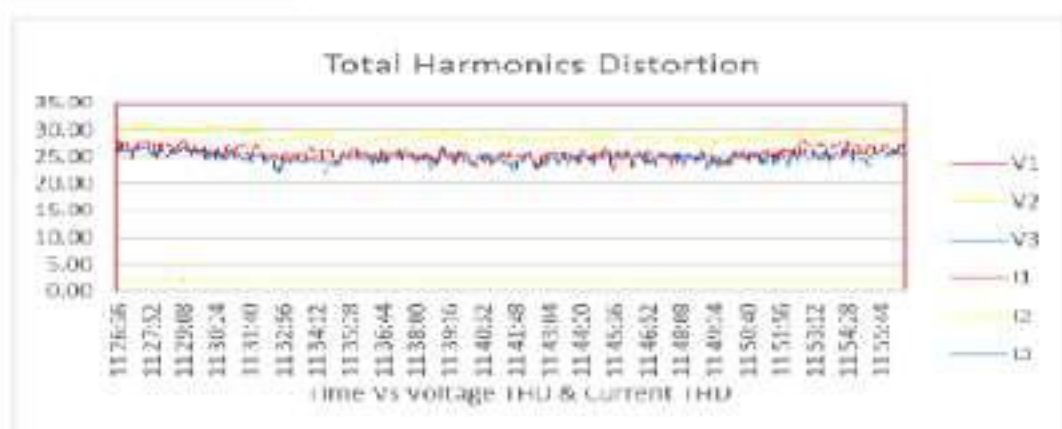
Frequency



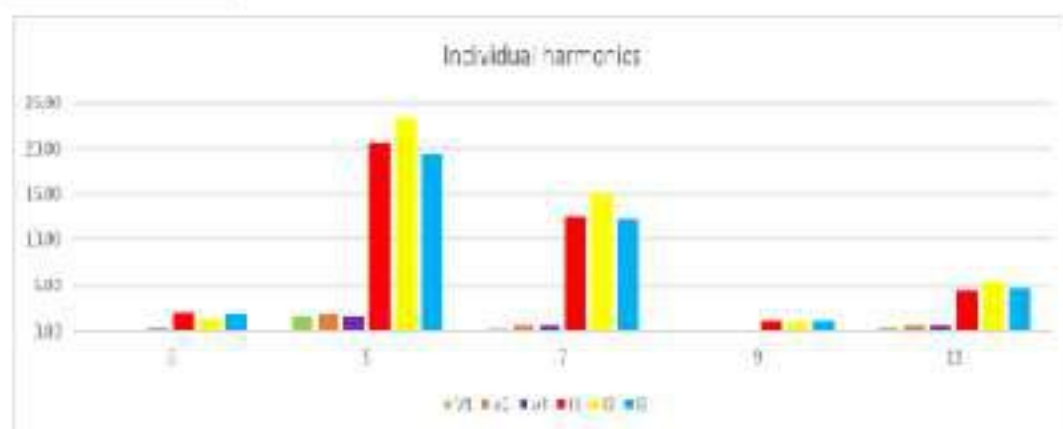
Power factor



Total harmonics distortion



Individual harmonics:



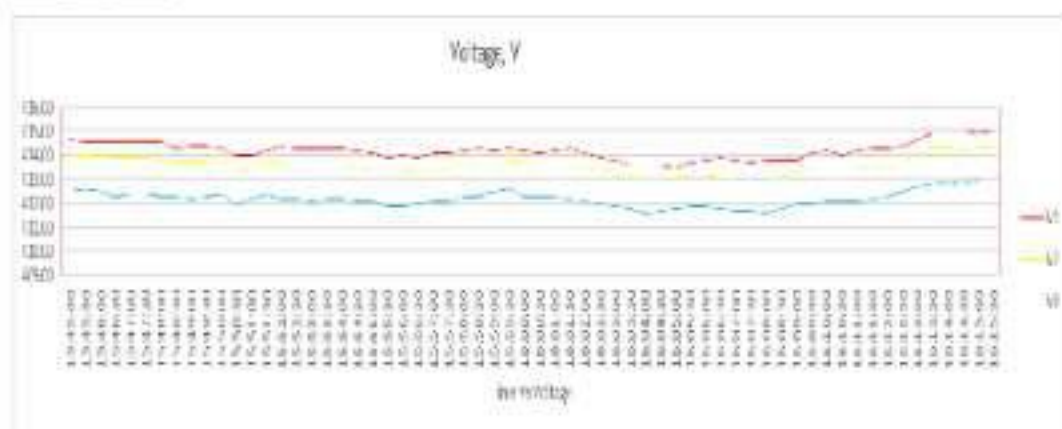
Remarks

- Current harmonics is higher than the acceptable level due to UPS, VFD fitted AHU & VV units.

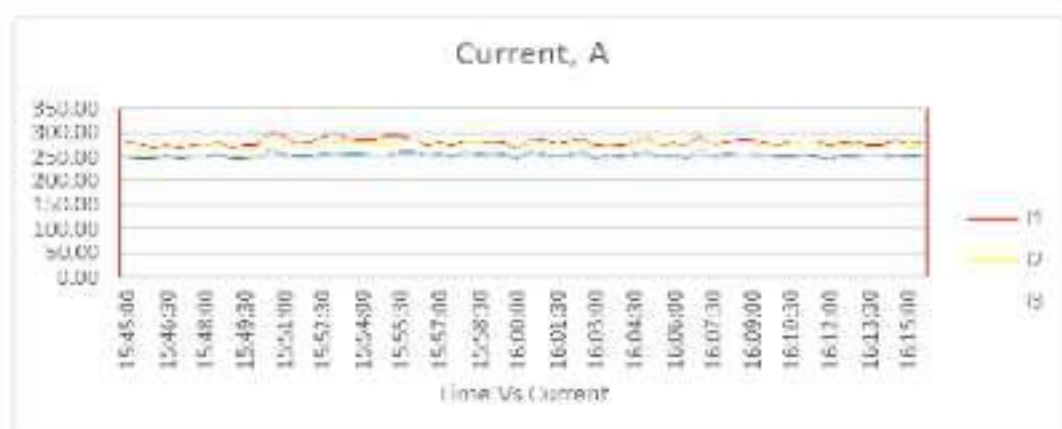
3.17IT-01_ 2000 kVA CSS TRANSFORMER-3

Power Quality Monitoring Summary					
Utility Name	IT-01_ 2000 kVA CSS TRANSFORMER 03				
Date of Analysis	06-03-2024				
Duration of Analysis	From 15:45:00 to 16:15:30				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.10	49.91	50.00	
RMS Voltage (VRN)	V	240	239	239	
RMS Voltage (VYN)	V	239	238	239	
RMS Voltage (VBN)	V	238	238	238	
RMS Voltage (VRY)	V	415	414	414	
RMS Voltage (VYB)	V	414	413	414	
RMS Voltage (VBR)	V	413	412	412	
RMS Current (IR)	Ampere	300.01	268.50	281.10	
RMS Current (IY)	Ampere	291.30	262.66	275.57	
RMS Current (IB)	Ampere	268.61	242.98	252.88	
Voltage THD (V)	%	1.88	1.66	1.75	Within permissible Limit
Current THD (I)	%	22.31	18.9	20.64	Current harmonics is higher than the acceptable level of 15% for this loading condition
Unbalance Voltage	%	0.33	0.24	0.29	Acceptable range.
Unbalance Current	%	6.37	4.61	5.47	Acceptable range.
Real Power	kW	193.30	173.60	181.76	
Apparent Power	kVA	203.80	185.30	193.08	
Reactive Power	KVAR	-63.30	-66.40	-64.93	
Average Power Factor	PF	-0.94	-0.95	-0.94	Leading PF due to UPS & VFD units

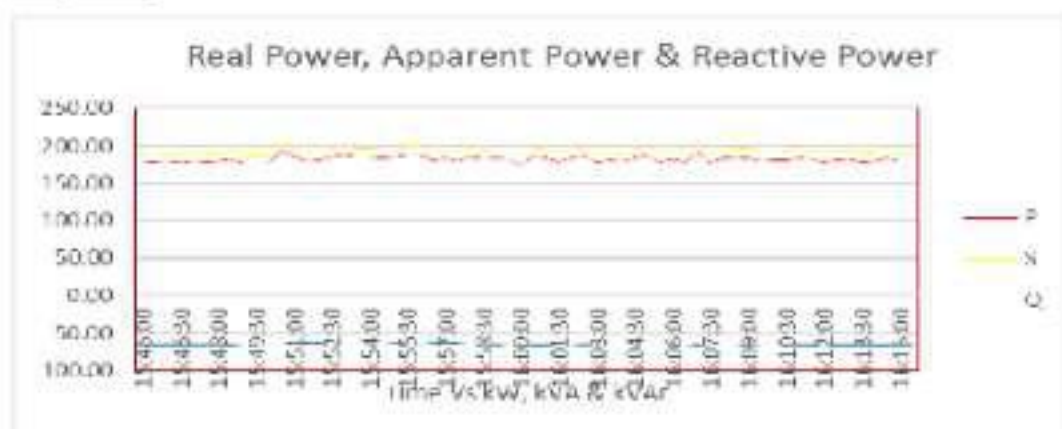
Voltage profile



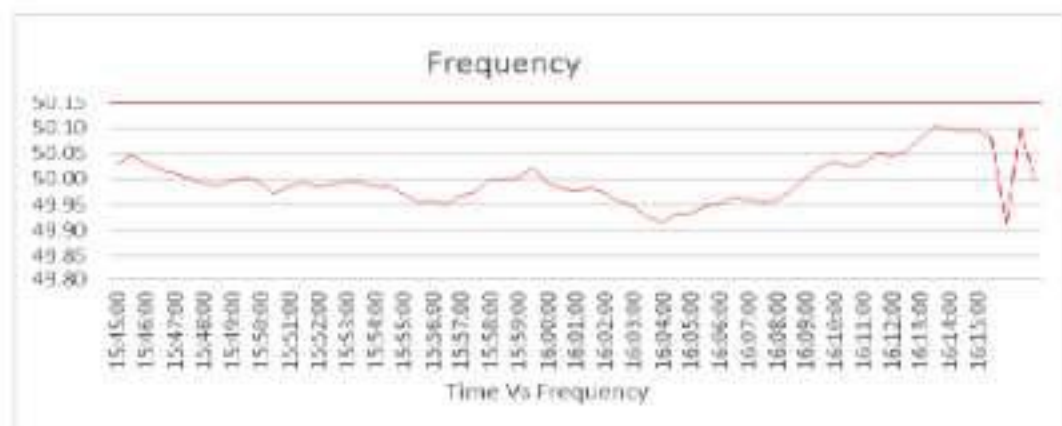
Current profile



Load profile



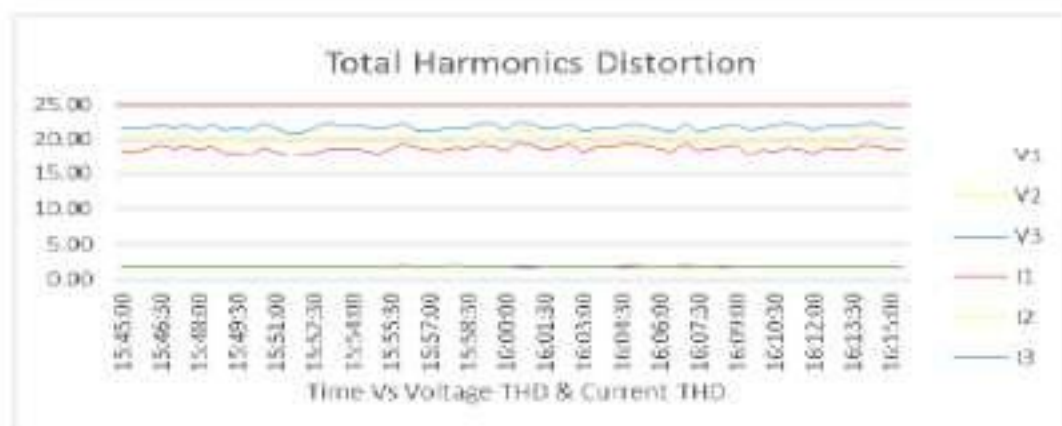
Frequency



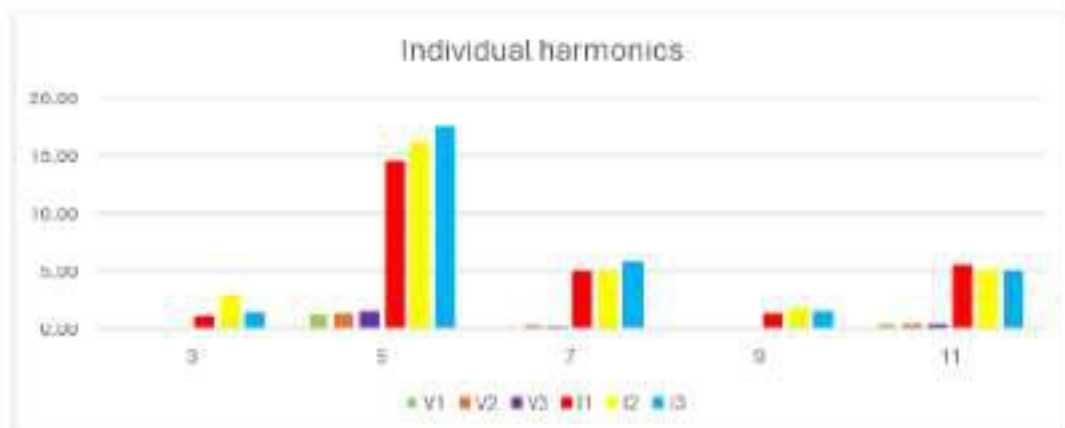
Power factor



Total harmonics distortion



Individual harmonics:



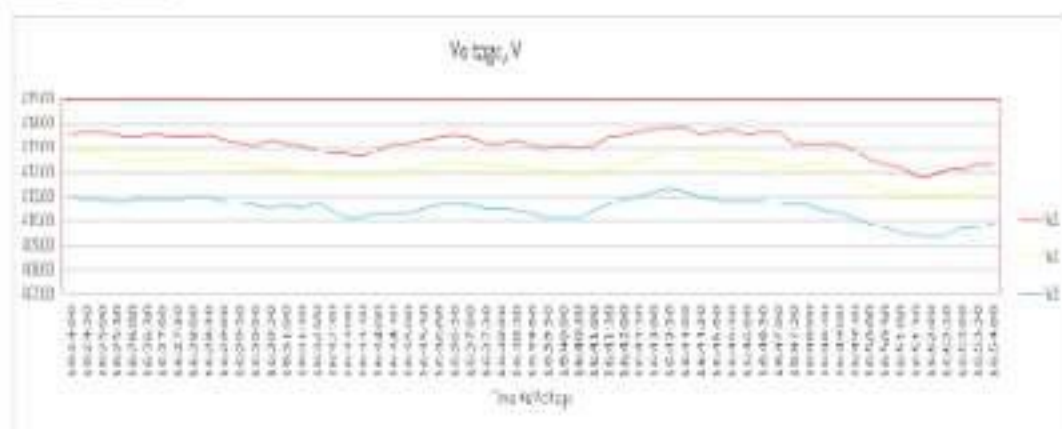
Remarks

- Current harmonics is higher than the acceptable level due to UPS, VFD fitted AHU & VRV units.

3.18 IT-01_ 2000 kVA CSS TRANSFORMER-4

Power Quality Monitoring Summary					
Utility Name	IT-01_ 2000 kVA CSS TRANSFORMER 04				
Date of Analysis	06-03-2024				
Duration of Analysis	From 16:24:00 to 16:54:30				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.08	49.91	50.00	
RMS Voltage (VRN)	V	239	238	239	
RMS Voltage (VYN)	V	238	237	238	
RMS Voltage (VBN)	V	237	237	237	
RMS Voltage (VRY)	V	414	412	413	
RMS Voltage (VYB)	V	413	411	412	
RMS Voltage (VBR)	V	411	409	410	
RMS Current (IR)	Ampere	264.65	218.29	232.20	
RMS Current (IY)	Ampere	227.20	197.20	207.92	
RMS Current (IB)	Ampere	241.71	207.86	223.52	
Voltage THD (V)	%	2.07	1.83	1.92	Within permissible Limit
Current THD (I)	%	28.87	21.46	25.56	Current harmonics is higher than the acceptable level of 15% for this loading condition
Unbalance Voltage	%	0.44	0.32	0.38	Acceptable range.
Unbalance Current	%	6.93	1.25	3.42	Acceptable range.
Real Power	kW	168.10	147.20	152.18	
Apparent Power	kVA	173.90	152.80	157.76	
Reactive Power	KVAR	44.10	15.90	35.83	
Average Power Factor	PF	0.97	0.96	0.96	Acceptable range.

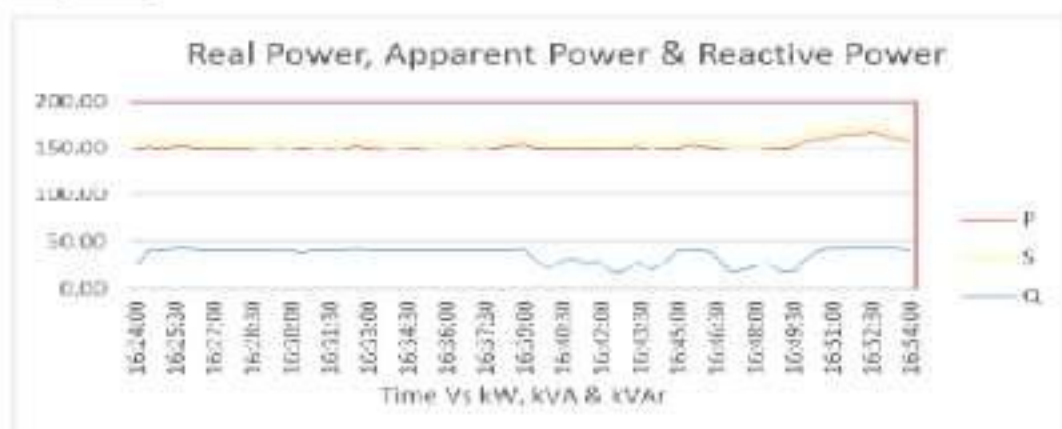
Voltage profile



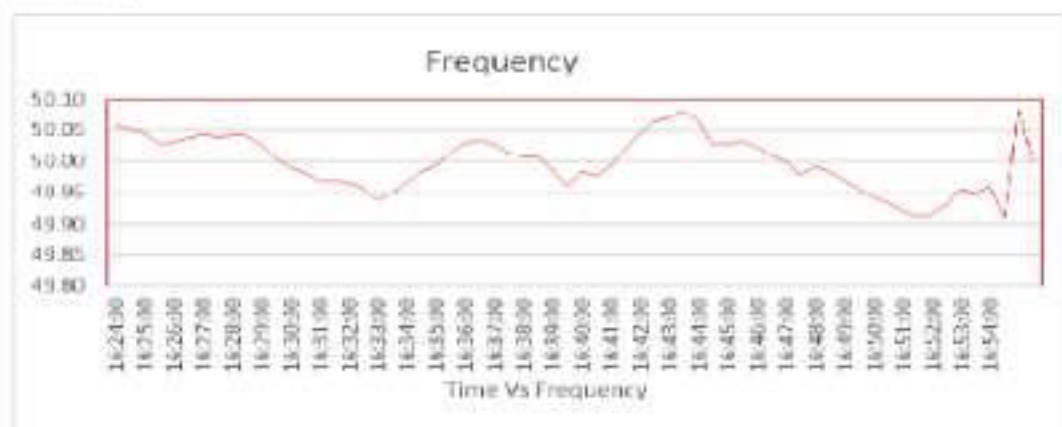
Current profile



Load profile



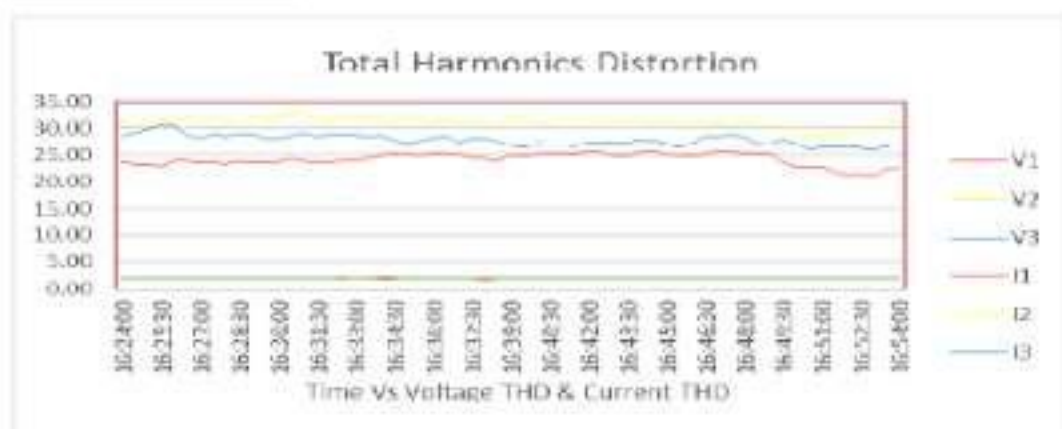
Frequency



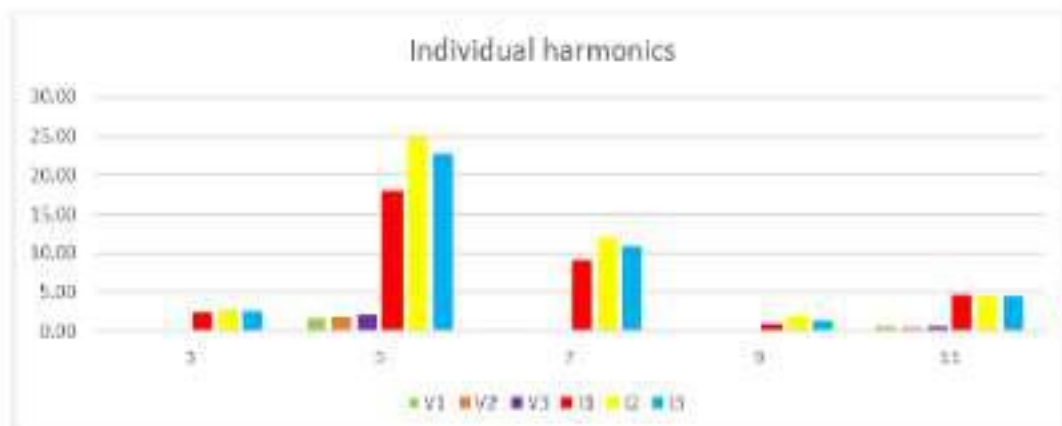
Power factor



Total harmonics distortion



Individual harmonics:



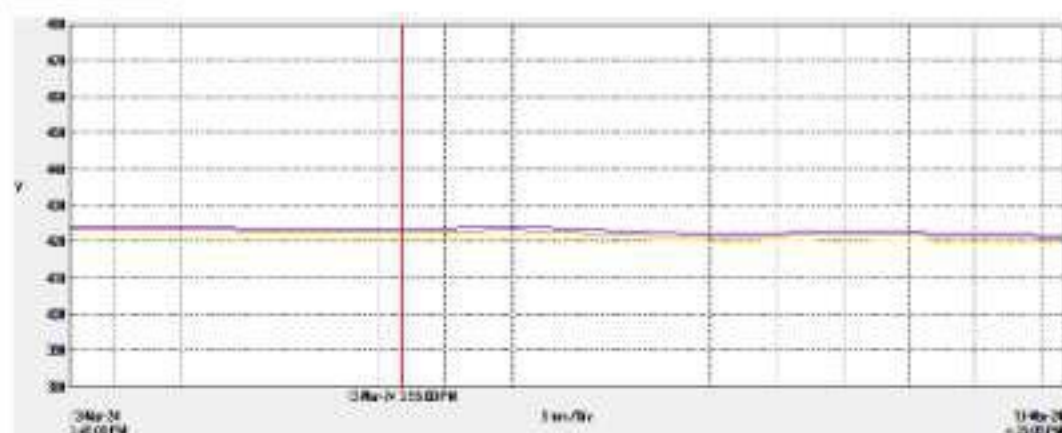
Remarks

- Current harmonics is higher than the acceptable level due to UPS, VFD fitted AHU & VRV units.

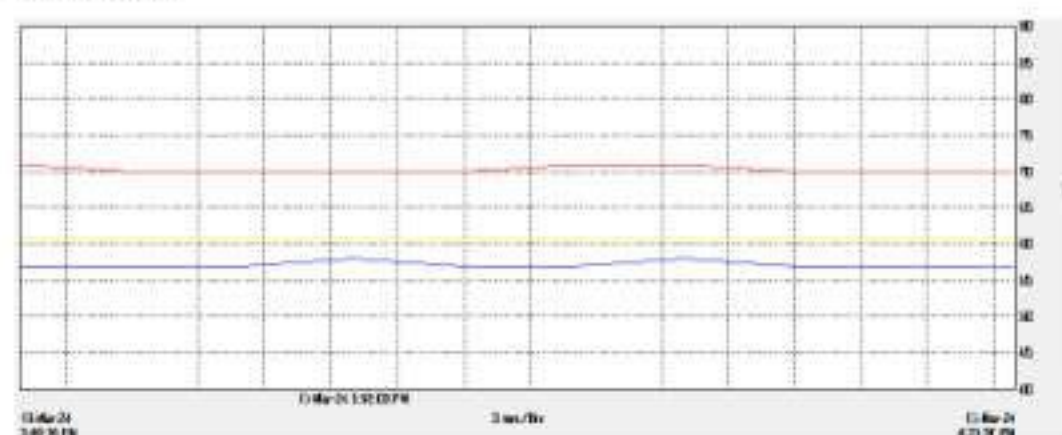
3.19 IT-02_ 1250 kVA CSS TRANSFORMER-1

Power Quality Monitoring Summary					
Utility Name	IT-02_ 1250 kVA CSS TRANSFORMER 01				
Date of Analysis	13-03-2024				
Duration of Analysis	From 15:40:00 to 16:25:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.07	49.87	49.95	
RMS Voltage (VRN)	V	245	243	244	
RMS Voltage (VYN)	V	244	242	243	
RMS Voltage (VBN)	V	245	244	244	
RMS Voltage (VRY)	V	424	421	423	
RMS Voltage (VYB)	V	422	420	421	
RMS Voltage (VBR)	V	424	422	423	
RMS Current (IR)	Ampere	71	70	70	
RMS Current (IY)	Ampere	58	61	61	
RMS Current (IB)	Ampere	61	57	57	
Voltage THD (V)	%	1.4	1.2	1.3	Within permissible Limit
Current THD (I)	%	20.1	17.2	18.9	Current harmonics is slightly higher than the acceptable level of 15% for this loading condition.
Unbalance Voltage	%	0.3	0.3	0.3	Acceptable range.
Unbalance Current	%	12.7	11.1	11.9	If possible, Phase currents shall be balanced
Real Power	kW	41.88	41.2	41.47	
Apparent Power	kVA	46.81	46.31	46.48	
Reactive Power	KVAR	-11.99	-12.32	-12.13	
Average Power Factor	PF	0.89	0.88	0.89	Acceptable range.

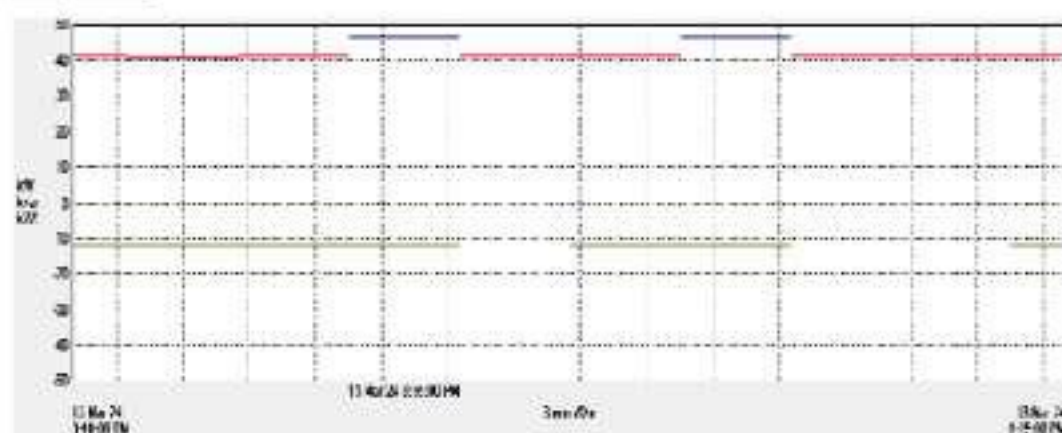
Voltage profile



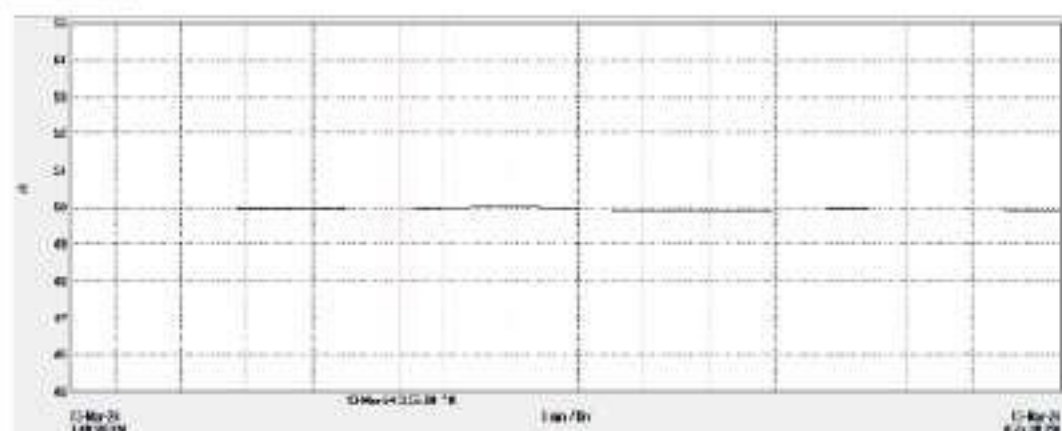
Current profile



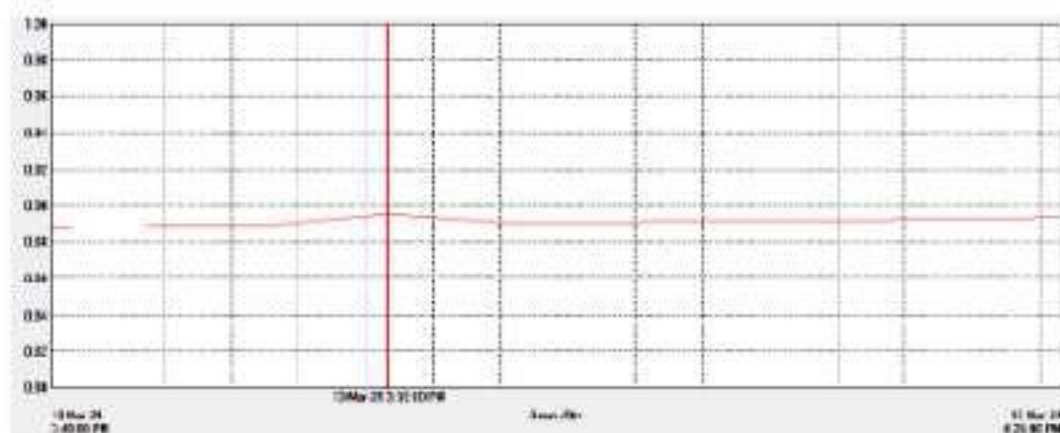
Load profile



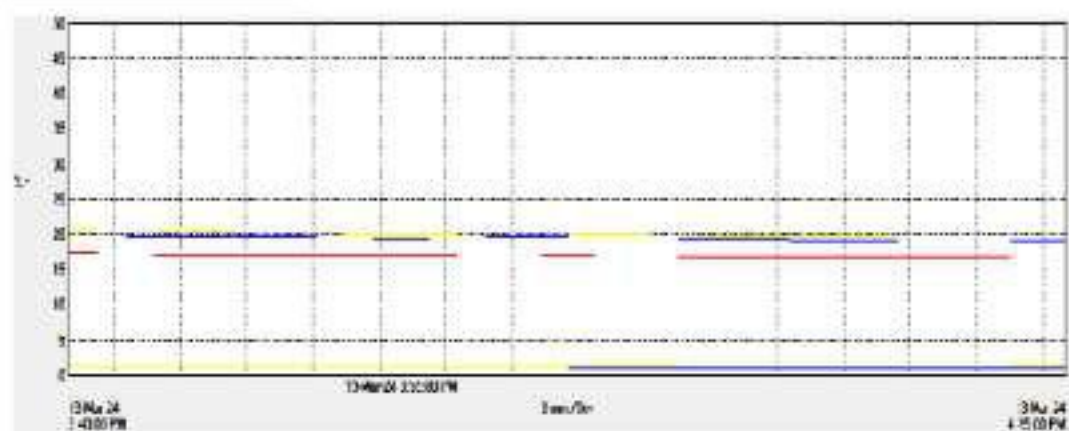
Frequency



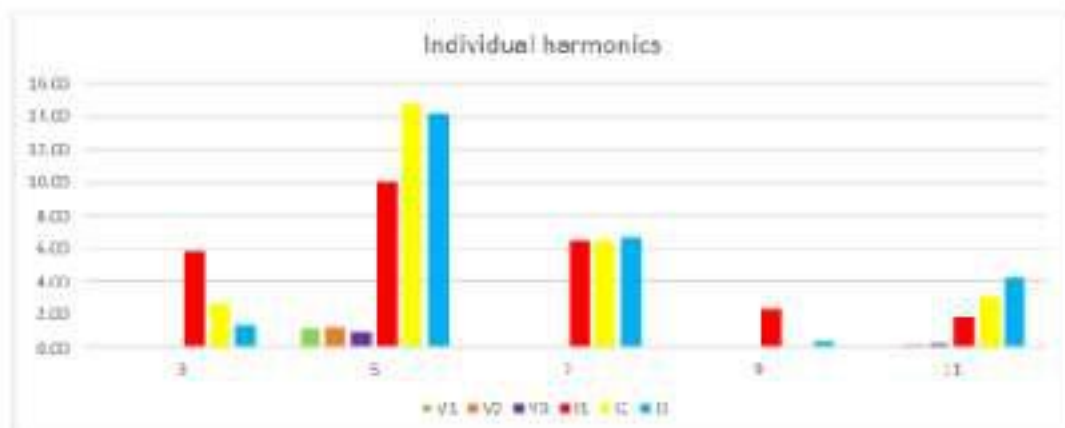
Power factor



Total harmonics distortion



Individual harmonics:



Remarks

- Current harmonics is higher than the acceptable level due to UPS, VFD fitted AHU & VRV units.

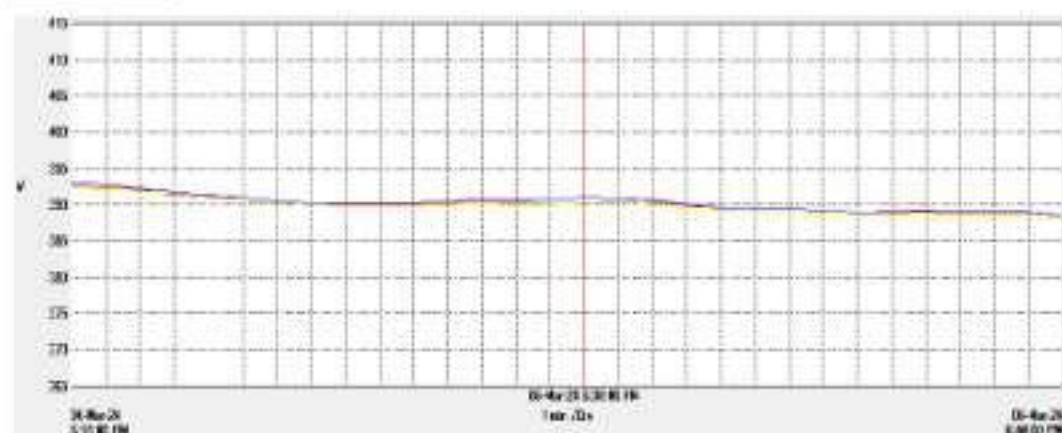
3.20 SEZ AREA_ 2500 kVA CHILLER TRANSFORMER-1

Power Quality Monitoring Summary					
Utility Name	SEZ AREA_ 2500 kVA CHILLER TRANSFORMER-1				
Date of Analysis	06-03-2024				
Duration of Analysis	From 18:15:00 to 18:44:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.08	49.96	50.01	
RMS Voltage (VRN)	V	227	224	225	
RMS Voltage (VYN)	V	227	224	225	
RMS Voltage (VBN)	V	227	224	225	
RMS Voltage (VRY)	V	393	389	390	
RMS Voltage (VYB)	V	392	388	390	
RMS Voltage (VBR)	V	393	389	390	
RMS Current (IR)	Ampere	751	556	626	
RMS Current (IY)	Ampere	744	543	615	
RMS Current (IB)	Ampere	735	534	605	
Voltage THD (V)	%	2.1	1.8	1.9	Within permissible Limit
Current THD (I)	%	8.6	8.4	8.5	Within permissible Limit of 12% for this loading condition.
Unbalance Voltage	%	0.1	0	0.1	Acceptable range.
Unbalance Current	%	2.5	0.9	1.7	Acceptable range.
Real Power	kW	493.2	363	405.6	
Apparent Power	kVA	502.8	370.9	414	
Reactive Power	KVAR	72.24	43.39	54.19	
Average Power Factor	PF	0.98	0.97	0.97	Acceptable range.

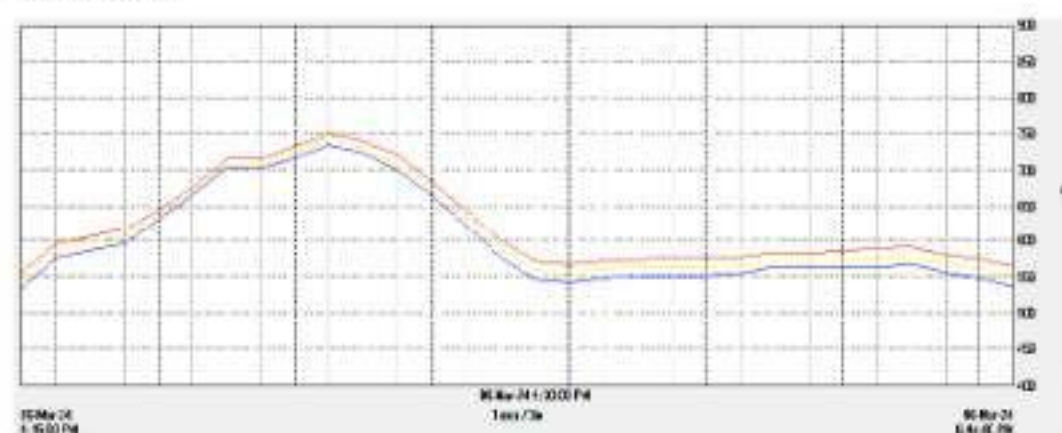
Remarks

- Voltage is below 400 V. Need to maintain more than 400 V for smooth functioning of Equipment's.

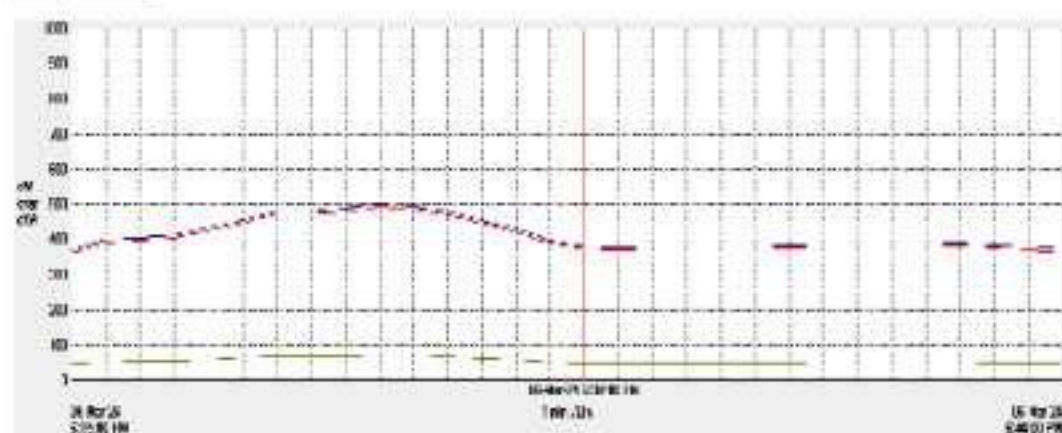
Voltage profile



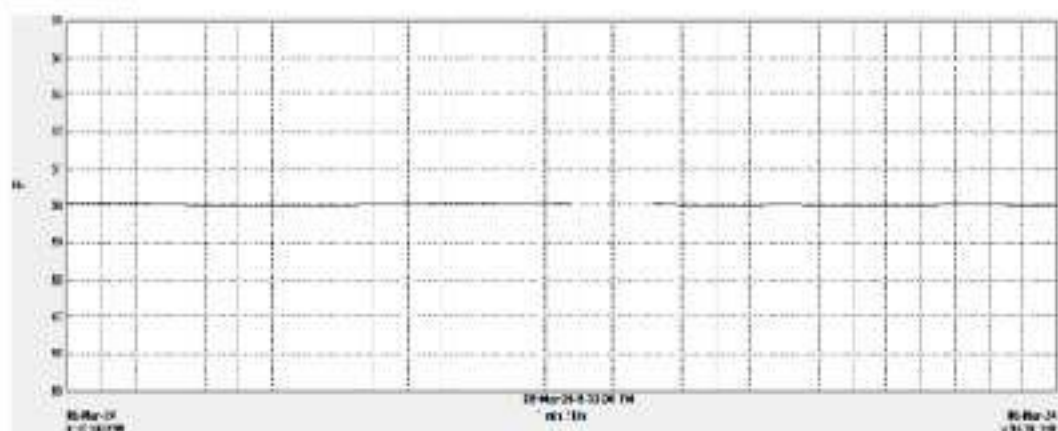
Current profile



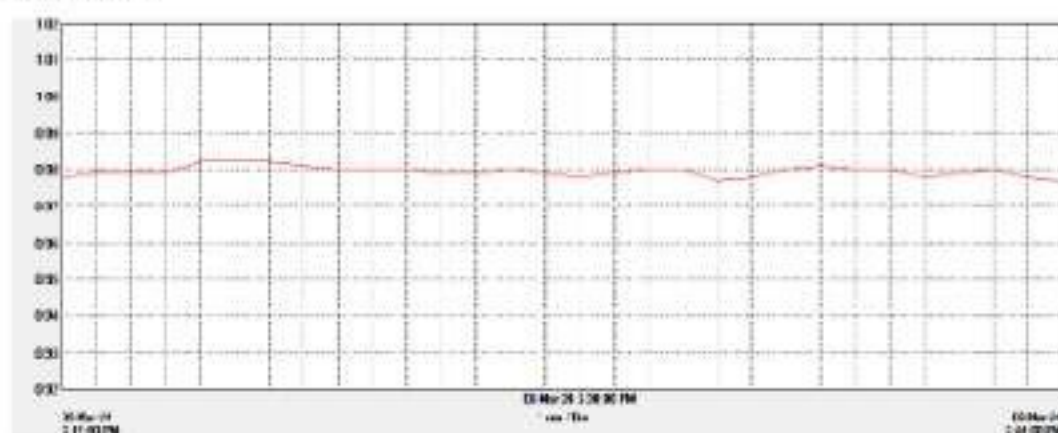
Load profile.



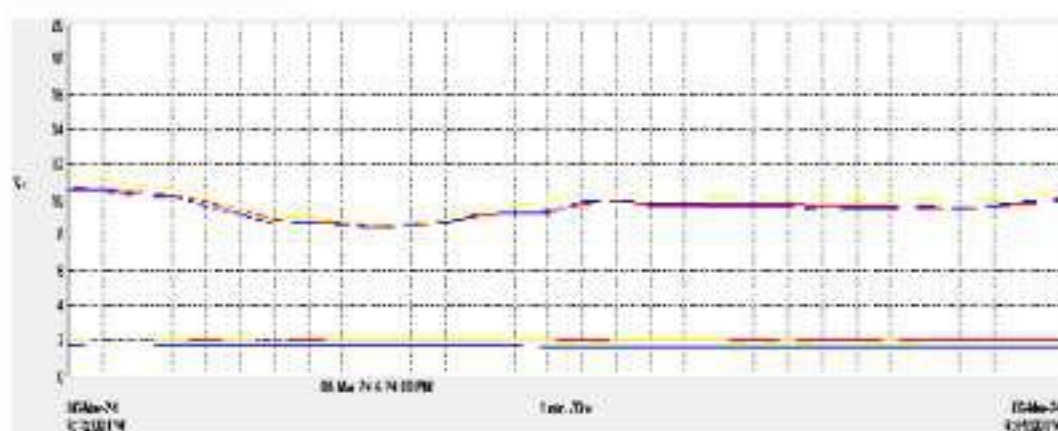
Frequency



Power factor



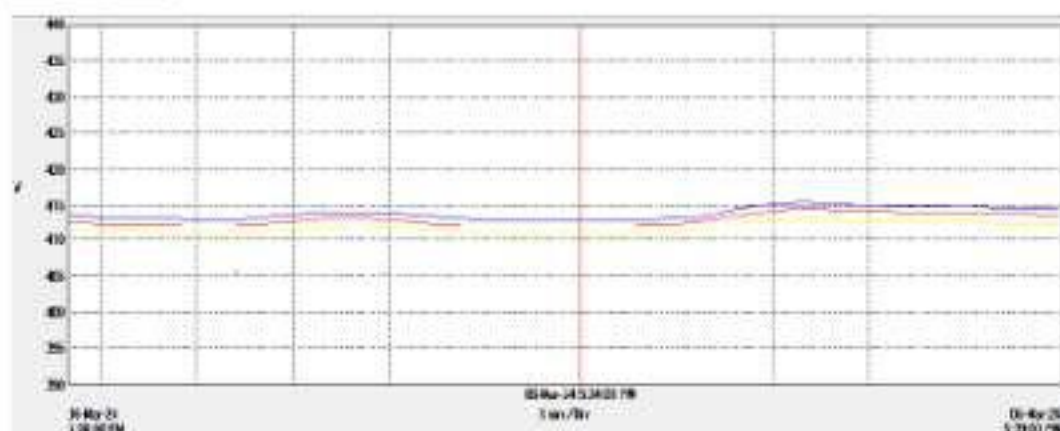
Total harmonics distortion



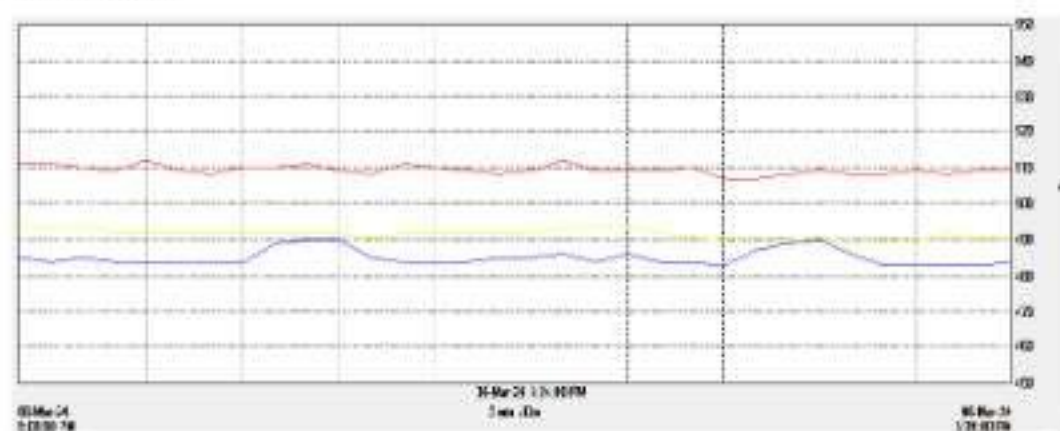
3.21 SEZ AREA_ 2500 kVA CHILLER TRANSFORMER-2

Power Quality Monitoring Summary					
Utility Name	SEZ AREA_ 2500 kVA CHILLER TRANSFORMER-2				
Date of Analysis	06-03-2024				
Duration of Analysis	From 17:08:00 to 17:40:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.1	49.93	50.01	
RMS Voltage (VRN)	V	239	238	239	
RMS Voltage (VYN)	V	239	237	238	
RMS Voltage (VBN)	V	240	238	239	
RMS Voltage (VRY)	V	415	412	413	
RMS Voltage (VYB)	V	413	411	412	
RMS Voltage (VBR)	V	416	413	414	
RMS Current (IR)	Ampere	512	507	509	
RMS Current (IY)	Ampere	494	489	492	
RMS Current (IB)	Ampere	490	483	485	
Voltage THD (V)	%	1.8	1.7	1.7	Within permissible Limit
Current THD (I)	%	11.4	10.1	10.6	Within permissible Limit of 12% for this loading condition.
Unbalance Voltage	%	0.3	0.2	0.3	Acceptable range.
Unbalance Current	%	3.2	2.4	2.8	Acceptable range.
Real Power	kW	343.2	339.3	340.6	-
Apparent Power	kVA	356.9	353.6	354.8	-
Reactive Power	KVAR	82.18	79.62	80.78	-
Average Power Factor	PF	0.96	0.95	0.95	Acceptable range

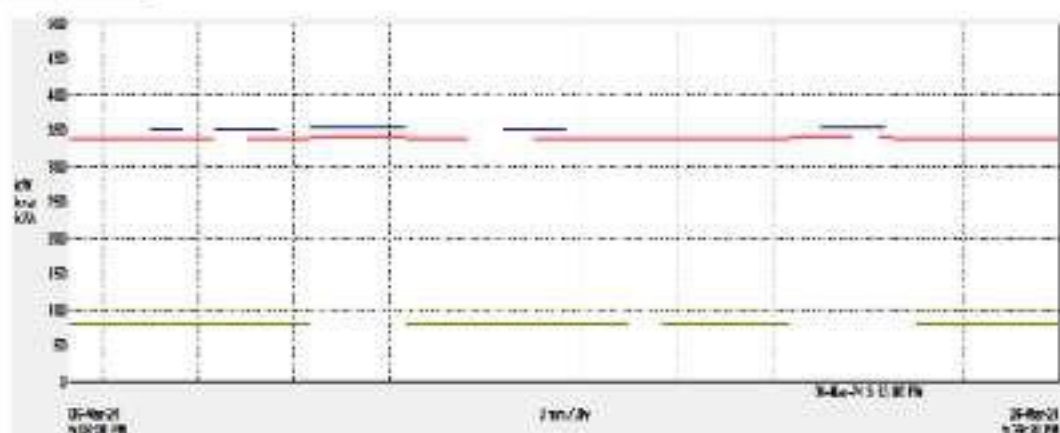
Voltage profile



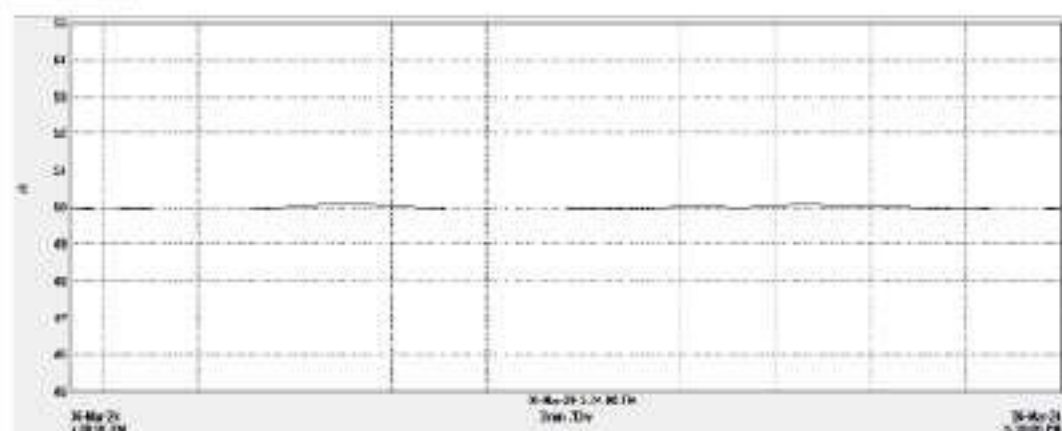
Current profile



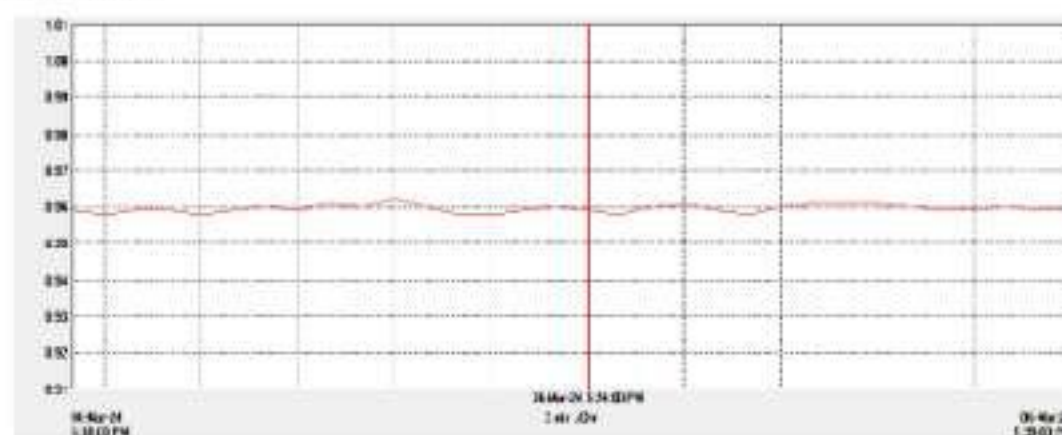
Load profile



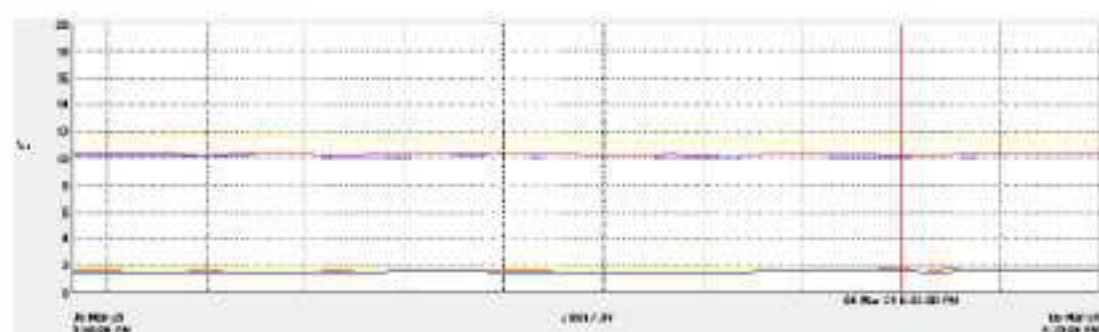
Frequency



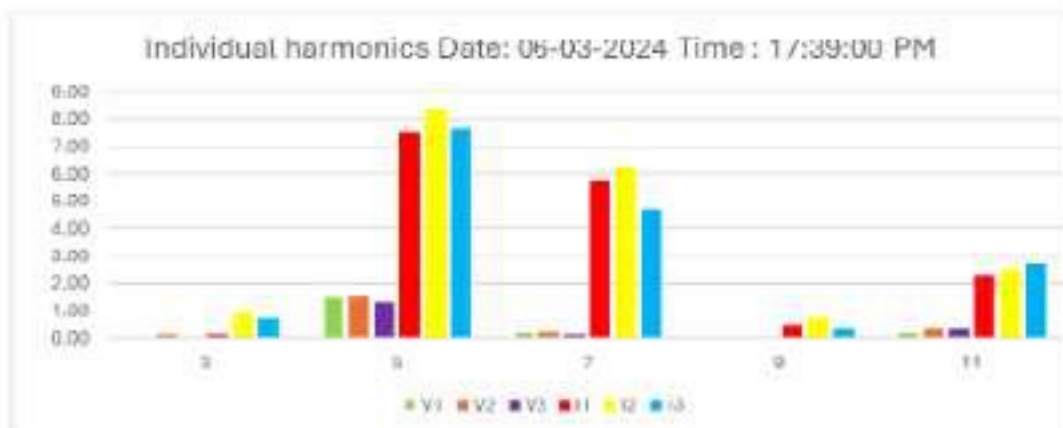
Power factor



Total harmonics distortion



Individual harmonics:



3.22 NSEZ_ 2500 KVA TRANSFORMER-1

Power Quality Monitoring Summary					
Utility Name	NSEZ_ 2500 KVA TRANSFORMER 1				
Date of Analysis	04-03-2024				
Duration of Analysis	From 17:24:56 to 17:56:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.15	49.95	50.05	
RMS Voltage (VRN)	V	241	240	240	
RMS Voltage (VYN)	V	242	241	242	
RMS Voltage (VBN)	V	241	241	240	
RMS Voltage (VRY)	V	417	415	416	
RMS Voltage (VYB)	V	420	418	419	
RMS Voltage (VBR)	V	417	415	416	
RMS Current (IR)	Ampere	398.00	322.85	352.68	
RMS Current (IY)	Ampere	369.83	294.00	324.80	
RMS Current (IB)	Ampere	379.21	304.39	327.27	
Voltage THD (V)	%	1.67	1.45	1.55	Within permissible Limit
Current THD (I)	%	14.36	12.48	13.32	Within permissible Limit of 15% for this loading condition.
Unbalance Voltage	%	0.51	0.39	0.45	Acceptable range.
Unbalance Current	%	5.15	1.20	3.52	Acceptable range.
Real Power	kW	268.20	207.80	230.11	
Apparent Power	kVA	275.60	222.60	241.83	
Reactive Power	KVAR	-62.70	-82.90	-73.73	
Average Power Factor	PF	-0.93	-0.97	-0.95	Leading PF due to UPS & VFD units

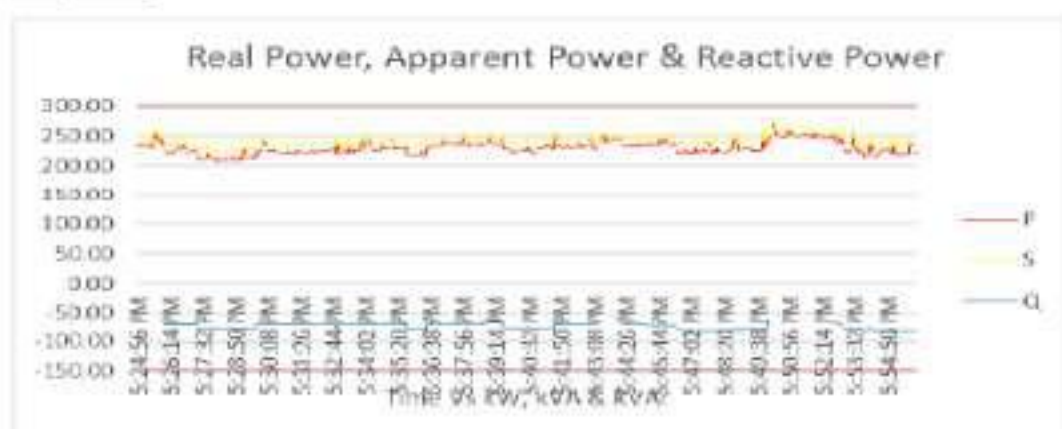
Voltage profile



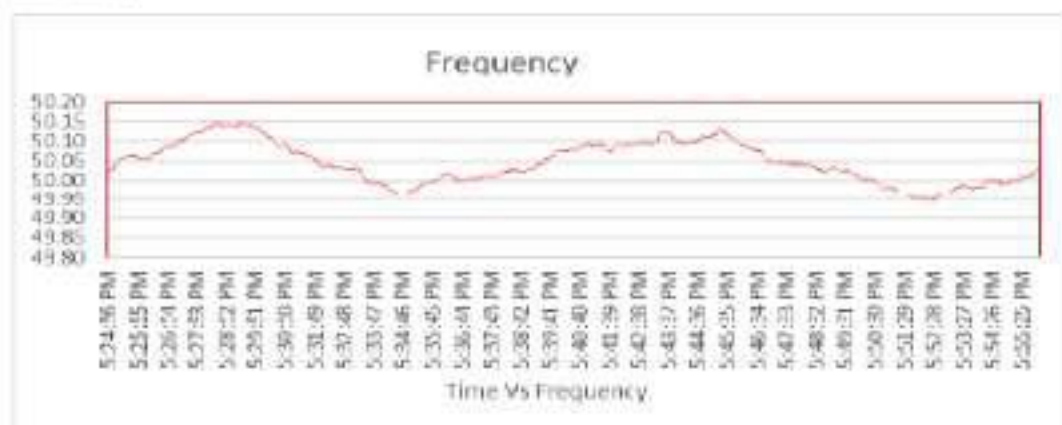
Current profile



Load profile



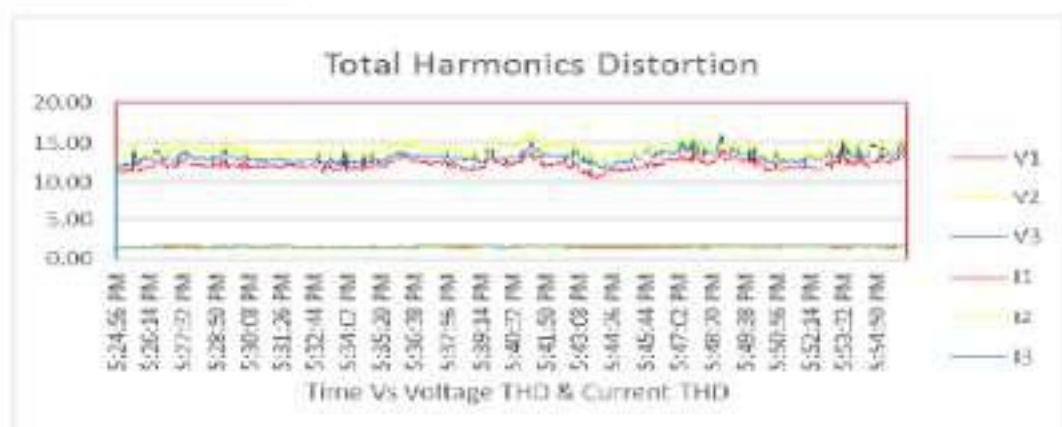
Frequency



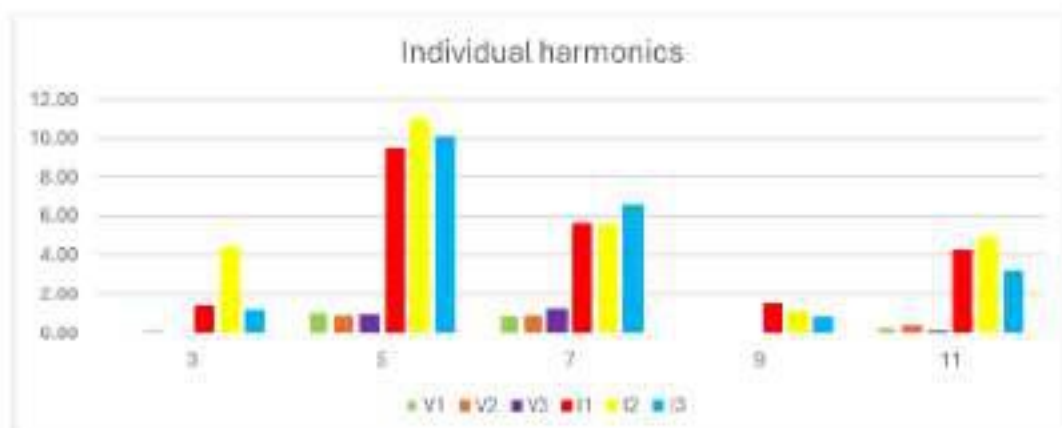
Power factor



Total harmonics distortion



Individual harmonics:



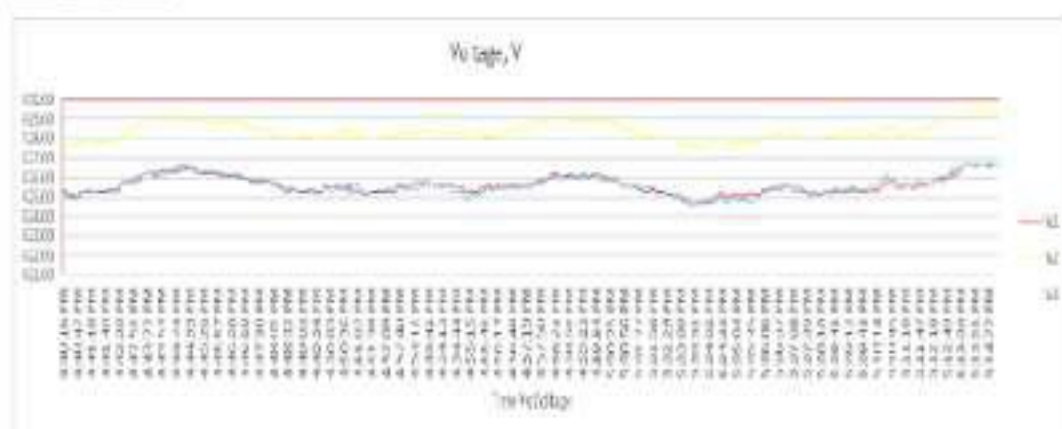
Remarks

- The average power factor is -0.95 leading due to UPS & VFD units

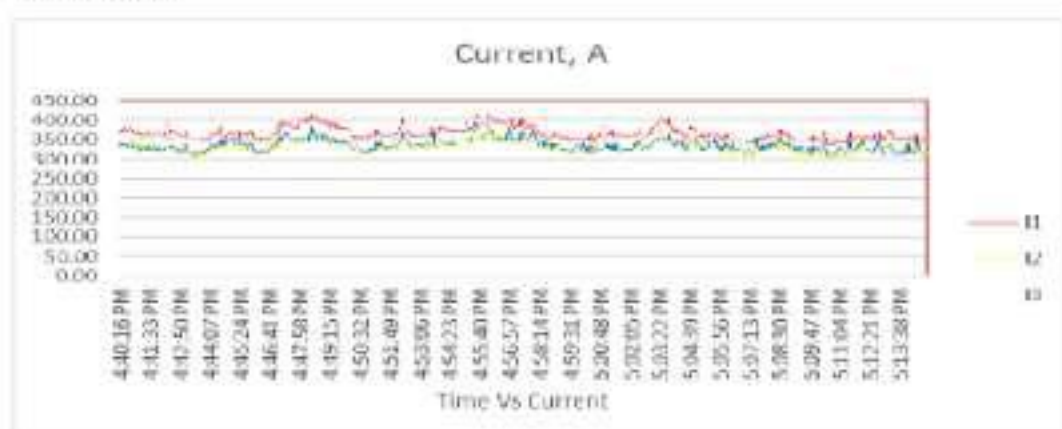
3.23 NSEZ_ 2500 KVA TRANSFORMER-2

Power Quality Monitoring Summary					
Utility Name	NSEZ_ 2500 KVA TRANSFORMER 2				
Date of Analysis	04-03-2024				
Duration of Analysis	From 16:40:16 to 17:14:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.20	49.85	49.99	
RMS Voltage (VRN)	V	246	245	246	
RMS Voltage (VYN)	V	248	247	247	
RMS Voltage (VBN)	V	246	247	246	
RMS Voltage (VRY)	V	427	425	426	
RMS Voltage (VYB)	V	430	427	428	
RMS Voltage (VBR)	V	427	425	426	
RMS Current (IR)	Ampere	417.50	336.40	367.12	
RMS Current (IY)	Ampere	390.70	305.10	330.65	
RMS Current (IB)	Ampere	389.90	311.00	336.15	
Voltage THD (V)	%	1.51	1.36	1.42	Within permissible Limit
Current THD (I)	%	14.92	13.18	14.09	Within permissible Limit of 15% for this loading condition.
Unbalance Voltage	%	0.53	0.38	0.44	Acceptable range.
Unbalance Current	%	6.09	2.21	4.50	Acceptable range.
Real Power	kW	287.00	220.00	242.76	
Apparent Power	kVA	294.00	235.00	254.56	
Reactive Power	KVAR	-61.00	-88.00	-75.79	
Average Power Factor	PF	-0.93	-0.98	-0.95	Leading PF due to UPS & VFD units

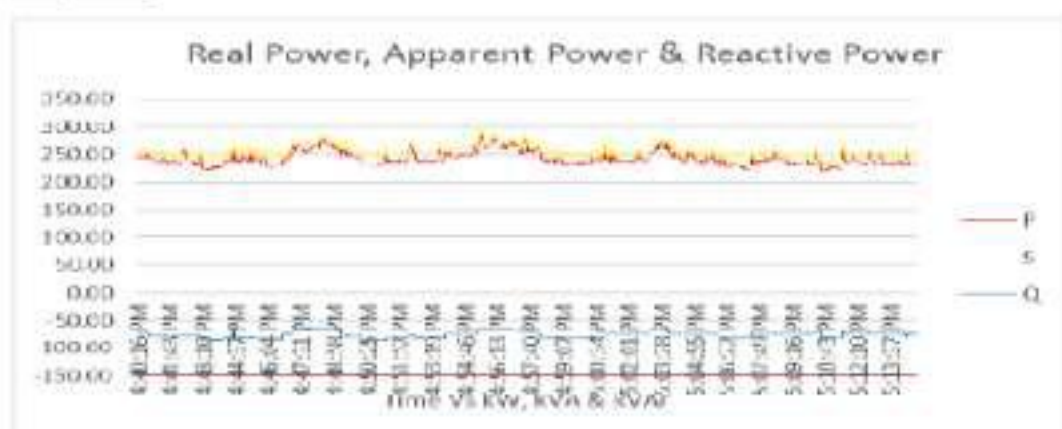
Voltage profile



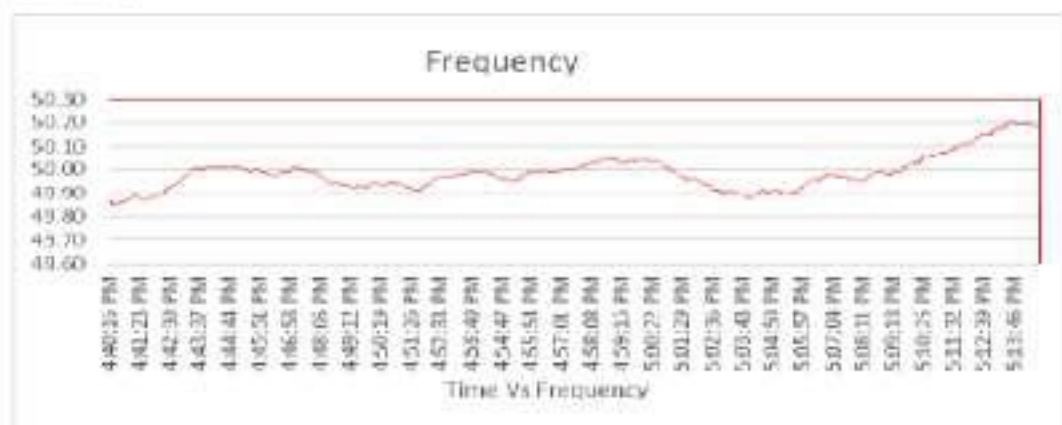
Current profile



Load profile



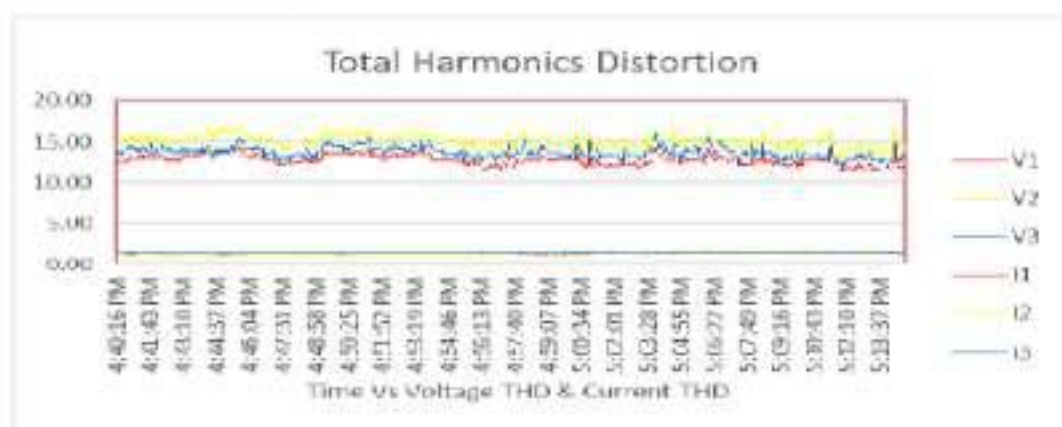
Frequency



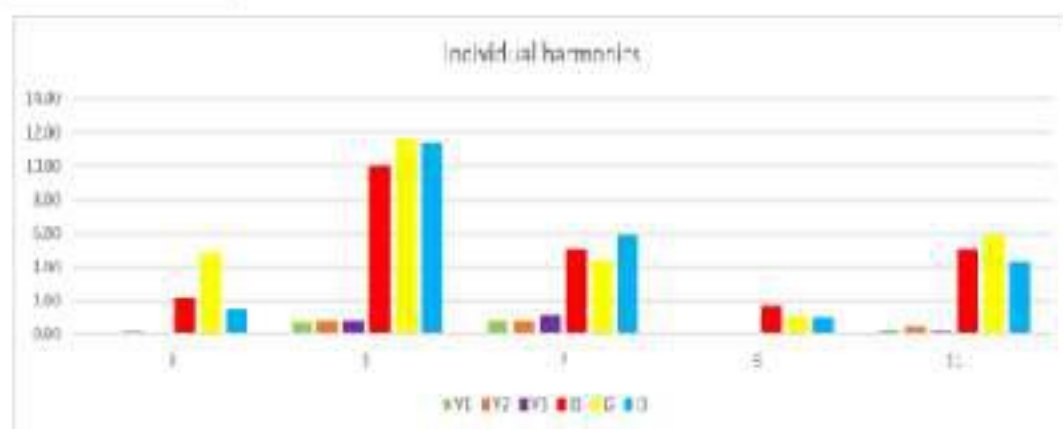
Power factor



Total harmonics distortion



Individual harmonics:



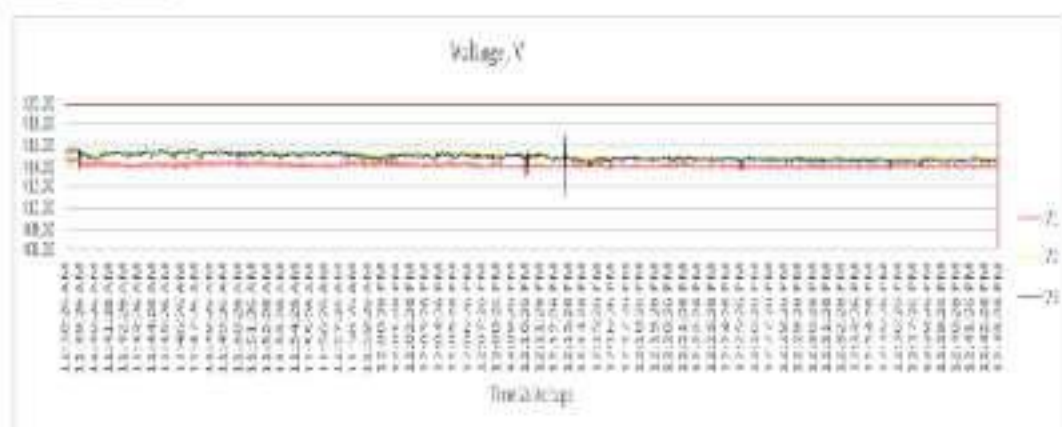
Remarks

- The average power factor is -0.95 leading due to UPS & VFD units.

3.24 NSEZ_DG-1_1010 kVA

Power Quality Monitoring Summary					
Utility Name	NSEZ_1010 kVA DG-1				
Date of Analysis	05-03-24				
Duration of Analysis	From 11:38:26 to 12:43:26				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	51.39	49.76	50.00	
RMS Voltage (VRN)	V	242	237	239	
RMS Voltage (VYN)	V	241	238	240	
RMS Voltage (VBN)	V	242	238	240	
RMS Voltage (VRY)	V	418	411	414	
RMS Voltage (VYB)	V	418	412	415	
RMS Voltage (VBR)	V	418	412	415	
RMS Current (IR)	Ampere	592.20	24.00	435.09	
RMS Current (IY)	Ampere	570.70	35.70	404.75	
RMS Current (IB)	Ampere	558.20	24.00	402.59	
Voltage THD (V)	%	2.6	2.4	2.53	
Current THD (I)	%	9.3	8.53	8.85	
Unbalance Voltage	%	0.31	0.05	0.13	Acceptable range
Unbalance Current	%	40.19	1.33	3.71	Acceptable range
Real Power	kW	376.00	185.00	272.06	
Apparent Power	kVA	402.00	191.00	278.61	
Reactive Power	KVAR	119.00	-80.00	-28.59	
Average Power Factor	PF	1.00	-1.00	1.00	Acceptable range.

Voltage profile



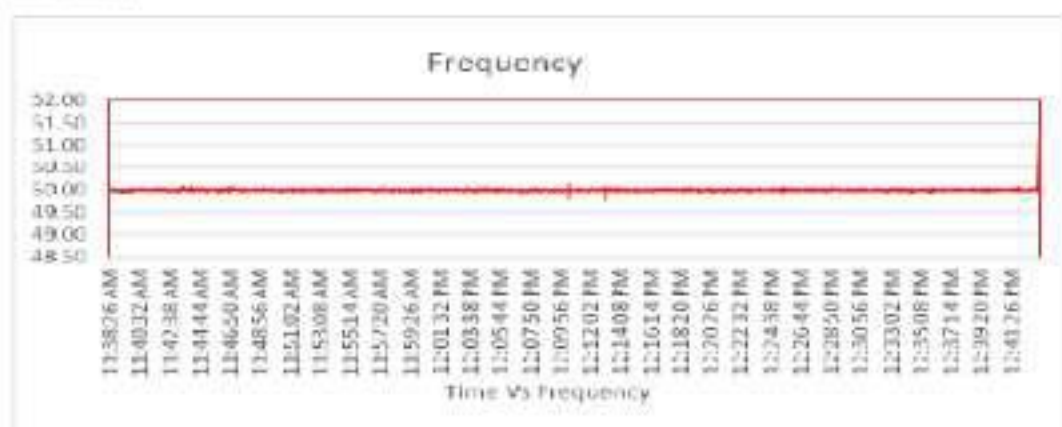
Current profile



Load profile.



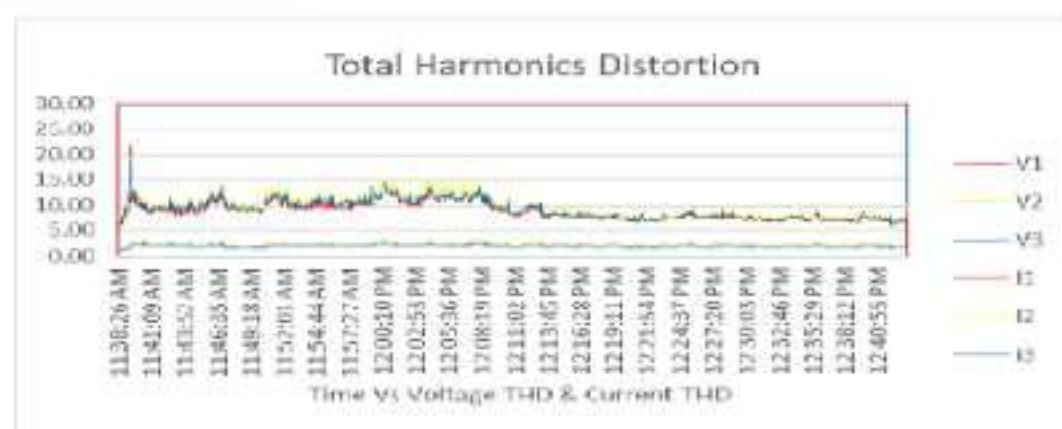
Frequency



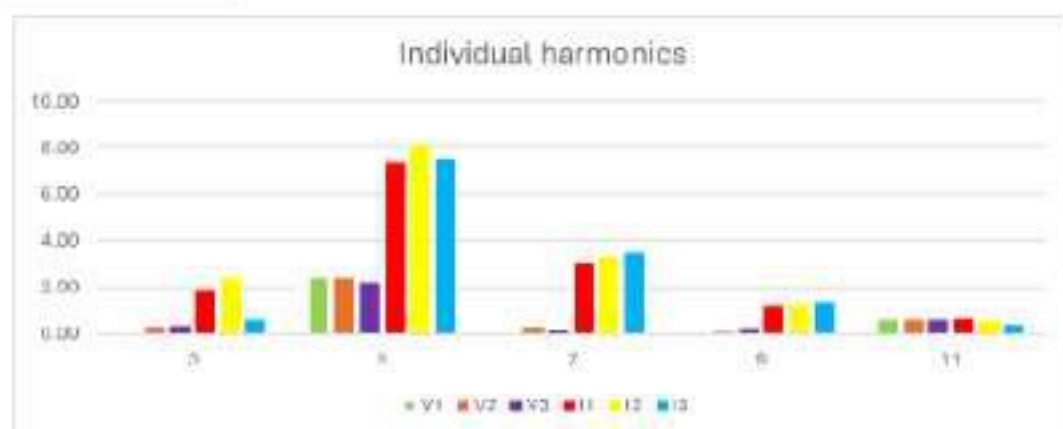
Power factor



Total harmonics distortion



Individual harmonics:



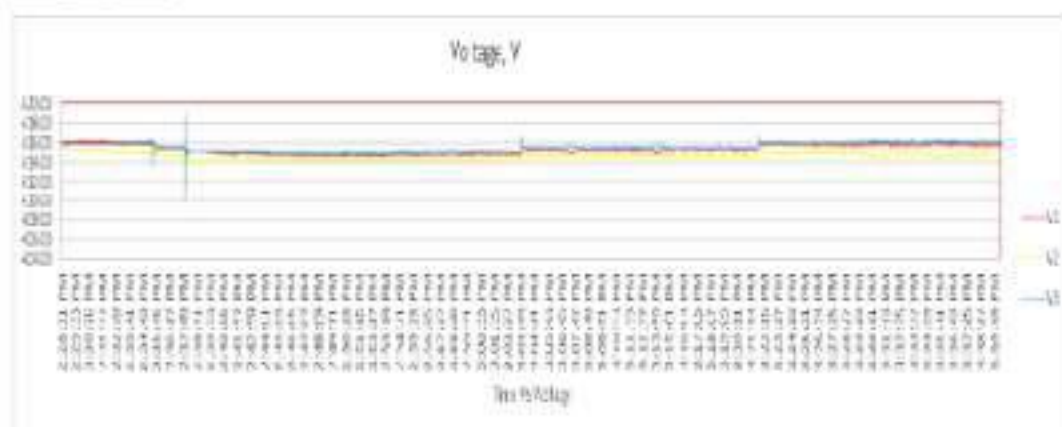
Remarks

- No issues observed.

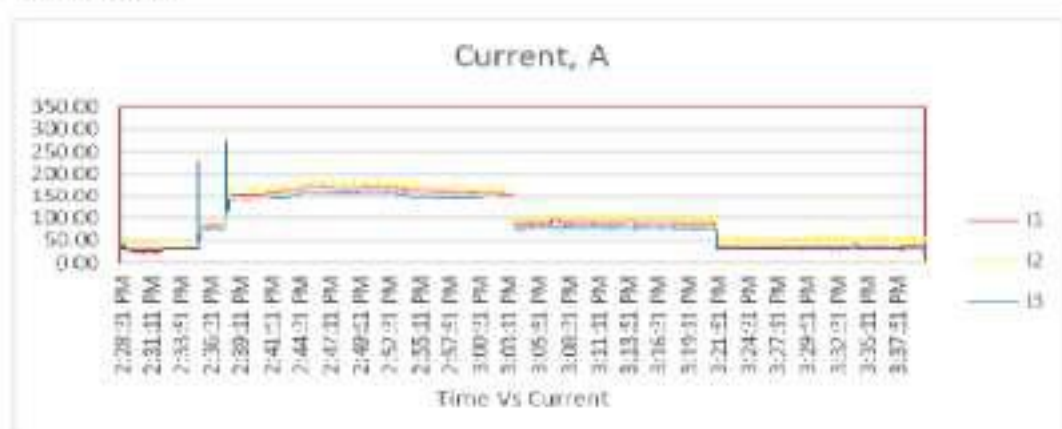
3.25 NSEZ_DG-2_380 kVA

Power Quality Monitoring Summary					
Utility Name	NSEZ_380 kVA DG-2				
Date of Analysis	05-03-24				
Duration of Analysis	From 14:28:31 to 15:40:24				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.66	49.32	50.08	
RMS Voltage (VRN)	V	242	236	240	
RMS Voltage (VYN)	V	242	236	239	
RMS Voltage (VBN)	V	242	236	240	
RMS Voltage (VRY)	V	419	410	415	
RMS Voltage (VYB)	V	418	409	415	
RMS Voltage (VBR)	V	419	410	416	
RMS Current (IR)	Ampere	281.90	18.10	94.58	
RMS Current (IY)	Ampere	291.30	42.10	107.66	
RMS Current (IB)	Ampere	272.60	22.30	86.18	
Voltage THD (V)	%	1.15	1.11	1.13	
Current THD (I)	%	4.31	2.76	3.76	
Unbalance Voltage	%	0.28	0.07	0.14	Acceptable range.
Unbalance Current	%	28.98	1.89	8.74	Acceptable range.
Real Power	kW	105.00	19.00	56.09	
Apparent Power	kVA	171.00	21.00	69.07	
Reactive Power	KVAR	133.00	-17.00	32.35	
Average Power Factor	PF	1.00	-0.95	1.00	Acceptable range.

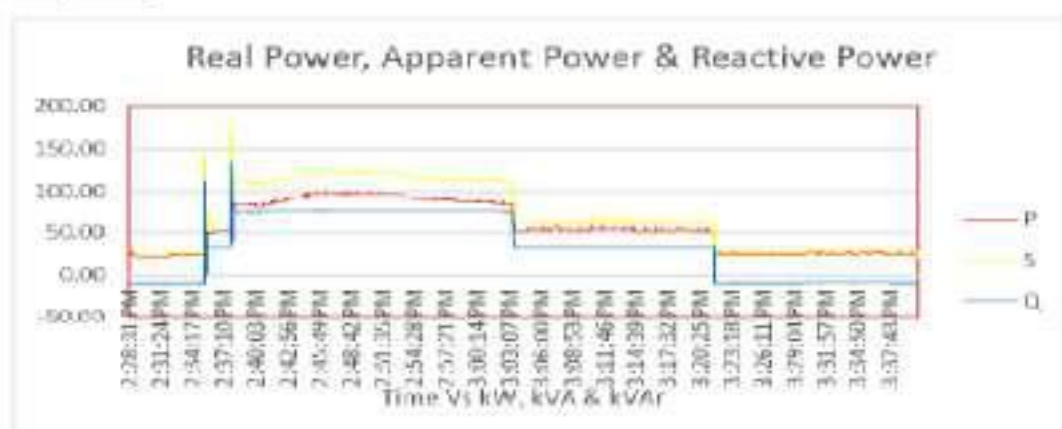
Voltage profile



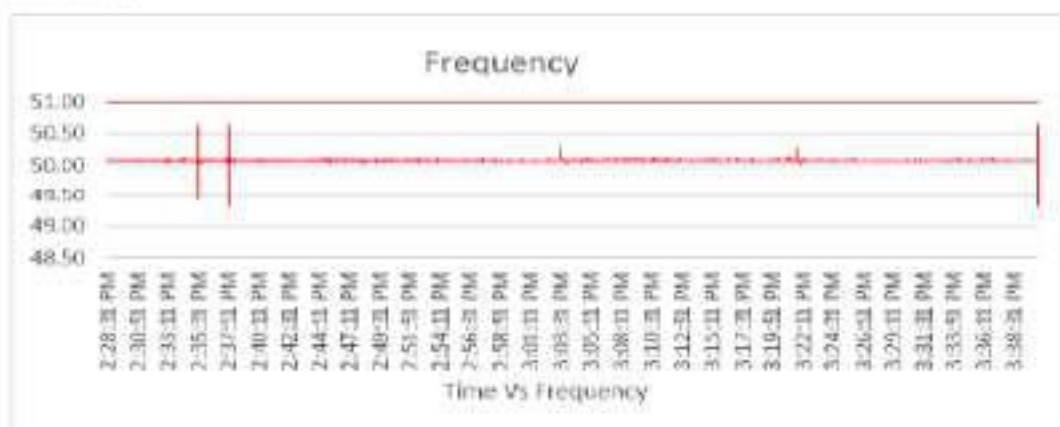
Current profile



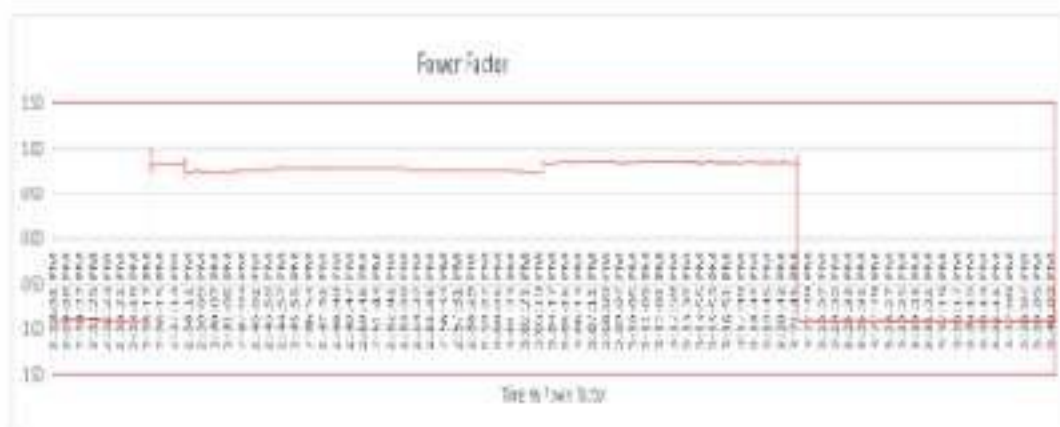
Load profile.



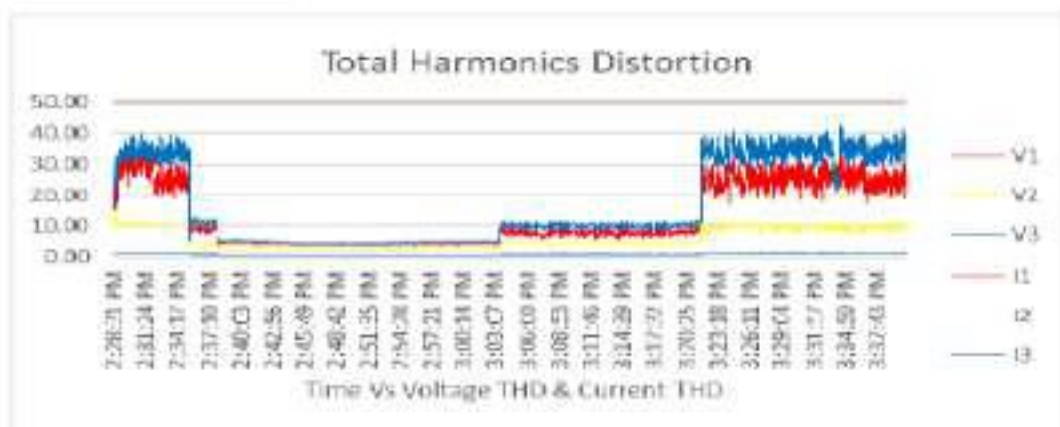
Frequency



Power factor



Total harmonics distortion



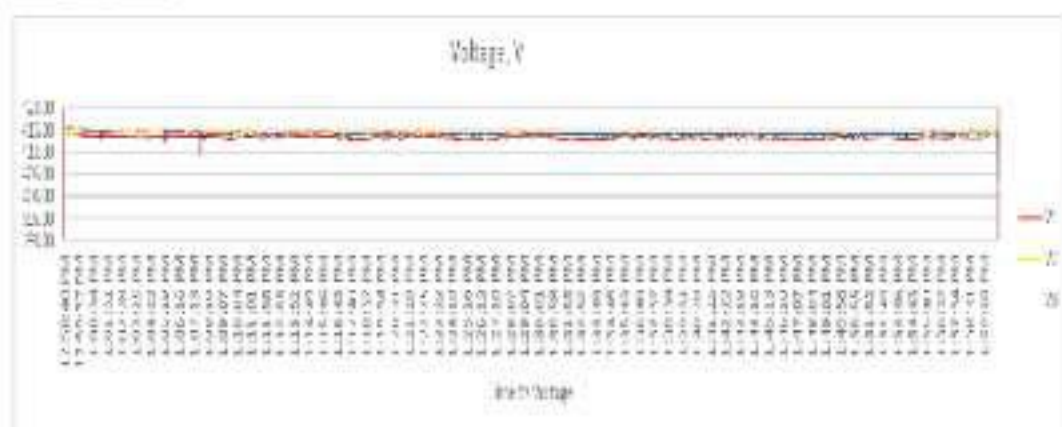
Remarks

- The average power factor is 0.20.
- Current Unbalance is higher than acceptable level of 10%. It is recommended to distribute the loads equally.

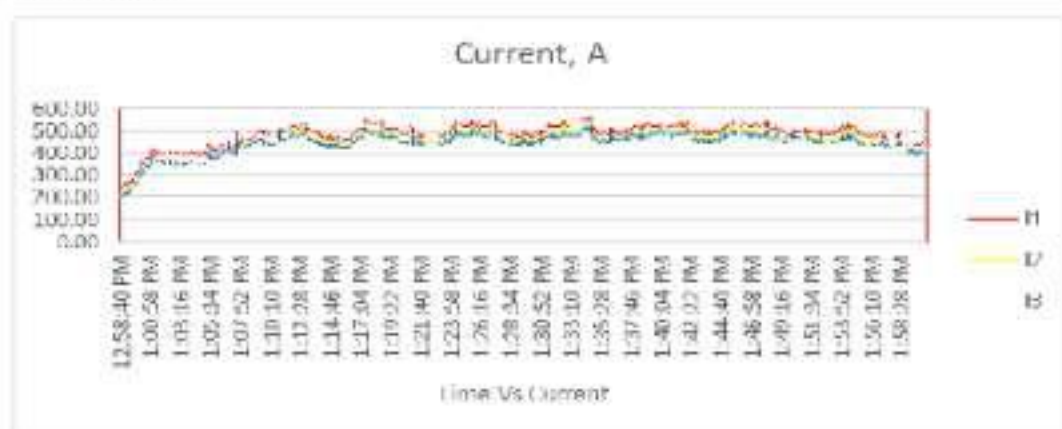
3.26 NSEZ_DG-3_1010 kVA

Power Quality Monitoring Summary					
Utility Name	NSEZ_DG-3_1010 kVA				
Date of Analysis	05-03-24				
Duration of Analysis	From 12:58:40 to 14:00:23				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.23	49.23	50.00	
RMS Voltage (VRN)	V	241	232	239	
RMS Voltage (VYN)	V	241	233	239	
RMS Voltage (VBN)	V	241	233	239	
RMS Voltage (VRY)	V	417	402	413	
RMS Voltage (VYB)	V	418	403	414	
RMS Voltage (VBR)	V	417	403	414	
RMS Current (IR)	Ampere	567.20	236.10	481.80	
RMS Current (IY)	Ampere	541.90	204.60	452.33	
RMS Current (IB)	Ampere	523.90	193.60	444.46	
Voltage THD (V)	%	2.77	2.57	2.69	
Current THD (I)	%	9.42	9.1	9.28	
Unbalance Voltage	%	0.92	0.07	0.13	Acceptable range.
Unbalance Current	%	9.89	1.27	2.98	Acceptable range.
Real Power	kW	384.00	140.00	325.70	
Apparent Power	kVA	390.00	152.00	329.34	
Reactive Power	KVAR	106.00	-80.00	30.19	
Average Power Factor	PF	1.00	-1.00	0.64	

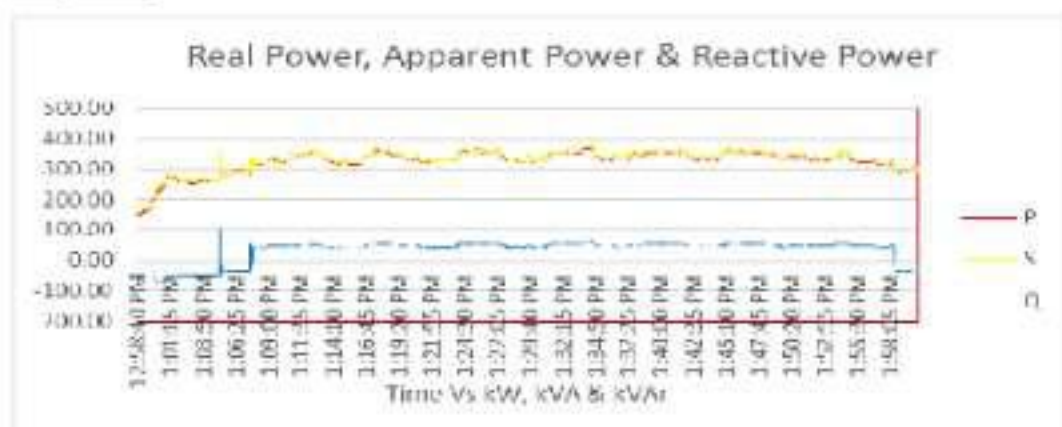
Voltage profile



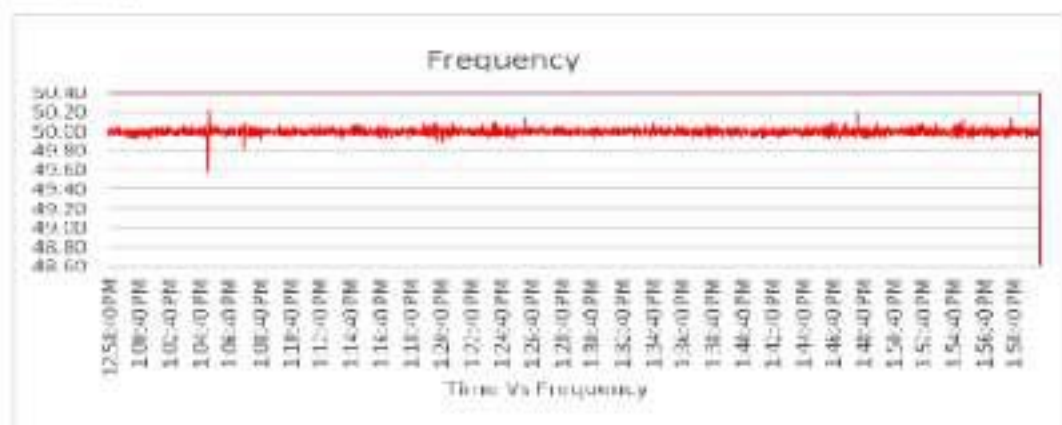
Current profile



Load profile



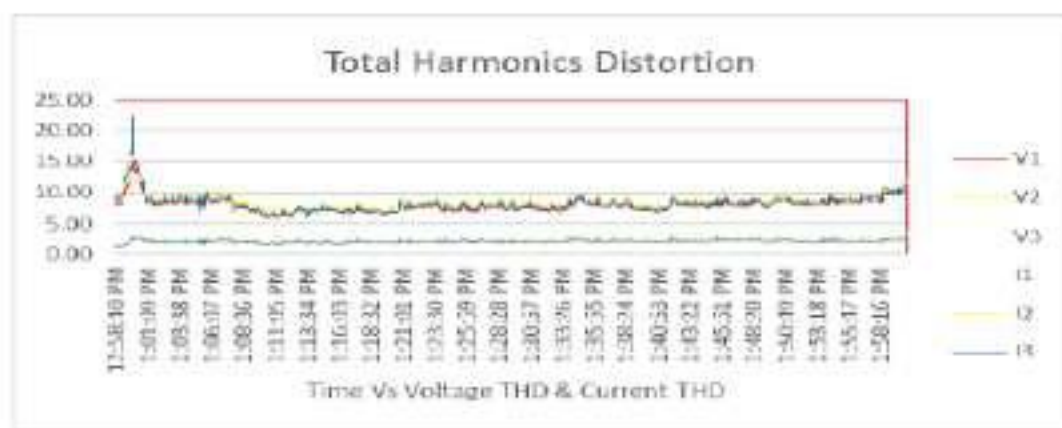
Frequency



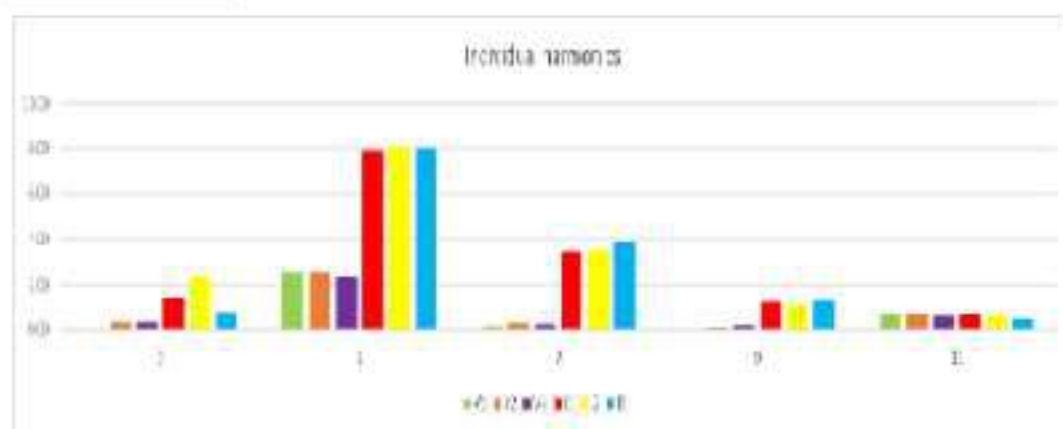
Power factor



Total harmonics distortion



Individual harmonics:



Remarks

- No issues observed.

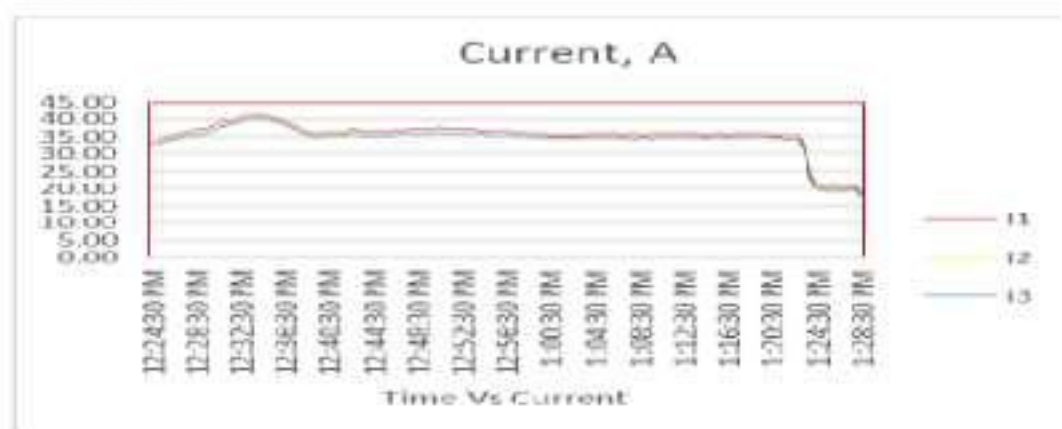
3.27 SEZ_DG-1_1500 kVA

Power Quality Monitoring Summary					
Utility Name	SEZ_1500 kVA_DG-1				
Date of Analysis	06-03-24				
Duration of Analysis	From 12:24:30 to 13:28:30				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.02	49.79	50.00	
RMS Voltage (VRN)	V	6351	6288	6299	
RMS Voltage (VYN)	V	6368	6305	6313	
RMS Voltage (VBN)	V	6374	6311	6322	
RMS Voltage (VRY)	V	11000	10890	10910	
RMS Voltage (VYB)	V	11030	10920	10935	
RMS Voltage (VBR)	V	11040	10930	10950	
RMS Current (IR)	Ampere	41.31	18.61	35.47	
RMS Current (IY)	Ampere	40.45	17.27	34.29	
RMS Current (IB)	Ampere	40.39	17.80	34.36	
Voltage THD (V)	%	5.34	4.66	4.91	
Current THD (I)	%	10.48	9.74	10.01	
Unbalance Voltage	%	0.27	0.17	0.22	Acceptable range.
Unbalance Current	%	4.56	1.30	2.09	Acceptable range.
Real Power	kW	760.00	310.00	649.22	
Apparent Power	kVA	770.00	340.00	657.05	
Reactive Power	KVAR	-80.00	-130.00	-94.42	
Average Power Factor	PF	-0.93	-0.99	-0.99	Leading PF

Voltage profile



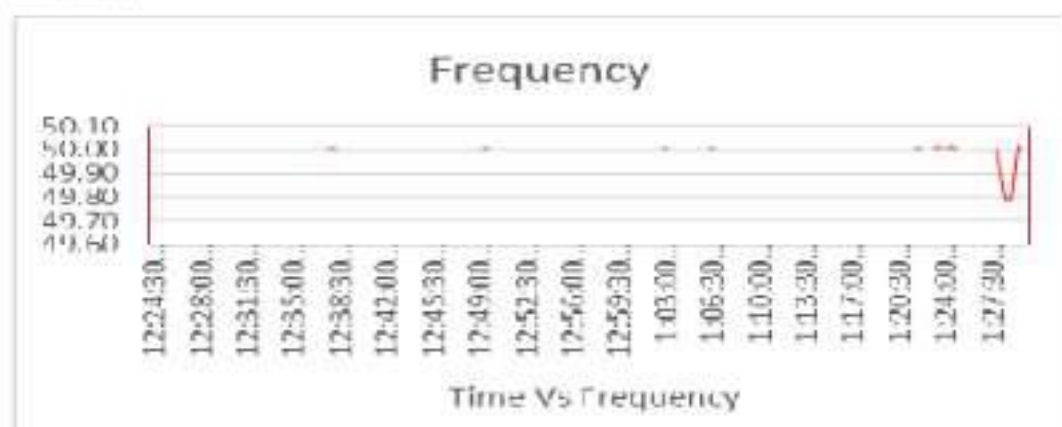
Current profile



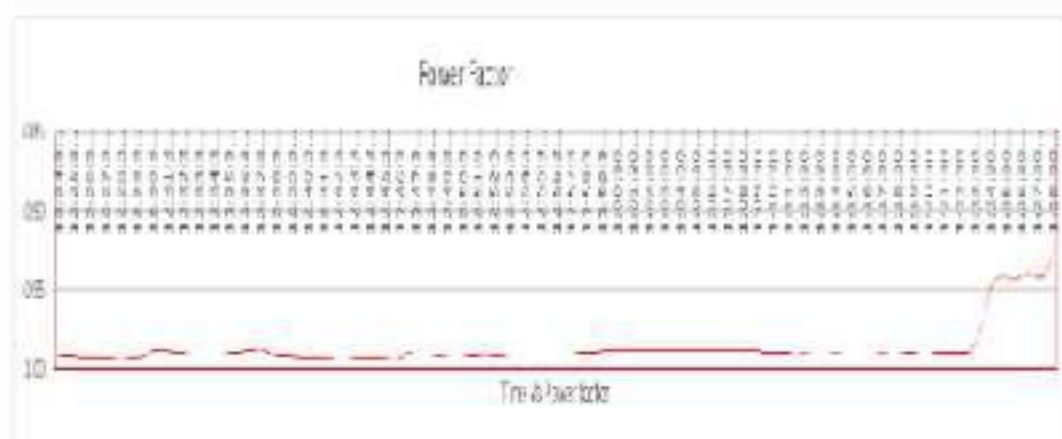
Load profile.



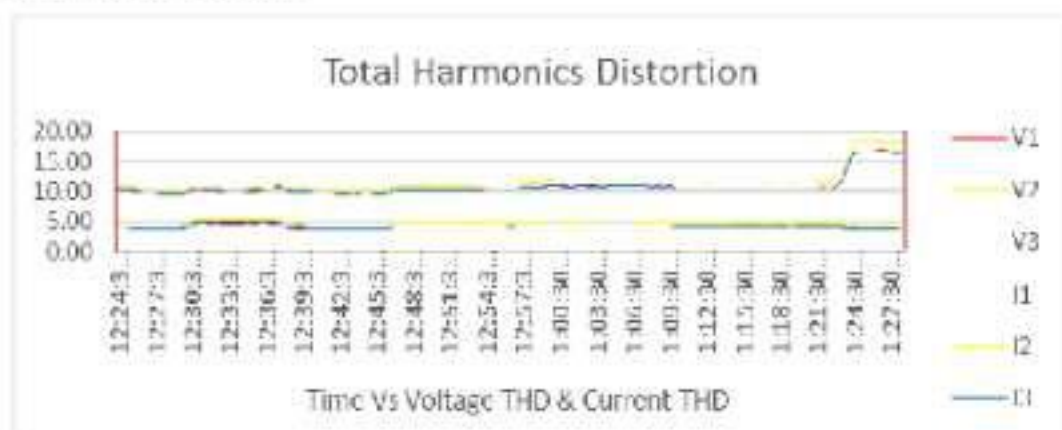
Frequency



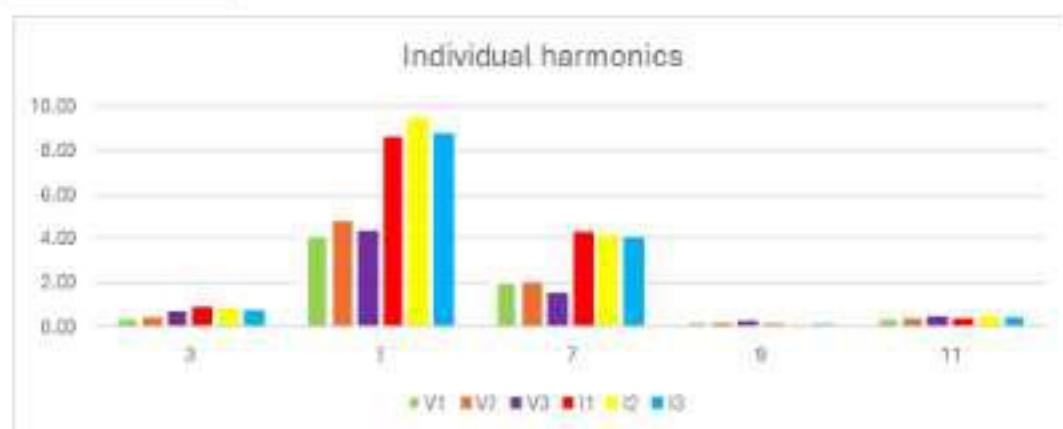
Power factor



Total harmonics distortion



Individual harmonics:



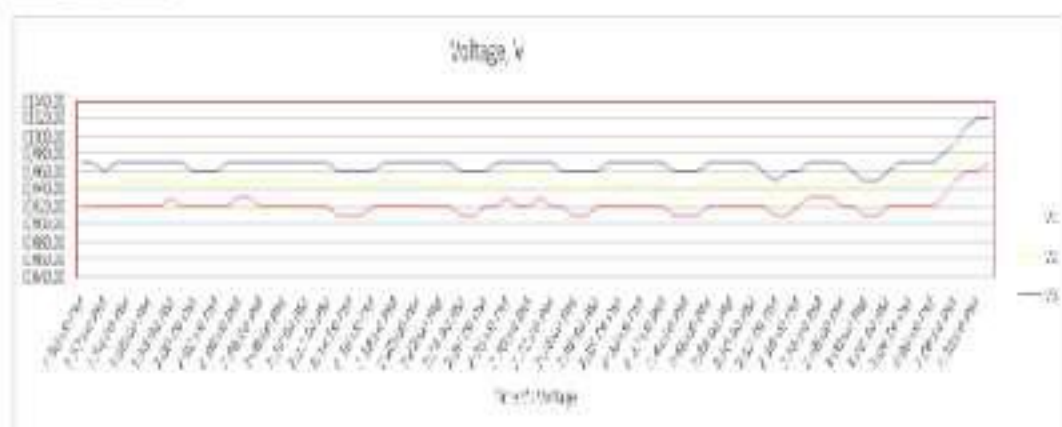
Remarks

- No issues observed.

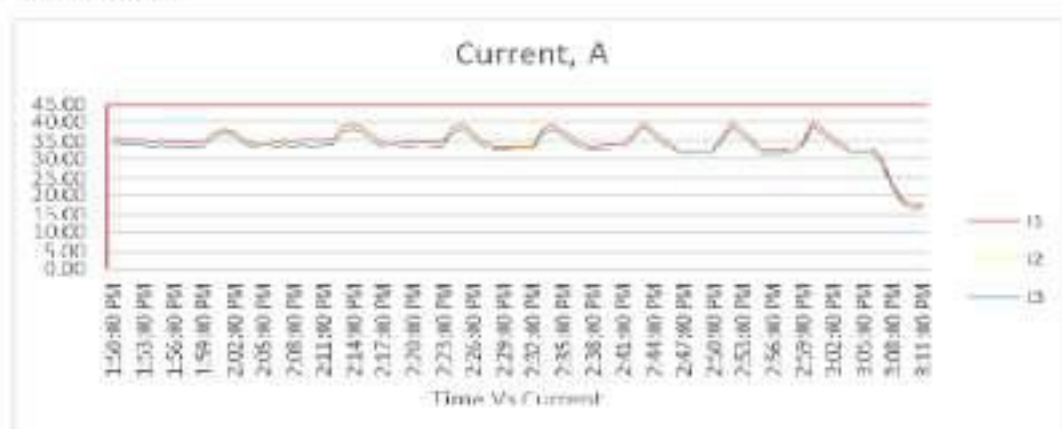
3.28 SEZ_DG-2_1500 kVA

Power Quality Monitoring Summary					
Utility Name	SEZ_1500 kVA_DG-2				
Date of Analysis	06-03-24				
Duration of Analysis	From 13:50:30 to 15:11:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.01	50.00	50.00	
RMS Voltage (VRN)	V	6334	6299	6306	
RMS Voltage (VYN)	V	6345	6311	6321	
RMS Voltage (VBN)	V	6363	6322	6333	
RMS Voltage (VRY)	V	10970	10910	10921	
RMS Voltage (VYB)	V	10990	10930	10948	
RMS Voltage (VBR)	V	11020	10950	10969	
RMS Current (IR)	Ampere	39.82	17.78	34.54	
RMS Current (IY)	Ampere	38.70	16.27	33.29	
RMS Current (IB)	Ampere	38.73	16.58	33.37	
Voltage THD (V)	%	4.65	4.09	4.28	
Current THD (I)	%	10.37	9.71	9.93	
Unbalance Voltage	%	0.31	0.21	0.25	Acceptable range.
Unbalance Current	%	5.66	1.83	2.43	Acceptable range.
Real Power	kW	730.00	300.00	631.83	
Apparent Power	kVA	740.00	320.00	639.27	
Reactive Power	KVAR	-90.00	-120.00	-93.66	
Average Power Factor	PF	-0.93	-0.99	-0.99	Leading PF

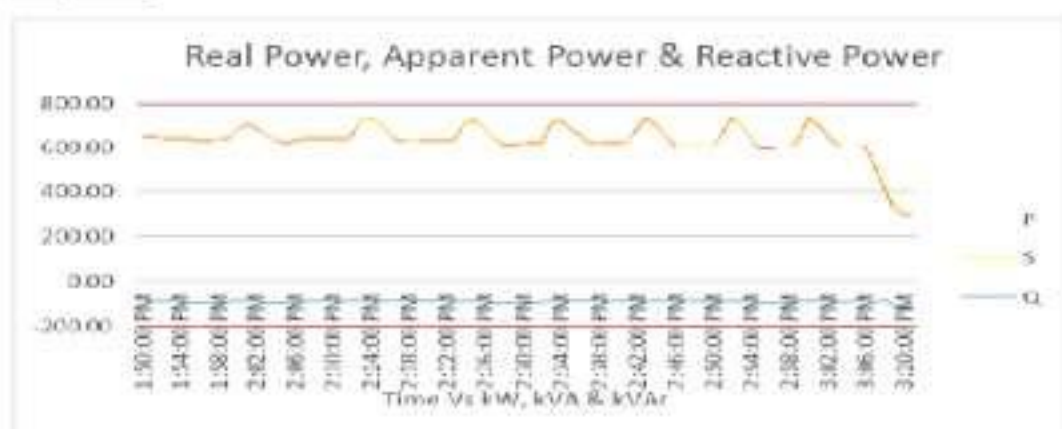
Voltage profile



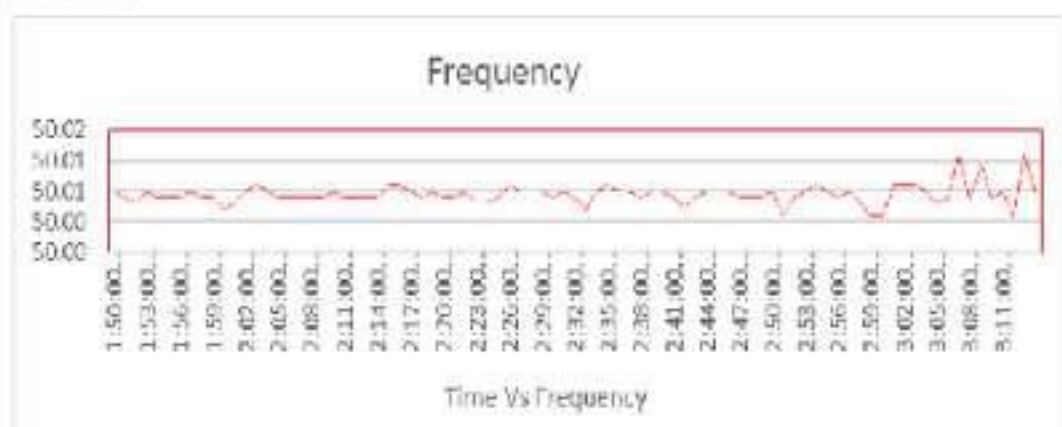
Current profile



Load profile



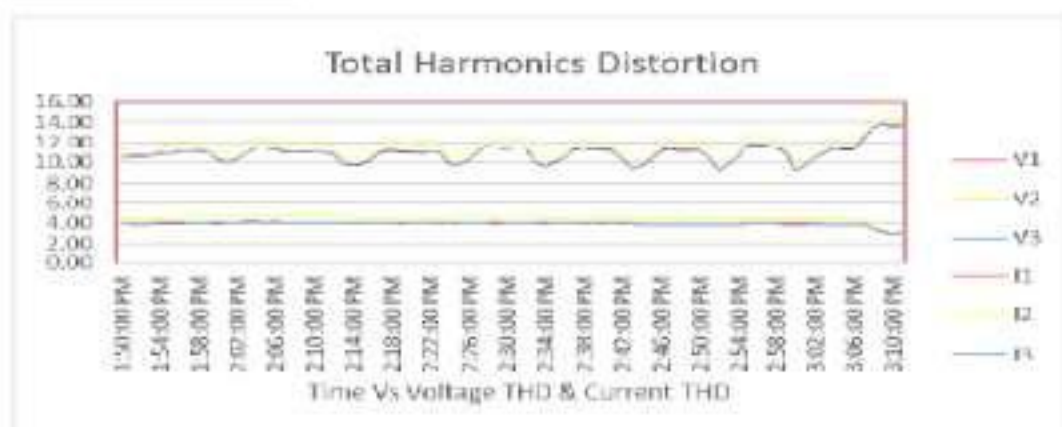
Frequency



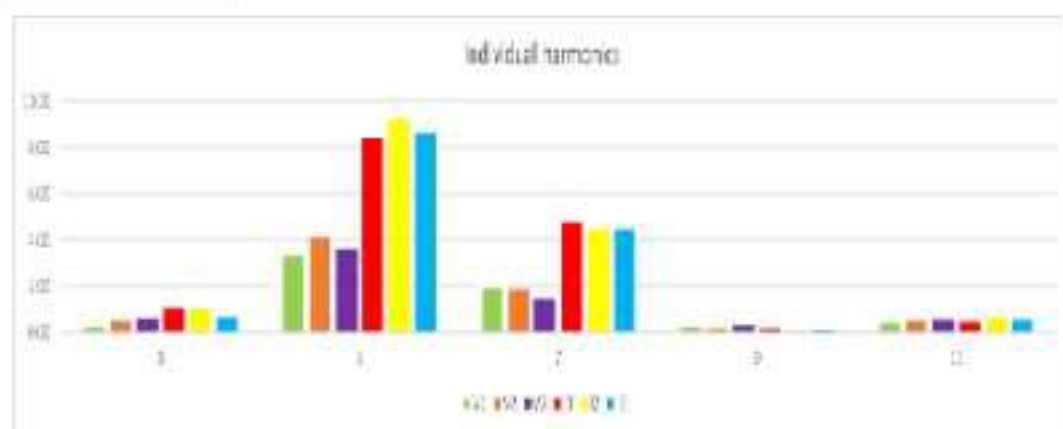
Power factor



Total harmonics distortion



Individual harmonics:



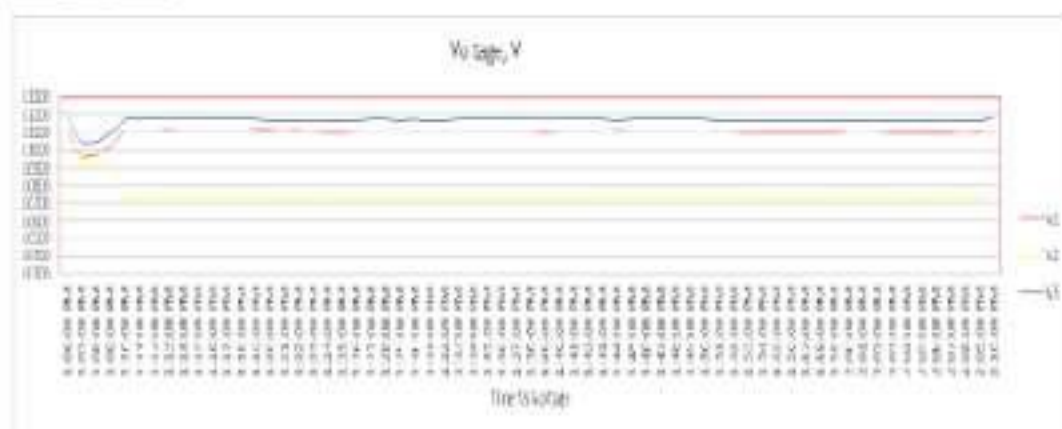
Remarks

- No issues observed

3.29 SEZ_DG-3_1500 kVA

Power Quality Monitoring Summary					
Utility Name	SEZ_DG-3_1500 kVA				
Date of Analysis	08-03-24				
Duration of Analysis	From 13:06:00 to 14:10:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.01	49.85	50.00	
RMS Voltage (VRN)	V	6419	6326	6409	
RMS Voltage (VYN)	V	6338	6147	6198	
RMS Voltage (VBN)	V	6458	6375	6447	
RMS Voltage (VRY)	V	11118	10957	11101	
RMS Voltage (VYB)	V	10977	10647	10734	
RMS Voltage (VBR)	V	11185	10647	11167	
RMS Current (IR)	Ampere	40.06	36.81	38.46	
RMS Current (IY)	Ampere	36.92	33.95	35.46	
RMS Current (IB)	Ampere	38.95	35.92	37.59	
Voltage THD (V)	%	5.35	4.95	5.12	
Current THD (I)	%	11.63	10.25	10.76	
Unbalance Voltage	%	0.55	0.43	0.49	Acceptable range.
Unbalance Current	%	5.55	4.52	5.09	Acceptable range.
Real Power	kW	700.00	640.00	675.38	
Apparent Power	kVA	740.00	680.00	708.46	
Reactive Power	KVAR	-200.00	-220.00	-212.92	
Average Power Factor	PF	0.95	0.96	0.95	Acceptable range.

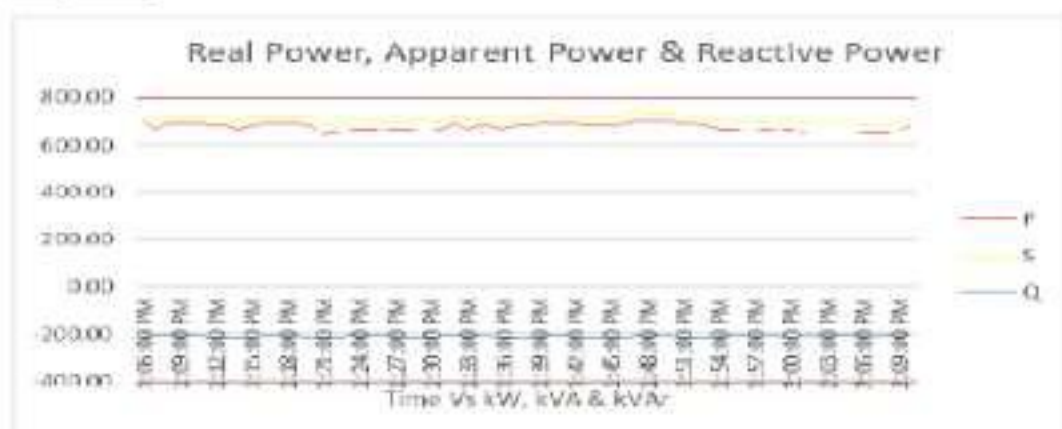
Voltage profile



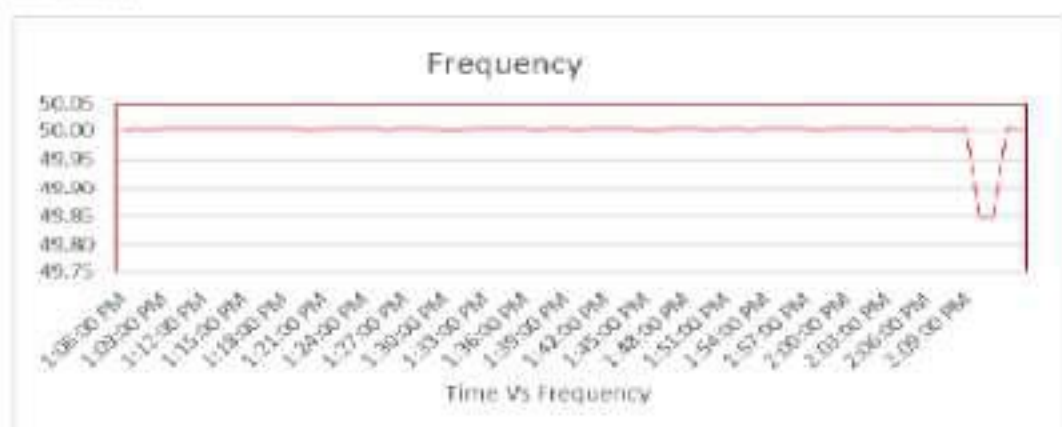
Current profile



Load profile



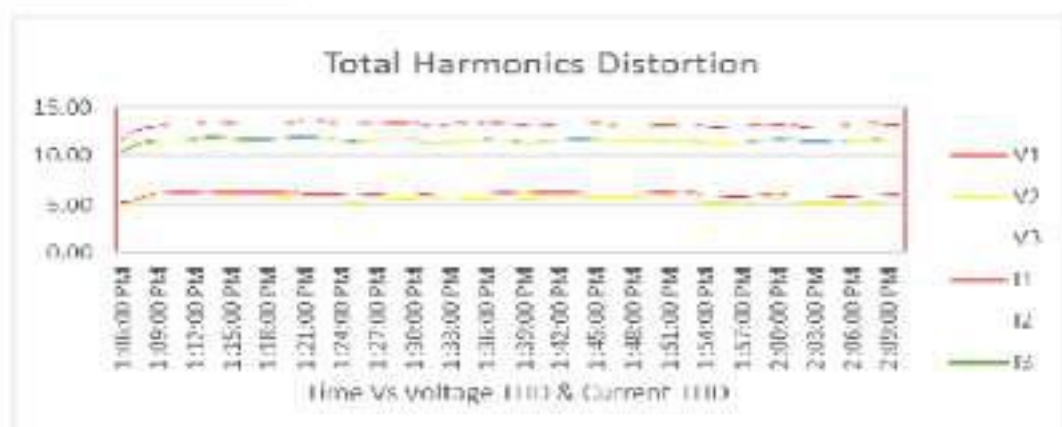
Frequency



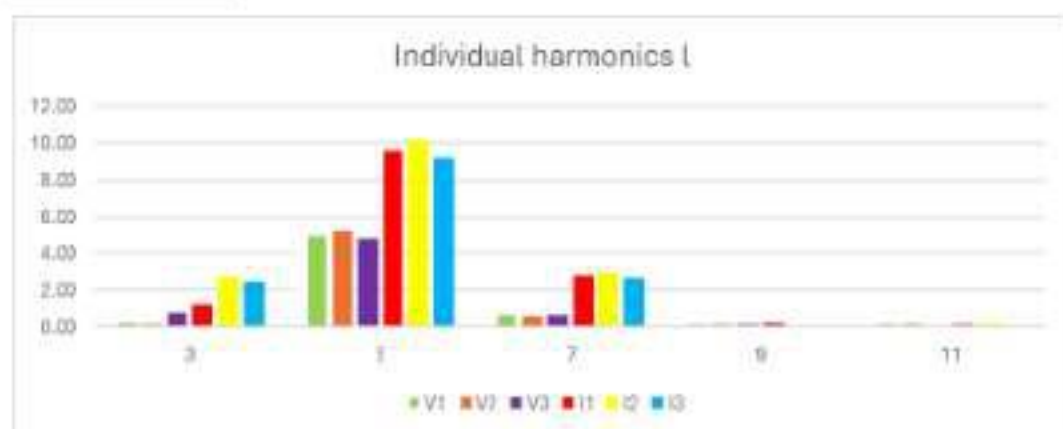
Power factor



Total harmonics distortion



Individual harmonics:



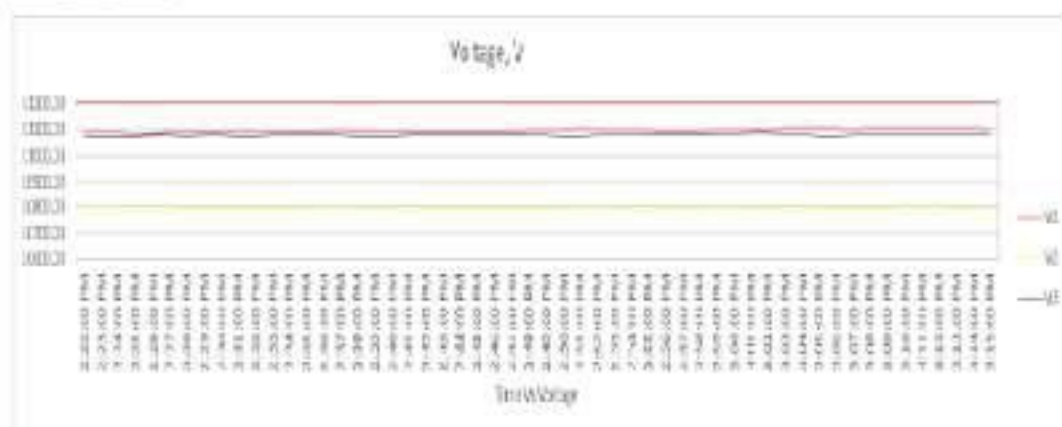
Remarks

- No issues observed

3.30 SEZ_DG-4_1500 kVA

Power Quality Monitoring Summary					
Utility Name	SEZ_DG-4_1500 kVA				
Date of Analysis	08-03-24				
Duration of Analysis	From 14:22:00 to 15:15:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.01	50.00	50.00	
RMS Voltage (VRN)	V	6413	6400	6406	
RMS Voltage (VYN)	V	6235	6223	6230	
RMS Voltage (VBN)	V	6401	6393	6397	
RMS Voltage (VRY)	V	11107	11085	11095	
RMS Voltage (VYB)	V	10799	10778	10791	
RMS Voltage (VBR)	V	11087	11073	11079	
RMS Current (IR)	Ampere	44.18	38.48	41.36	
RMS Current (IY)	Ampere	41.26	35.35	38.43	
RMS Current (IB)	Ampere	43.09	37.72	40.73	
Voltage THD (V)	%	7.04	6.8	6.85	
Current THD (I)	%	13.17	11.75	12.23	
Unbalance Voltage	%	0.56	0.44	0.51	Acceptable range.
Unbalance Current	%	5.05	3.55	4.41	Acceptable range.
Real Power	kW	790.00	670.00	733.70	
Apparent Power	kVA	820.00	710.00	765.37	
Reactive Power	KVAR	-210.00	-220.00	-214.44	
Average Power Factor	PF	-0.95	-0.97	-0.96	Leading PF

Voltage profile



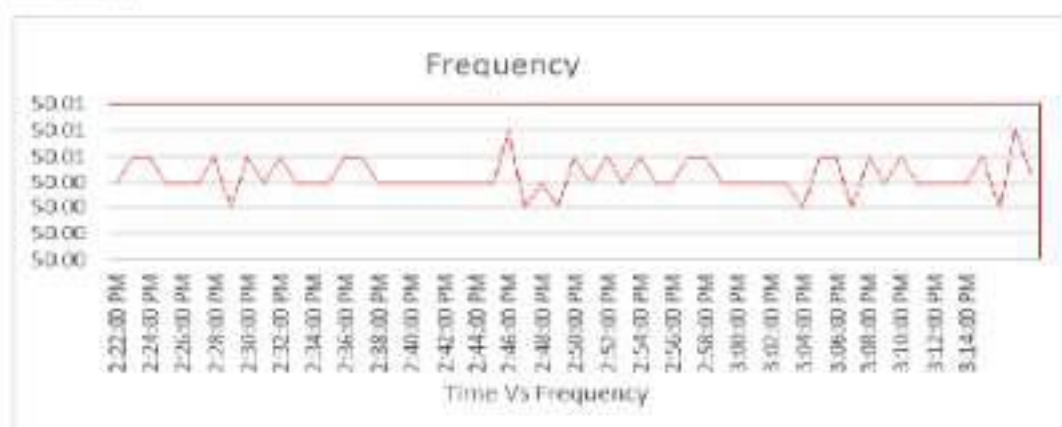
Current profile



Load profile



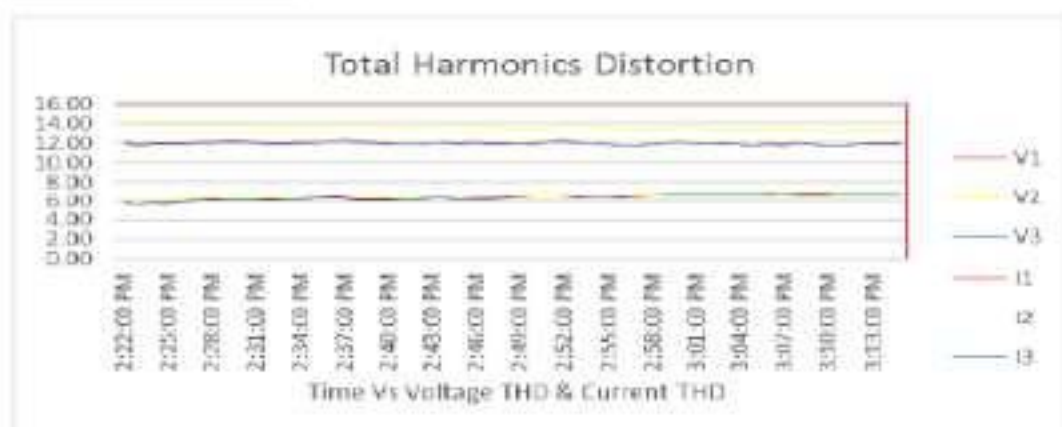
Frequency



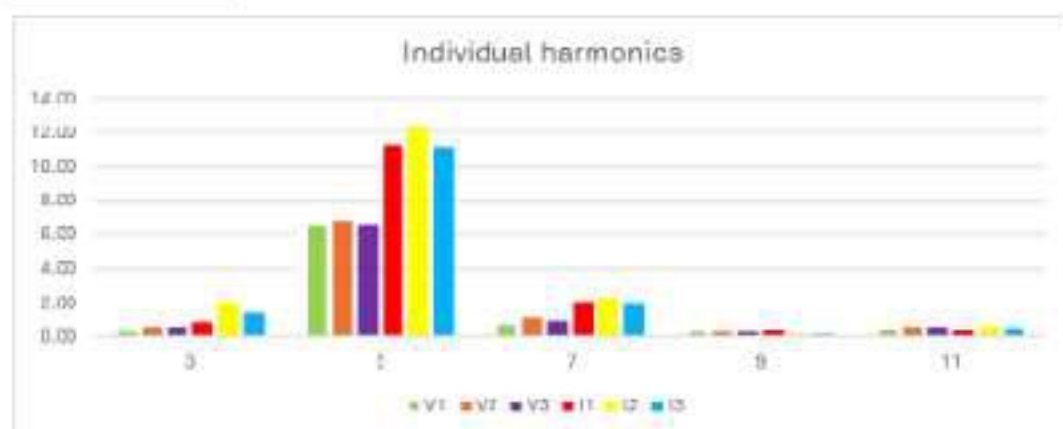
Power factor



Total harmonics distortion



Individual harmonics:



Remarks

- No issues observed

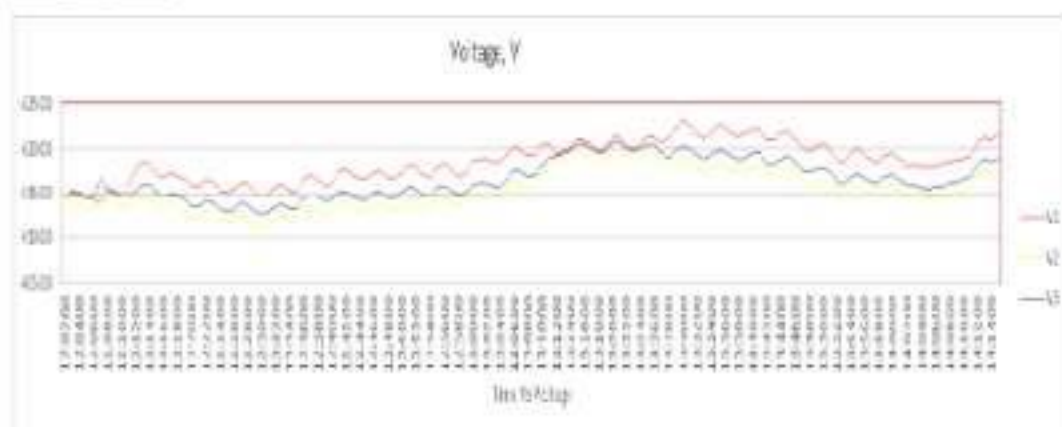
3.31 SEZ_ WATER COOLED CHILLER-1

Power Quality Monitoring Summary					
Utility Name	SEZ_ WCC-1				
Date of Analysis	11-03-24				
Duration of Analysis	Parameters From 12:02:00 to 14:15:00				
	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.10	49.87	49.96	
RMS Voltage (VRN)	V	244	239	242	
RMS Voltage (VYN)	V	242	237	240	
RMS Voltage (VBN)	V	243	238	241	
RMS Voltage (VRY)	V	423	414	419	
RMS Voltage (VYB)	V	420	411	415	
RMS Voltage (VBR)	V	421	413	417	
RMS Current (IR)	Ampere	543.40	318.80	411.80	
RMS Current (IY)	Ampere	550.80	320.90	416.10	
RMS Current (IB)	Ampere	544.90	317.10	411.09	
Voltage THD (V)	%	2.07	1.98	2.01	
Current THD (I)	%	3.85	3.66	3.76	
Unbalance Voltage	%	0.27	0.11	0.19	Acceptable range.
Unbalance Current	%	2.16	0.41	0.85	Acceptable range.
Real Power	kW	386.00	208.00	290.96	
Apparent Power	kVA	394.00	213.00	297.40	
Reactive Power	KVAR	79.00	46.00	61.49	
Average Power Factor	PF	0.98	0.97	0.97	Acceptable range.

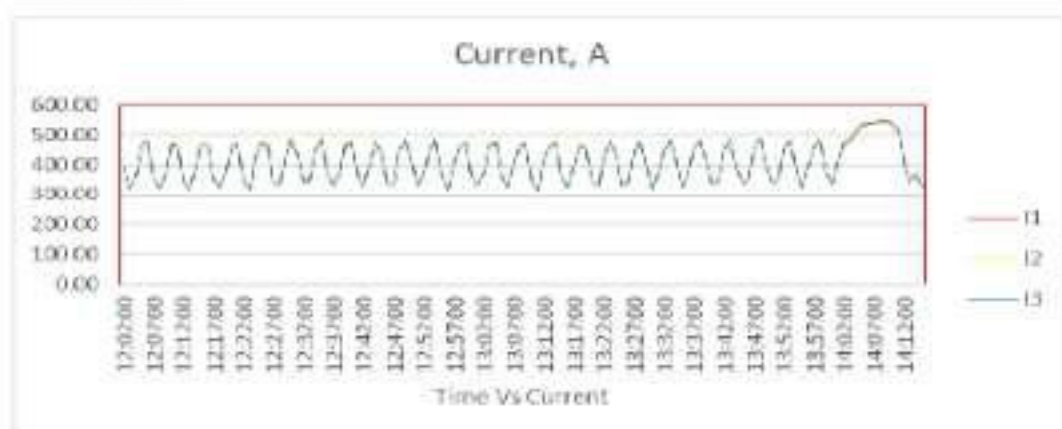
Remarks

- No Issues Observed

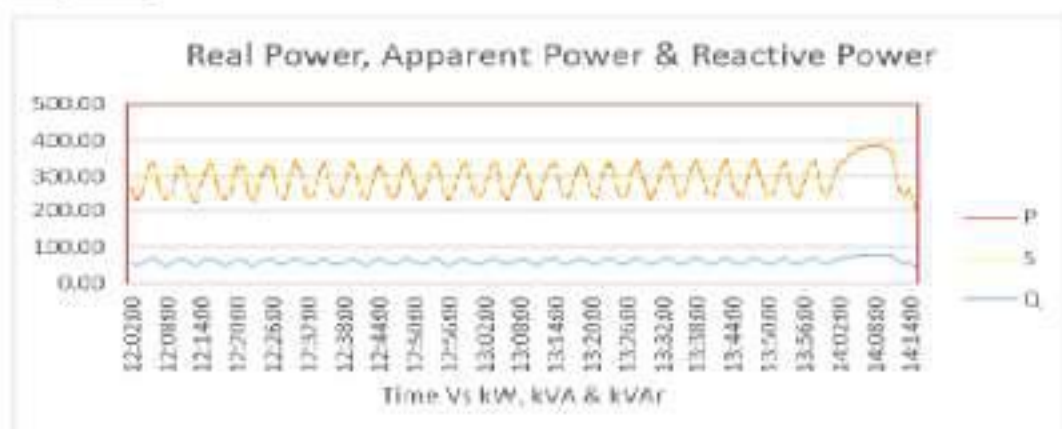
Voltage profile



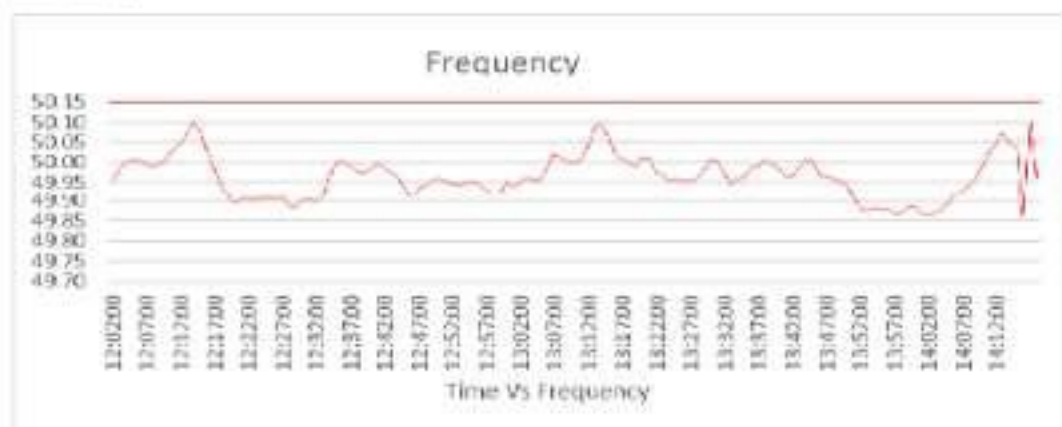
Current profile



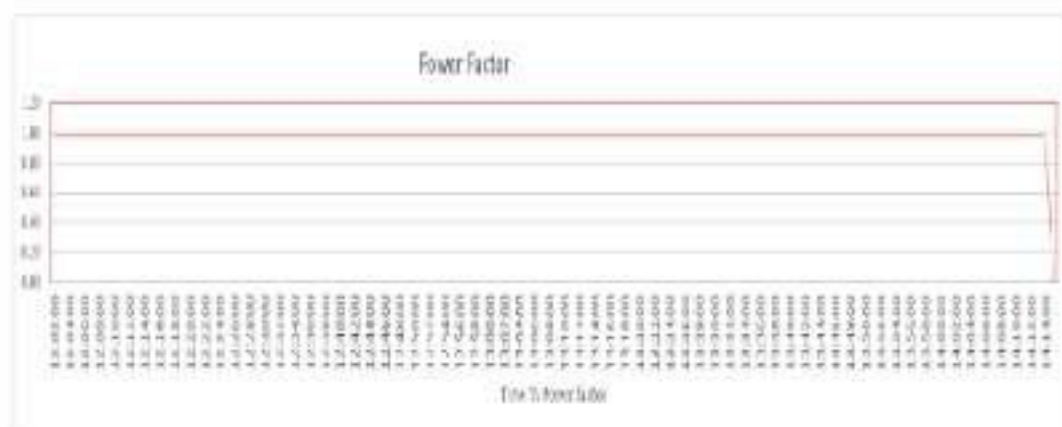
Load profile.



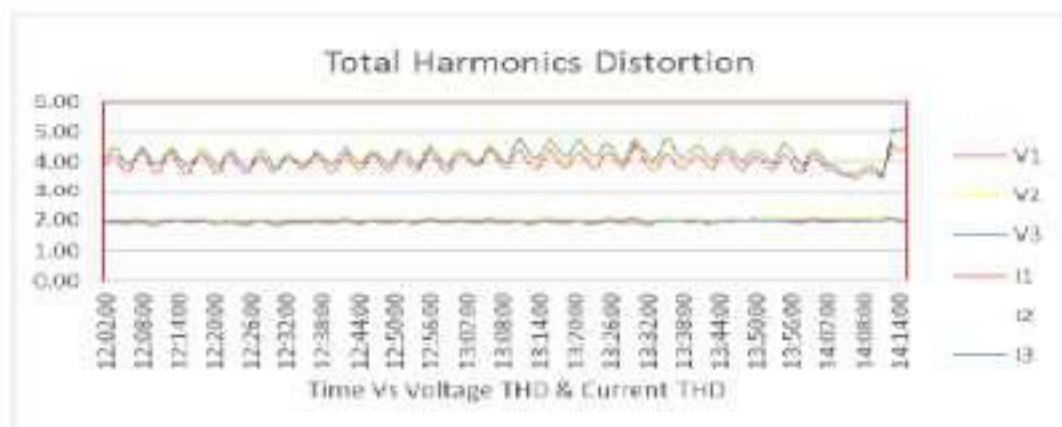
Frequency



Power factor



Total harmonics distortion



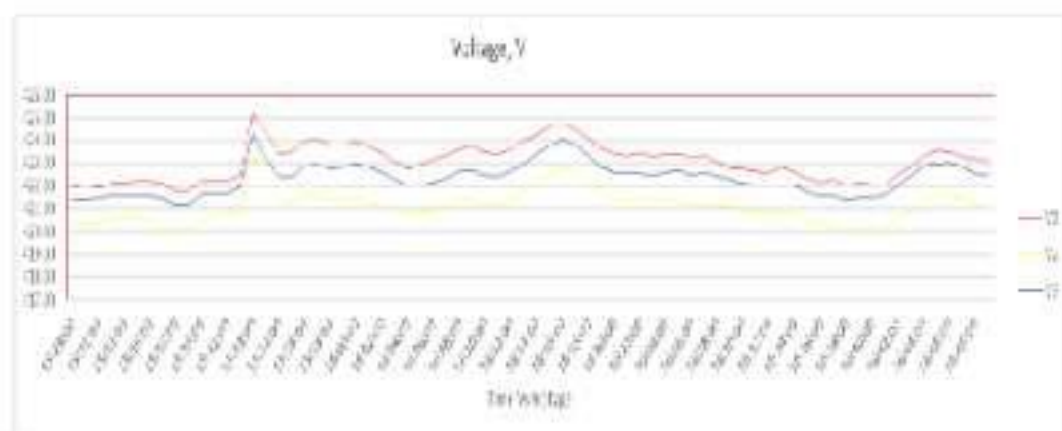
3.32 SEZ WATER COOLED CHILLER-2

Power Quality Monitoring Summary					
Utility Name	SEZ_WCC-2				
Date of Analysis	11-03-24				
Duration of Analysis	From 15:29:00 to 16:49:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.13	49.85	49.97	
RMS Voltage (VRN)	V	246	244	244	
RMS Voltage (VYN)	V	244	242	243	
RMS Voltage (VBN)	V	245	243	244	
RMS Voltage (VRY)	V	425	422	423	
RMS Voltage (VYB)	V	423	420	421	
RMS Voltage (VBR)	V	424	421	422	
RMS Current (IR)	Ampere	526.70	88.60	386.98	
RMS Current (IY)	Ampere	528.00	88.90	386.71	
RMS Current (IB)	Ampere	522.60	85.20	381.83	
Voltage THD (V)	%	2.01	1.9	1.96	
Current THD (I)	%	3.47	3.35	3.4	
Unbalance Voltage	%	0.34	0.20	0.27	Acceptable range.
Unbalance Current	%	4.65	0.48	2.43	Acceptable range.
Real Power	kW	376.00	40.00	273.67	
Apparent Power	kVA	384.00	43.00	280.13	
Reactive Power	KVAR	78.00	13.00	59.26	
Average Power Factor	PF	0.98	0.94	0.94	Acceptable range.

Remarks

- No issues observed.

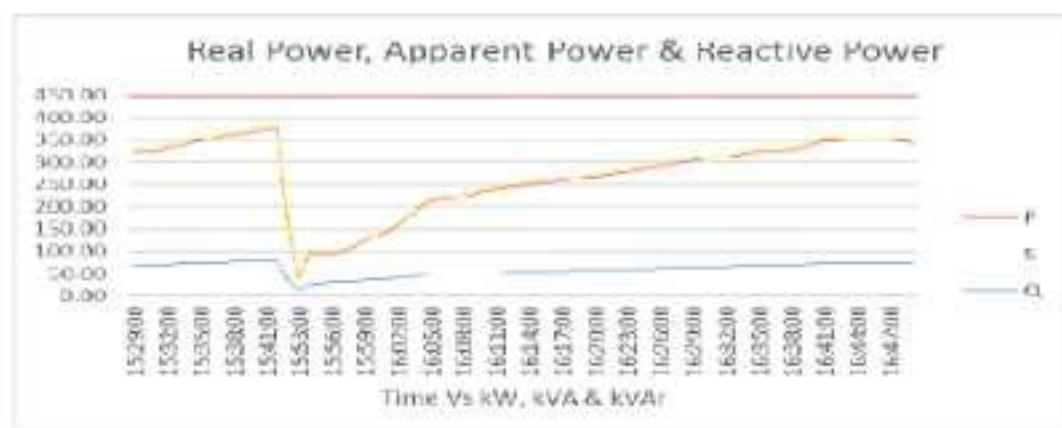
Voltage profile



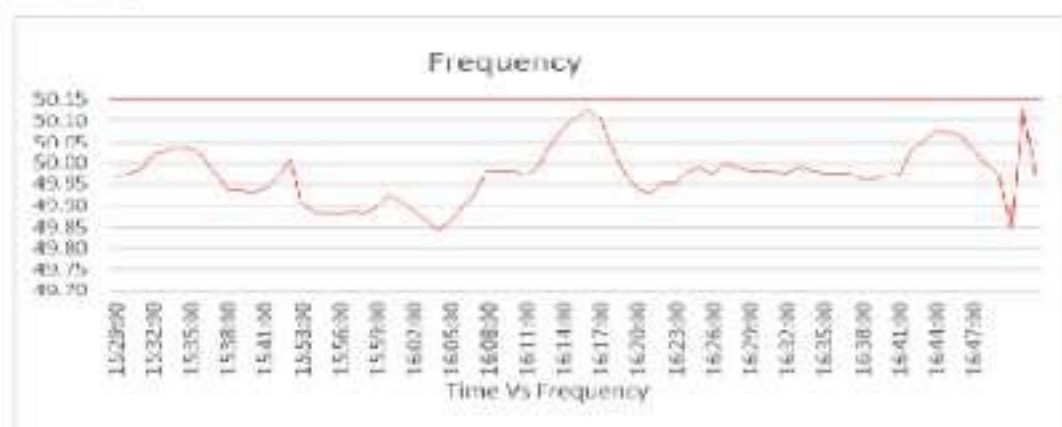
Current profile



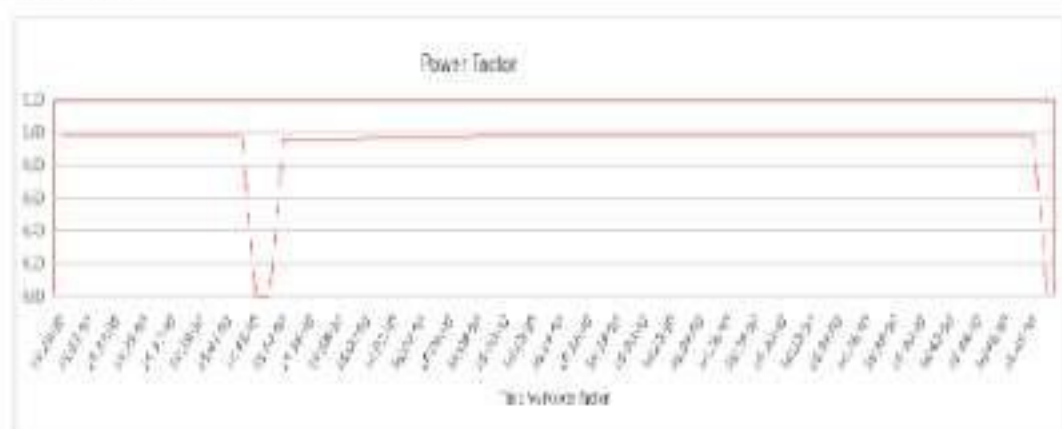
Load profile



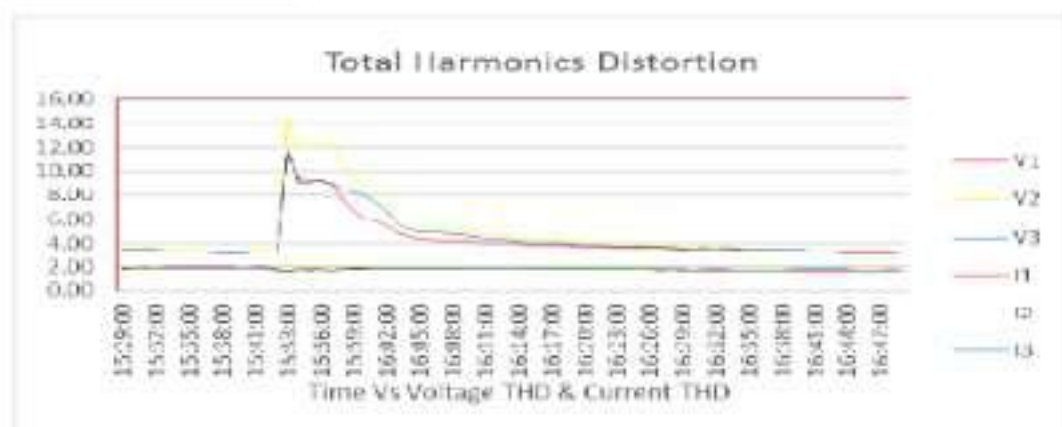
Frequency



Power factor



Total harmonics distortion



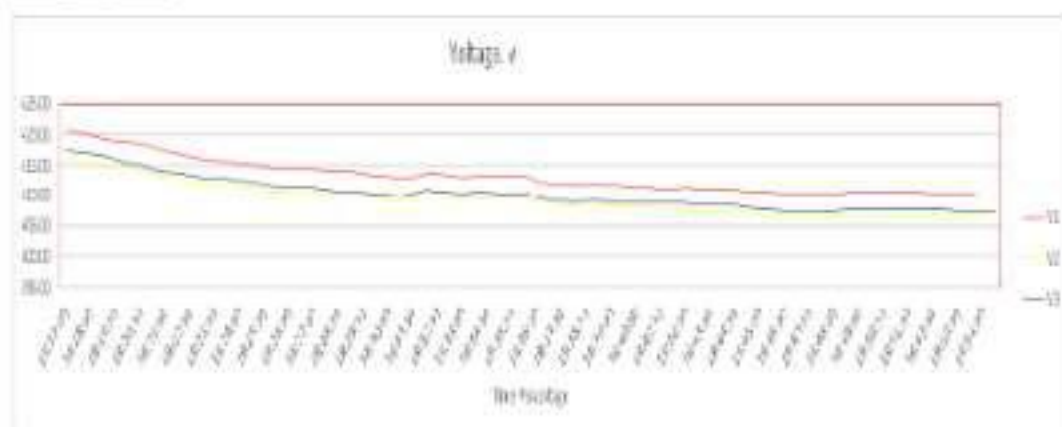
3.33 SEZ_ WATER COOLED CHILLER-3

Power Quality Monitoring Summary					
Utility Name	SEZ_WCC-3				
Date of Analysis	11-03-24				
Duration of Analysis	From 18:17:00 to 18:55:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.18	49.86	49.97	
RMS Voltage (VRN)	V	243	237	239	
RMS Voltage (VYN)	V	240	235	236	
RMS Voltage (VBN)	V	241	235	237	
RMS Voltage (VRY)	V	421	410	413	
RMS Voltage (VYB)	V	416	406	409	
RMS Voltage (VBR)	V	418	407	410	
RMS Current (IR)	Ampere	540.50	403.60	480.17	
RMS Current (IY)	Ampere	547.60	407.20	485.52	
RMS Current (IB)	Ampere	544.60	404.60	482.19	
Voltage THD (V)	%	2.02	1.97	1.99	
Current THD (I)	%	3.46	3.36	3.4	
Unbalance Voltage	%	0.26	0.11	0.18	Acceptable range.
Unbalance Current	%	0.94	0.64	0.81	Acceptable range.
Real Power	kW	378.00	281.00	336.80	
Apparent Power	kVA	386.00	286.00	343.47	
Reactive Power	KVAR	75.00	56.00	67.05	
Average Power Factor	PF	0.98	0.98	0.98	Acceptable range.

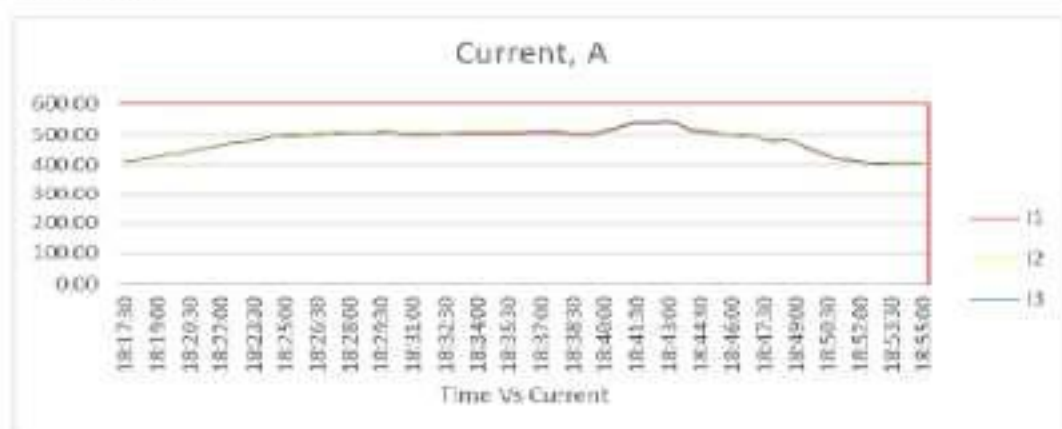
Remarks

- No issues observed.

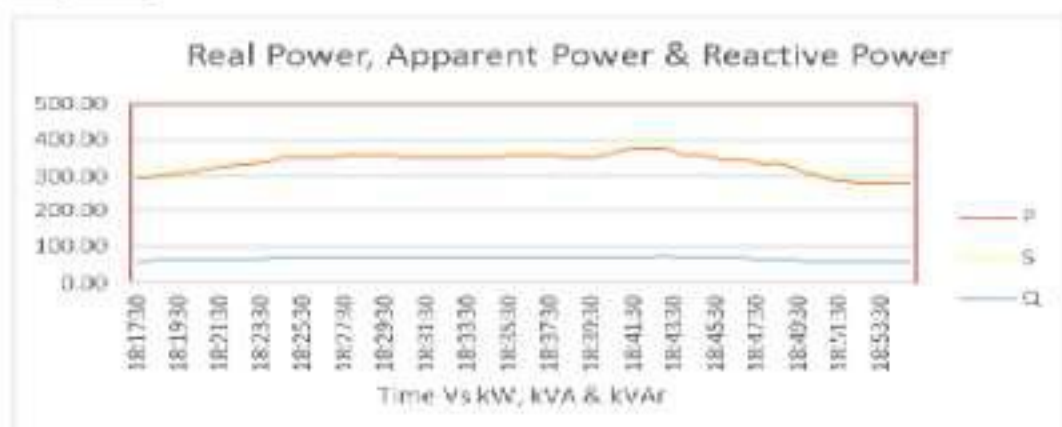
Voltage profile



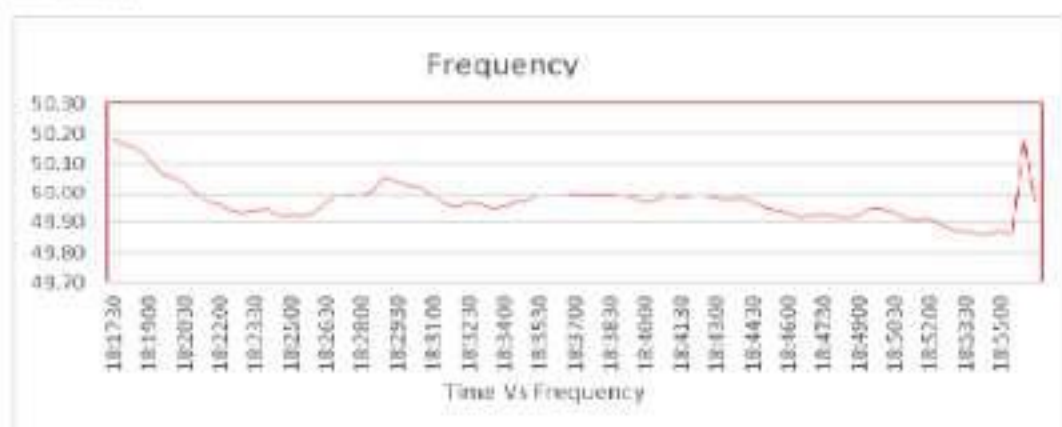
Current profile



Load profile.



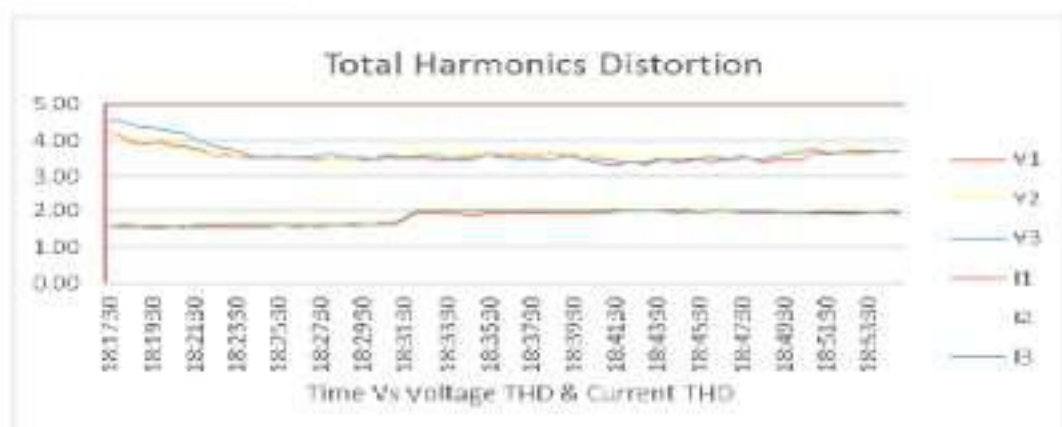
Frequency



Power factor



Total harmonics distortion



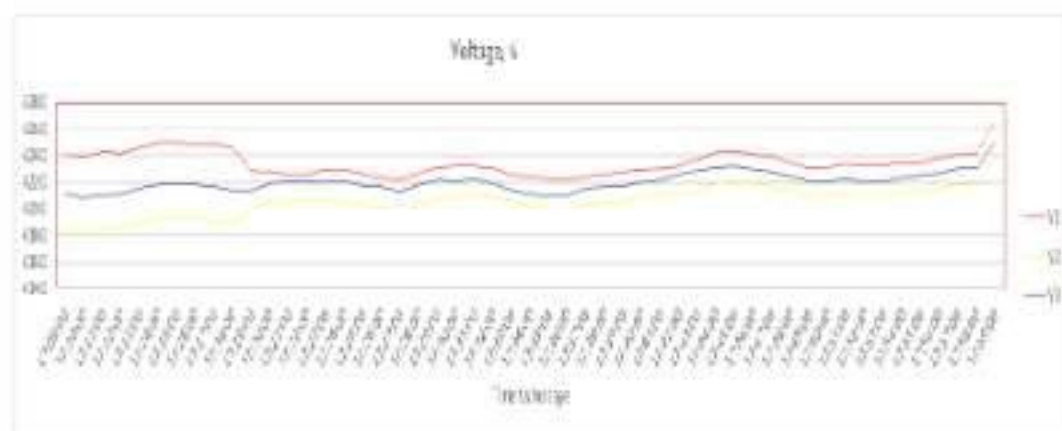
3.34 SEZ_ WATER COOLED CHILLER-4

Power Quality Monitoring Summary					
Utility Name	SEZ_ WCC-4				
Date of Analysis	11-03-24				
Duration of Analysis	From 17:09:00 to 17:59:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.13	49.89	50.04	
RMS Voltage (VRN)	V	246	244	244	
RMS Voltage (VYN)	V	245	242	243	
RMS Voltage (VBN)	V	245	243	244	
RMS Voltage (VRY)	V	427	422	423	
RMS Voltage (VYB)	V	424	418	421	
RMS Voltage (VBR)	V	425	421	422	
RMS Current (IR)	Ampere	529.20	58.00	448.42	
RMS Current (IY)	Ampere	527.40	57.50	445.80	
RMS Current (IB)	Ampere	531.40	57.30	449.16	
Voltage THD (V)	%	1.87	1.7	1.77	
Current THD (I)	%	4.01	3.89	3.93	
Unbalance Voltage	%	0.36	0.25	0.29	Acceptable range.
Unbalance Current	%	4.84	0.39	1.80	Acceptable range.
Real Power	kW	379.00	12.00	319.67	
Apparent Power	kVA	387.00	12.00	326.67	
Reactive Power	KVAR	78.00	3.00	67.25	
Average Power Factor	PF	0.98	0.95	0.96	Acceptable range.

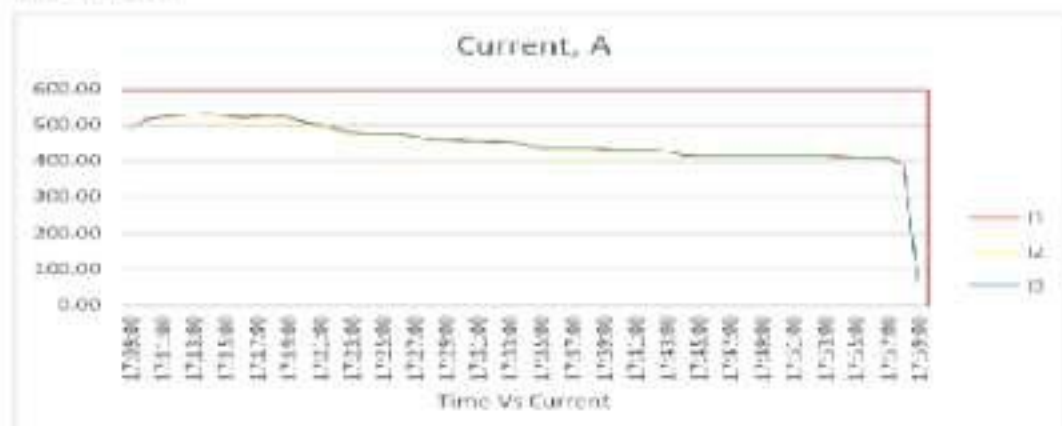
Remarks

- No issues observed.

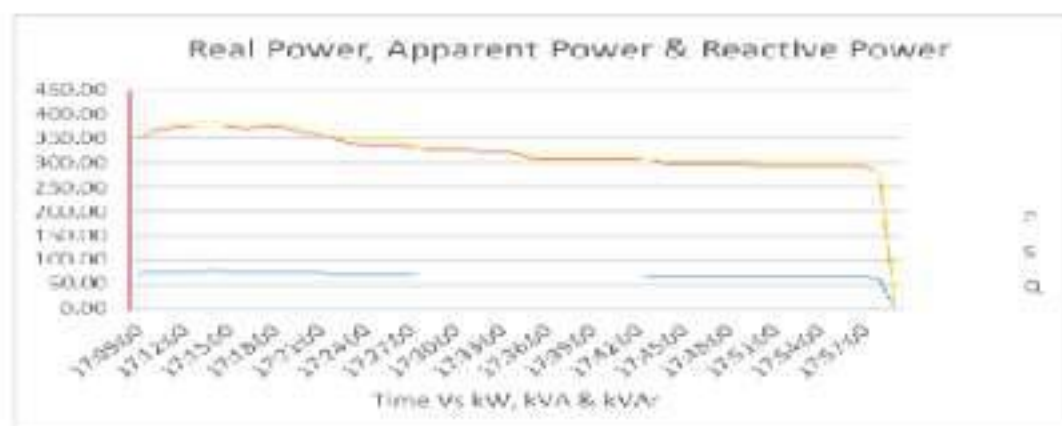
Voltage profile



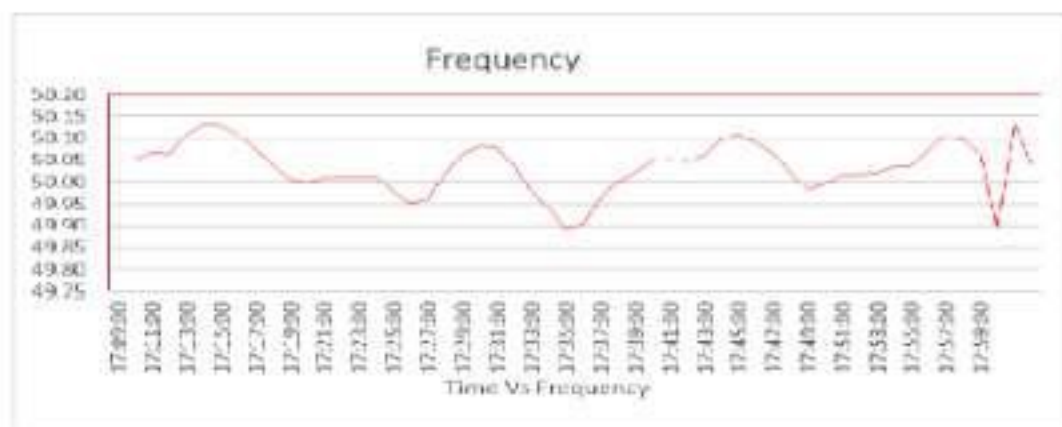
Current profile



Load profile,



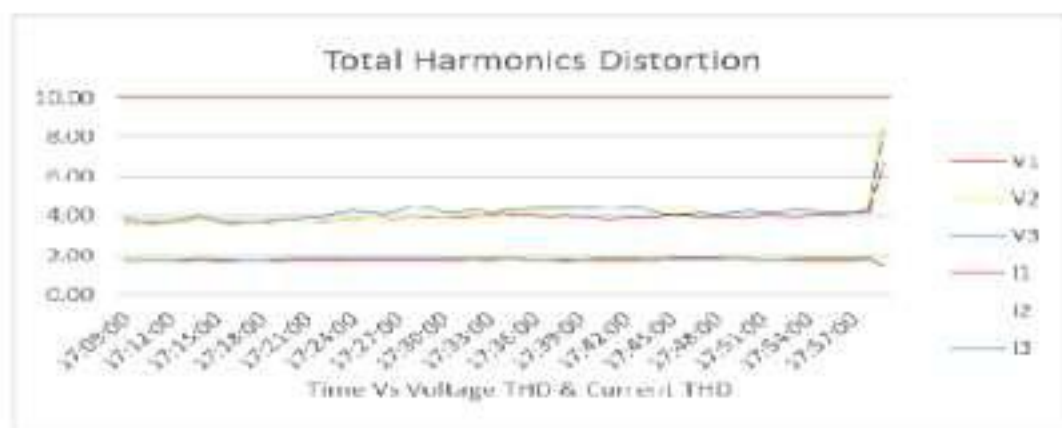
Frequency



Power factor



Total harmonics distortion



3.35 NSEZ_ WATER COOLED CHILLER-1

Power Quality Monitoring Summary					
Utility Name	NSEZ_WCC-1				
Date of Analysis	12-03-24				
Duration of Analysis	From 15:29:30 to 15:50:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.08	49.93	50.00	
RMS Voltage (VRN)	V	243	240	241	
RMS Voltage (VYN)	V	245	242	243	
RMS Voltage (VBN)	V	245	242	243	
RMS Voltage (VRY)	V	421	416	418	
RMS Voltage (VYB)	V	424	419	421	
RMS Voltage (VBR)	V	424	419	421	
RMS Current (IR)	Ampere	187.50	72.60	172.61	
RMS Current (IY)	Ampere	213.10	83.30	197.02	
RMS Current (IB)	Ampere	195.20	77.00	180.61	
Voltage THD (V)	%	1.5	1.43	1.48	
Current THD (I)	%	4.97	4.9	4.94	
Unbalance Voltage	%	0.56	0.44	0.50	Acceptable range.
Unbalance Current	%	7.32	6.20	6.66	Acceptable range.
Real Power	kW	108.00	34.00	96.43	
Apparent Power	kVA	144.00	57.00	133.33	
Reactive Power	KVAR	96.00	45.00	91.55	
Average Power Factor	PF	0.75	0.59	0.72	Acceptable range.

Remarks

- No issues observed.

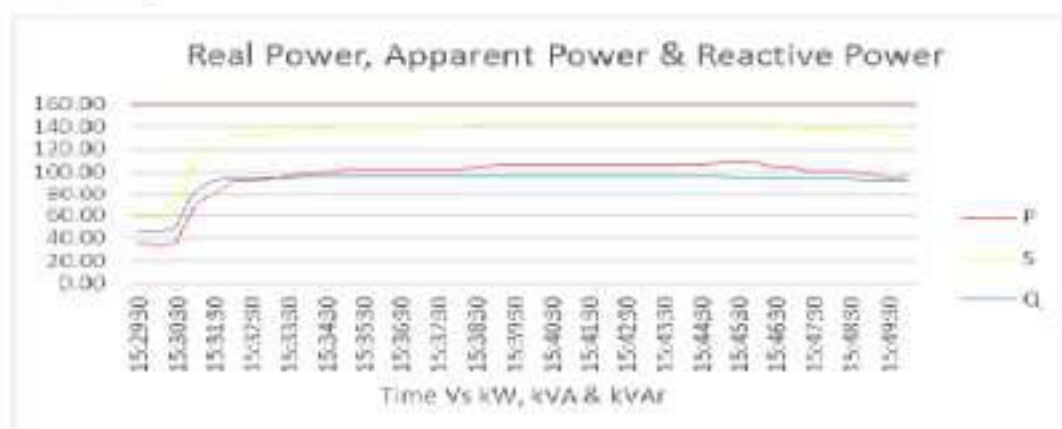
Voltage profile



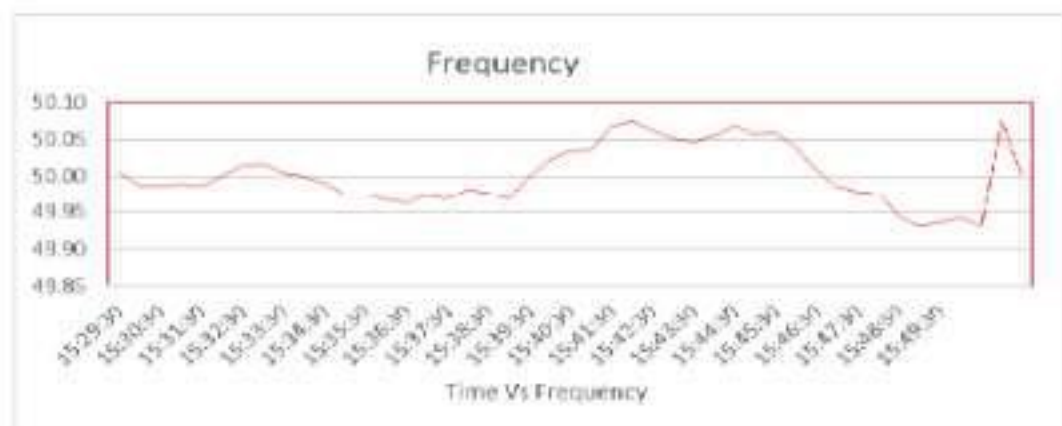
Current profile



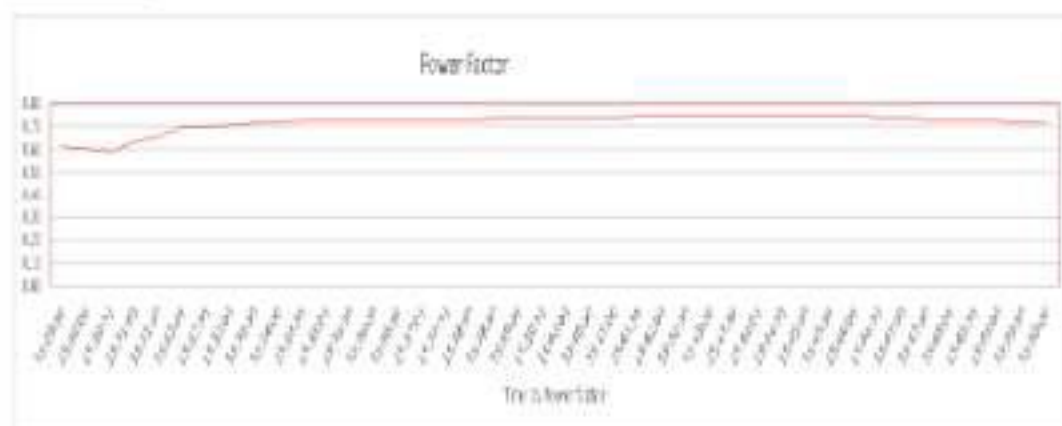
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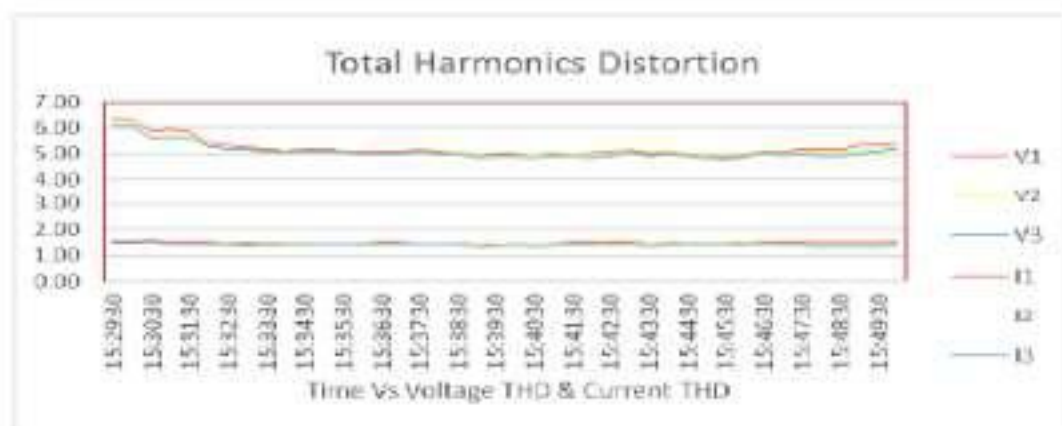
Frequency



Power factor



Total harmonics distortion



3.36 NSEZ_ WATER COOLED CHILLER-2

Power Quality Monitoring Summary					
Utility Name	NSEZ_WCC-2				
Date of Analysis	12-03-24				
Duration of Analysis	From 13:09:00 to 15:18:30				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.18	49.85	50.00	
RMS Voltage (VRN)	V	243	239	240	
RMS Voltage (VYN)	V	246	242	243	
RMS Voltage (VBN)	V	243	240	241	
RMS Voltage (VRY)	V	421	415	416	
RMS Voltage (VYB)	V	426	419	421	
RMS Voltage (VBR)	V	422	416	418	
RMS Current (IR)	Ampere	202.59	26.94	157.94	
RMS Current (IY)	Ampere	219.04	29.15	172.43	
RMS Current (IB)	Ampere	212.95	29.19	169.83	
Voltage THD (V)	%	1.52	1.39	1.45	
Current THD (I)	%	4.74	4.5	4.61	
Unbalance Voltage	%	0.54	0.41	0.48	Acceptable range.
Unbalance Current	%	9.89	5.26	7.04	Acceptable range.
Real Power	kW	119.50	5.10	82.14	
Apparent Power	kVA	154.10	8.60	120.66	
Reactive Power	KVAR	97.00	6.20	87.84	
Average Power Factor	PF	0.90	0.56	0.68	Acceptable range.

Remarks

- No issues observed.

Voltage profile



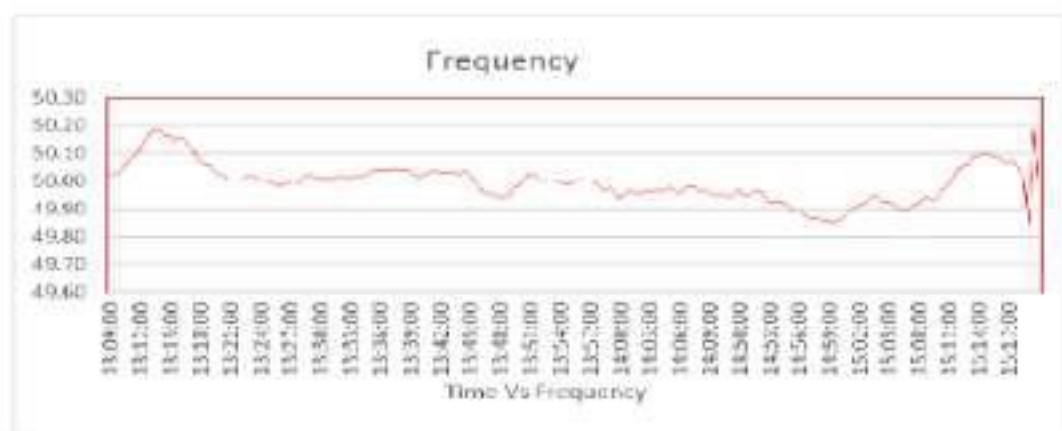
Current profile



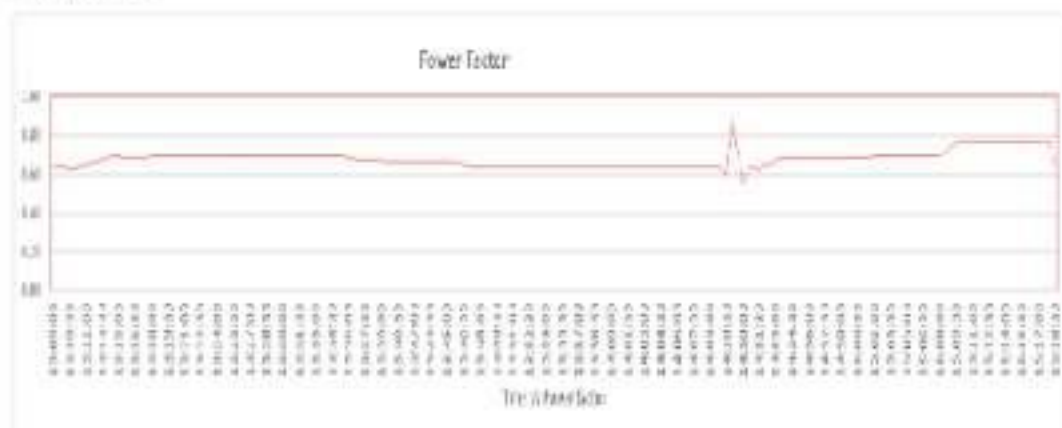
Load profile



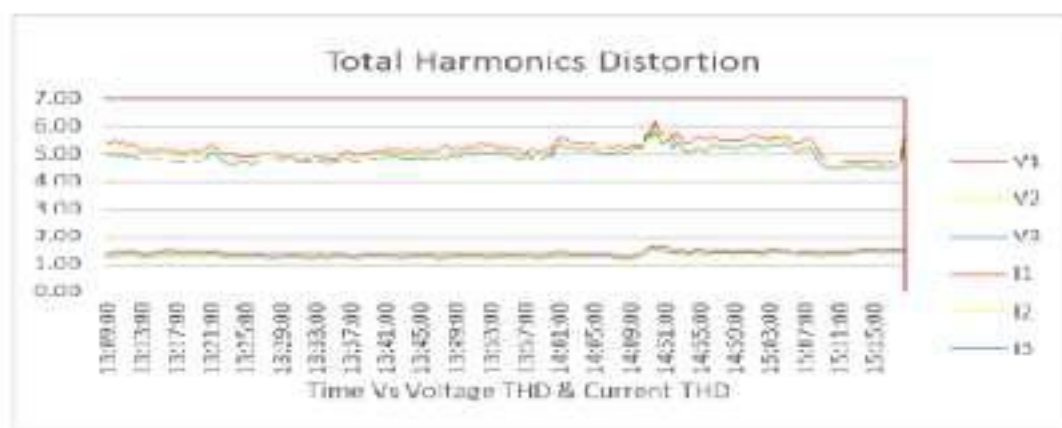
Frequency



Power factor



Total harmonics distortion



3.37 NSEZ_ WATER COOLED CHILLER-3

Power Quality Monitoring Summary					
Utility Name	NSEZ_WCC-3				
Date of Analysis	12-03-24				
Duration of Analysis	From 11:42:30 to 12:58:00				
Parameters	Unit	Maximum	Minimum	Average	Remarks
Frequency	Hz	50.13	49.89	50.00	
RMS Voltage (VRN)	V	240	234	237	
RMS Voltage (VYN)	V	242	236	239	
RMS Voltage (VBN)	V	240	236	238	
RMS Voltage (VRY)	V	415	405	410	
RMS Voltage (VYB)	V	420	409	415	
RMS Voltage (VBR)	V	416	408	412	
RMS Current (IR)	Ampere	210.92	55.35	174.35	
RMS Current (IY)	Ampere	228.72	57.53	190.19	
RMS Current (IB)	Ampere	222.57	56.01	186.26	
Voltage THD (V)	%	1.22	1.12	1.2	
Current THD (I)	%	3.68	3.51	3.61	
Unbalance Voltage	%	0.55	0.39	0.48	Acceptable range.
Unbalance Current	%	9.36	4.55	6.70	Acceptable range.
Real Power	kW	125.90	12.20	97.46	
Apparent Power	kVA	155.70	19.00	130.46	
Reactive Power	KVAR	94.20	12.70	85.79	
Average Power Factor	PF	0.88	0.57	0.74	Acceptable range.

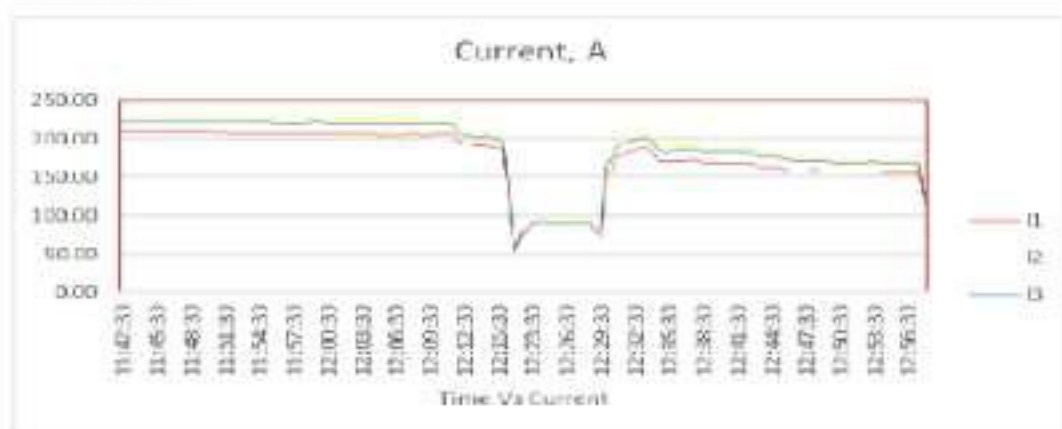
Remarks

- No issues observed.

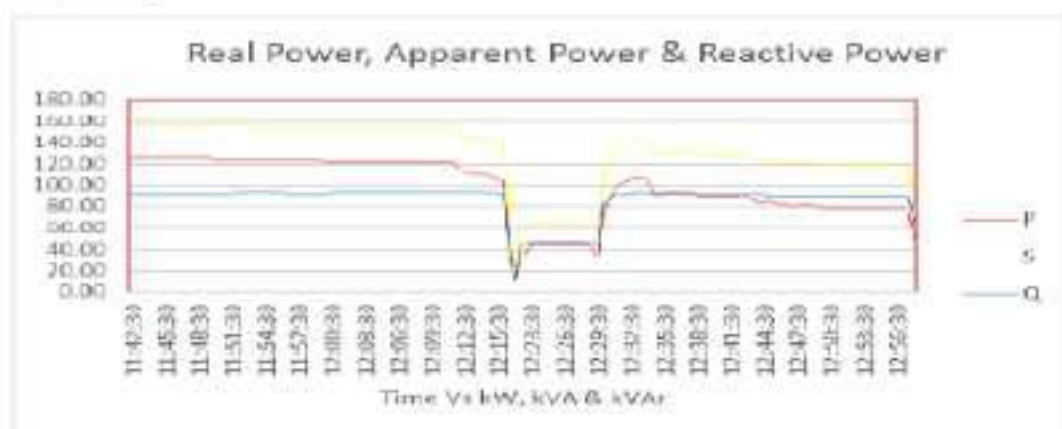
Voltage profile



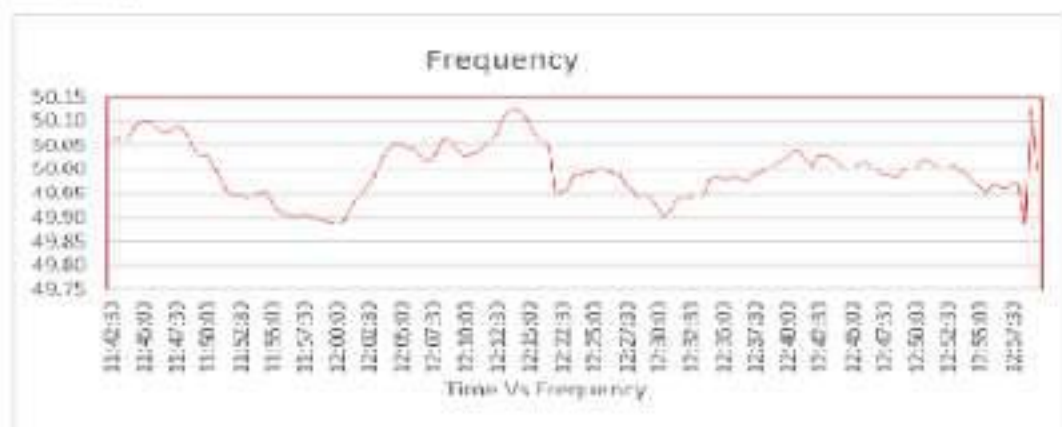
Current profile



Load profile.



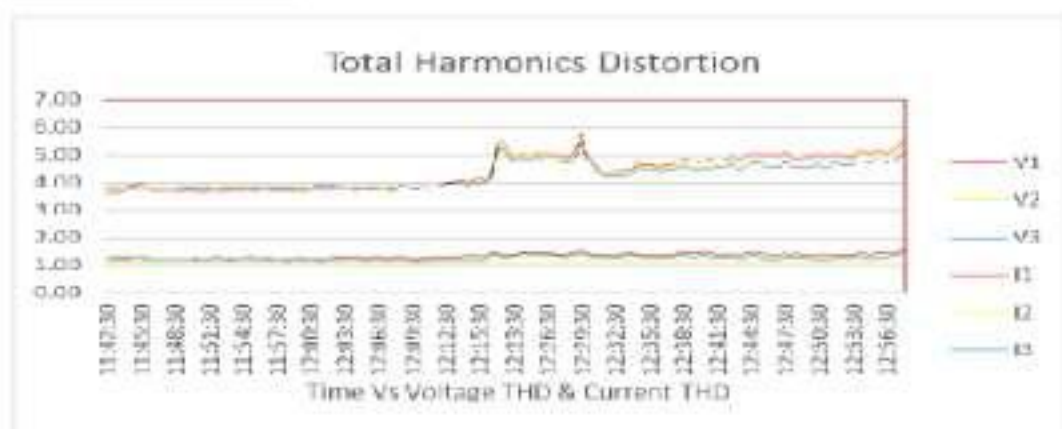
Frequency



Power factor



Total harmonics distortion





CHAPTER – 4: HVAC SYSTEM

4.1 BRIEF ABOUT THE HVAC SYSTEM

- The facility has installed Four No's of water-cooled chiller of 600 TR for SEZ Area. Normally 1 or 2 No's Water-Cooled Chiller runs based on load and Occupancy during Weekdays and Weekends.
- The facility has installed Three No's of water-cooled chiller of 250 TR for NSEZ (SDC-1 & SDC-2) Area. Normally 1 No's Water-Cooled Chiller runs based on load and Occupancy during Weekdays and Weekends.
- Present chilled water system installed in the plant is constant primary - variable secondary system for comfort chiller.

4.1.1 SEZ Water Cooled Chiller Design Details:

WCC Design Data			
Water Cooled Chiller		WCC-1 to 4	
Make		Dakin	
Model		WSC087M	
Type		Water Cooled – Centrifugal Chiller	
VFD		Yes	
Capacity	TR	600	
No. of Chillers Installed	Qty	4	
		Condenser	Evaporator
Entering	°C / °F	32.2 / 90	13.31 / 55.97
Leaving	°C / °F	37.46 / 99.44	6.66 / 44
Water Flow Rate	m ³ /hr	409	273
Power	kW	398.2	
Specific Power Consumption	kW / TR	0.6637	
Refrigerant		R – 134 A	
Chilled water circuit		Constant Primary and Variable Secondary Circuit	

4.1.2 NSEZ Water Cooled Chiller Design Details:

WCC Design Data			
Water Cooled Chiller		WCC-1to-3	
Make		Dakin	
Model		PFS2652DBRY	
Type		Water Cooled – Screw Chiller	
VFD		NA	
Capacity	TR	250	
No. of Chillers Installed	Qty	3	
		Condenser	Evaporator
Entering	°C / °F	32.2 / 90	13.31 / 55.91
Leaving	°C / °F	37.26 / 99.50	6.66 / 44
Water Flow Rate	m ³ /hr	170	114
Power	kW	171.6	
Specific Power Consumption	kW / TR	0.691	
Refrigerant		R – 134 A	
Chilled water circuit		Constant Primary and Variable Secondary Circuit	

Chiller Plant Pump Details:

Description	UoM	SEZ Area			NSEZ Area		
		Water Cooled Chiller			Water cooled Chiller		
		Primary Pumps	Secondary Pumps	Condenser Pumps	Primary Pumps	Secondary Pumps	Condenser Pumps
Pump Make	-	Bell & Gossett	Bell & Gossett	Bell & Gossett	Bell & Gossett	Bell & Gossett	Bell & Gossett
Quantity	No's	5	5	5	4	4	4
Flow	m ³ /hr	273	273	409	114	114	170
Head	m	18	30	25	17	22	25
Motor Power	kW	18.5	30	37	7.5	11	18.5
Frequency	Hz	50	50	50	50	50	50

4.2 PERFORMANCE ASSESSMENT

Purpose of Chiller performance test.

The purpose of performance assessment is to verify the performance of a refrigeration system by using field measurements at design condition. The test has been done to find out net cooling capacity (tons of refrigeration) and energy requirements, at the actual operating conditions.

Procedure

To determine the net refrigeration capacity and chiller performance following measurement has been taken at the same time during the chiller performance study:

- Chilled Water flow rate through chiller
- Chilled water temperature difference between entering and leaving water.
- Chiller- Compressor Power
- The temperature has been measured very accurately, which is vital in refrigeration and air conditioning.
- Flow measurement has been done with an online Ultra sonic flow meter.
- Compressor power has been taken with three phase power analyzers.

Performance Calculation

The net refrigeration capacity in tons has been obtained by the following equation:

$$\text{Net Refrigeration Capacity, TR} = \frac{Q \times C_p \times (T_i - T_o)}{3024}$$

Q is mass flow rate of coolant in kg/h.

C_p is coolant specific heat in kCal/ kg °C.

T_i is inlet temperature of coolant to evaporator (chiller) in °C.

T_o is outlet temperature of coolant to evaporator (chiller) in °C.

Estimation of EER and Specific Energy Consumption (kW/TR) and COP:

$$\text{Specific Energy Consumption} = \frac{\text{Measured Compressor Power, Kw}}{\text{Net Refrigeration Capacity, TR}}$$

$$\text{Coefficient of Performance, COP} = \frac{3.516}{\text{kW / TR}}$$

4.3 CHILLER PERFORMANCE ANALYSIS OF WATER-COOLED CHILLERS

4.3.1 PERFORMANCE OF SEZ AREA CHILLERS:

WATER COOLED CHILLER 1:

Table 14: SEZ area water cooled chiller 1

Parameters	Units	Water cooled chiller 1		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	WSC087M	WSC087M	WSC087M
Rated TR	TR	600	600	600
Rated power	kW	398.2	398.2	398.2
Rated COP	-	5.30	5.30	5.30
Rated SPC	kW/TR	0.66	0.66	0.66
Chilled Water Set Point	°C	10	10	10
Chilled water inlet temperature	°C	15.1	15.1	15.1
Chilled water outlet temperature	°C	11.5	10.1	11.0
Chilled Water Flow Rate	m ³ /hr	350	350	350
Chilled Water temperature difference	°C	3.6	5.0	4.1
Chiller Approach	°C	1.5	2.1	1.8
Condenser Water Flow Rate	m ³ /hr	380	380	380
Condenser water inlet temperature	°C	30.8	32.4	31.1
Condenser water outlet temperature	°C	34.5	37.6	35.3
Condenser Water temperature difference	°C	3.7	5.2	4.2
Condenser Approach	°C	1.5	2.4	2.0
Measured power	kW	224	403	310
Net Refrigerant Capacity	TR	417	579	472
RLA loading	%	65	103	81
TR loading	%	69	96	79
Actual COP	-	6.54	5.05	5.35
Specific power consumption	kW/TR	0.54	0.70	0.66

Remarks:

- Specific power consumption of 600 TR Water Cooled Chiller-1 at actual flow condition is 0.70 kW/TR. Average power consumption of chiller is 403 kW respectively; the measured capacity is 579 TR at around 10.1°C chiller outlet and 15.1°C Chiller inlet at 103% FLA.
- Evaporator water flow rate into the chiller-1 is around 350 m³/hr against the design value of 273 m³/hr which is higher than design flow rate.
- Condenser water flow rate into the Chiller-1 is around 380 m³/hr against the design value of 410 m³/hr which is slightly lesser than design condenser Flow rate.

- Evaporator approach is around 2.1°C which is slightly higher than the limit Need to check refrigerant quantity and Required to Top-up the refrigerant.
- Condenser approach is around 2.4°C which is slightly higher than the limit.

WATER COOLED CHILLER 2:

Table 15: SEZ area water cooled chiller 2

Parameters	Units	Water cooled chiller 2		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	WSC087M	WSC087M	WSC087M
Rated TR	TR	600	600	600
Rated power	kW	86.12	398.2	200.1
Rated COP	-	12.25	5.30	7.91
Rated SPC	kW/TR	0.29	0.66	0.44
Chilled Water Set Point	°C	10	10	10
Chilled water inlet temperature	°C	17.4	17.1	17.4
Chilled water outlet temperature	°C	14.8	12.1	13.3
Chilled Water Flow Rate	m ³ /hr	350	350	350
Chilled Water temperature difference	°C	2.6	5.0	4.2
Chiller Approach	°C	1.9	2.0	2.0
Condenser Water Flow Rate	m ³ /hr	380	380	380
Condenser water inlet temperature	°C	26.0	31.6	28.1
Condenser water outlet temperature	°C	28.2	36.1	31.7
Condenser Water temperature difference	°C	2.2	4.5	3.6
Condenser Approach	°C	3.2	4.7	4.1
Measured power	kW	185	376	293
Net Refrigerant Capacity	TR	301	579	484
RLA loading	%	62	101	82
TR loading	%	50	96	81
Actual COP	-	5.72	5.41	5.81
Specific power consumption	kW/TR	0.61	0.65	0.61

Remarks:

- Specific power consumption of 600 TR Water Cooled Chiller-2 at actual flow condition is 0.65 kW/TR. Average power consumption of chiller is 376 kW respectively; the measured capacity is 579 TR at around 12.1°C chiller outlet and 17.1°C Chiller inlet at 101% FLA.
- Evaporator water flow rate into the chiller-1 is around 350 m³/hr against the design value of 273 m³/hr which is higher than design flow rate.
- Condenser water flow rate into the Chiller-2 is around 380 m³/hr against the design value of 410 m³/hr which is slightly lesser than design condenser Flow rate.

- Evaporator approach is around 2.0°C which is Slightly higher than the limit.
- Condenser approach is around 4.5°C which is higher than the limit which leads to higher chiller power consumption.

WATER COOLED CHILLER 3:

Table 16: SEZ area water cooled chiller 3

Parameters	Units	Water cooled chiller 3		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	WSC087M	WSC087M	WSC087M
Rated TR	TR	600	600	600
Rated power	kW	200.1	398.2	398.2
Rated COP	-	7.91	5.30	5.30
Rated SPC	kW/TR	0.44	0.66	0.66
Chiller Set Point	°C	10	10	10
Chilled water inlet temperature	°C	15.4	15.8	15.9
Chilled water outlet temperature	°C	11.0	11.0	11.3
Chilled Water Flow Rate	m ³ /hr	350	350	350
Chilled Water temperature difference	°C	4.4	4.8	4.6
Chiller Approach	°C	0.6	1.9	1.5
Condenser Water Flow	m ³ /hr	380	380	380
Condenser water inlet temperature	°C	30.4	29.5	28.6
Condenser water outlet temperature	°C	33.3	32.6	31.5
Condenser Water temperature difference	°C	2.9	3.1	2.9
Condenser Approach	°C	5.8	6.1	6.1
Measured power	kW	285	378	344
Net Refrigerant Capacity	TR	509	556	534
RLA loading	%	80	99	91
TR loading	%	85	93	89
Actual COP	-	6.28	5.17	5.47
Specific power consumption	kW/TR	0.56	0.68	0.64

Remarks:

- Specific power consumption of 600 TR Water Cooled Chiller-3 at actual flow condition is 0.68 kW/TR. Average power consumption of chiller is 378 kW respectively; the measured capacity is 556 TR at around 11°C chiller outlet and 15.8°C Chiller inlet at 99% FLA.
- Evaporator water flow rate into the chiller-3 is around 350 m³/hr against the design value of 273 m³/hr which is higher than design flow rate.
- Condenser water flow rate into the Chiller-1 is around 380 m³/hr against the design value of 410 m³/hr which is slightly lesser than design condenser Flow rate.

- Evaporator approach is around 1.9°C which is slightly higher than the limit
- Condenser approach is around 6.1°C which is higher than the limit which leads to higher chiller power consumption.

WATER COOLED CHILLER 4:

Table 17: SEZ area water cooled chiller 4

Parameters	Units	Water cooled chiller 4		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	WSC087M	WSC087M	WSC087M
Rated TR	TR	600	600	600
Rated power	kW	200.1	398.2	398.2
Rated COP	-	7.91	5.30	5.30
Rated SPC	kW/TR	0.44	0.66	0.66
Chiller Set Point	°C	10	10	10
Chilled water inlet temperature	°C	15.2	16.0	15.7
Chilled water outlet temperature	°C	11	10.9	10.9
Chilled Water Flow Rate	m ³ /hr	350	350	350
Chilled Water temperature difference	°C	4.2	5.1	4.8
Chiller Approach	°C	0.1	0.3	0.1
Condenser Water Flow Rate	m ³ /hr	380	380	380
Condenser water inlet temperature	°C	30.9	30.9	30.3
Condenser water outlet temperature	°C	33.9	35	34.6
Condenser Water temperature difference	°C	3.0	4.1	4.3
Condenser Approach	°C	1.7	2.5	1.9
Measured power	kW	297	379	331
Net Refrigerant Capacity	TR	486	590	559
RLA loading	%	78	96	86
TR loading	%	81	98	93
Actual COP	-	5.76	5.48	5.94
Specific power consumption	kW/TR	0.61	0.64	0.59

Remarks:

- Specific power consumption of 600 TR Water Cooled Chiller-4 at actual flow condition is 0.64 kW/TR. Average power consumption of chiller is 379 kW respectively; the measured capacity is 590 TR at around 10.9°C chiller outlet and 16.0°C Chiller inlet at 96% FLA.
- Evaporator water flow rate into the chiller-4 is around 350 m³/hr against the design value of 273 m³/hr which is higher than design flow rate.
- Condenser water flow rate into the Chiller-4 is around 380 m³/hr against the design value of 410 m³/hr which is slightly lesser than design condenser Flow rate.
- Evaporator approach is around 0.3°C which is good within the limit.

- Condenser approach is around 2.5°C which is slightly higher than the limit which leads to higher chiller power consumption.

PART LOAD DESIGN DETAILS:

Table 18: SEZ chiller part load design details

% of loading	TR	Rated kW	kW/TR	COP	Chilled water inlet temperature, °C	Chilled water outlet temperature, °C	Condenser water inlet temperature, °C	Condenser water outlet temperature, °C
100	600	398.2	0.66	5.30	13.3	6.7	32.2	37.5
75	450	200.1	0.44	7.91	11.7	6.7	25.3	29.0
50	300	86.12	0.29	12.25	10.0	6.7	18.3	20.7
24	150	55.17	0.37	9.56	8.3	6.7	18.3	19.5

4.3.2 PERFORMANCE OF NSEZ AREA CHILLERS:

WATER COOLED CHILLER 1:

Table 19: NSEZ area water cooled chiller 1

Parameters	Units	Water cooled chiller 1		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	PFS2652DBRY	PFS2652DBRY	PFS2652DBRY
Rated TR	TR	250	250	250
Rated power	kW	102.8	102.8	102.8
Rated COP	-	6.37	6.37	6.37
Rated SPC	kW/TR	0.55	0.55	0.55
Chiller Set Point	°C	7	7	7
Chilled water inlet temperature	°C	10.8	12.5	11.8
Chilled water outlet temperature	°C	6.9	7.8	7.4
Chilled Water Flow Rate	m ³ /hr	135	135	135
Chilled Water temperature difference	°C	3.9	4.7	4.4
Chiller Approach	°C	1.0	1.2	1.1
Condenser Flow Rate	m ³ /hr	160	160	160
Condenser water inlet temperature	°C	24.6	23.2	23.6
Condenser water outlet temperature	°C	28.7	27.5	27.5
Condenser Water temperature difference	°C	4.1	4.3	3.9
Condenser Approach	°C	1.5	2.4	2.2
Measured power	kW	94	96	95
Net Refrigerant Capacity	TR	174	210	195
TR loading	%	70	84	78
Actual COP	-	6.51	7.69	7.21
Specific power consumption	kW/TR	0.54	0.46	0.49

Remarks:

- Specific power consumption of 250 TR Water Cooled Chiller-1 at actual flow condition is 0.46 kW/TR. Average power consumption of chiller is 96 kW respectively; the measured capacity is 210 TR at around 7.8°C chiller outlet and 12.5°C Chiller inlet.
- Evaporator water flow rate into the chiller-1 is around 135 m³/hr against the design value of 114 m³/hr which is slightly higher than design flow rate.
- Condenser water flow rate into the Chiller-1 is around 160 m³/hr against the design value of 170 m³/hr which is slightly lesser than design condenser Flow rate.
- Evaporator approach is around 1.2°C which is good.
- Condenser approach is around 2.4°C which is slightly higher than the limit.

WATER COOLED CHILLER 2:

Table 20: NSEZ area water cooled chiller 2

Parameters	Units	Water cooled chiller 2		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	PFS2652DBRY	PFS2652DBRY	PFS2652DBRY
Rated TR	TR	250	250	250
Rated power	kW	102.8	102.8	102.8
Rated COP	-	6.37	6.37	6.37
Rated SPC	kW/TR	0.55	0.55	0.55
Chiller Set Point	°C	7	7	7
Chilled water inlet temperature	°C	9.6	12.6	11.8
Chilled water outlet temperature	°C	7.2	8.0	8.1
Chilled Water Flow Rate	m ³ /hr	140	140	140
Chilled Water temperature difference	°C	2.4	4.6	3.7
Chiller Approach	°C	0.9	1.4	1.2
Condenser Flow Rate	m ³ /hr	160	160	160
Condenser water inlet temperature	°C	23.9	24.6	24.3
Condenser water outlet temperature	°C	26.6	29.4	28.1
Condenser Water temperature difference	°C	2.7	4.8	3.8
Condenser Approach	°C	0.4	1.3	1.0
Measured power	kW	72	119	98
Net Refrigerant Capacity	TR	111	213	170
TR loading	%	44	85	68
Actual COP	-	5.43	6.30	6.08
Specific power consumption	kW/TR	0.65	0.56	0.58

Remarks:

- Specific power consumption of 250 TR Water Cooled Chiller-2 at actual flow condition is 0.56 kW/TR. Average power consumption of chiller is 119 kW respectively; the measured capacity is 213 TR at around 8°C chiller outlet and 12.6°C Chiller inlet.
- Evaporator water flow rate into the chiller-1 is around 140 m³/hr against the design value of 114 m³/hr which is slightly higher than design flow rate.
- Condenser water flow rate into the Chiller-1 is around 160 m³/hr against the design value of 170 m³/hr which is slightly lesser than design condenser Flow rate.
- Evaporator approach is around 1.4°C which is good.
- Condenser approach is around 1.3°C which is good.

WATER COOLED CHILLER 3:

Table 21: NSEZ area water cooled chiller 3

Parameters	Units	Water cooled chiller 3		
		Set-1	Set-2	Set-3
Make	-	DAIKIN	DAIKIN	DAIKIN
Model	-	PFS2652DBRY	PFS2652DBRY	PFS2652DBRY
Rated TR	TR	250	250	250
Rated power	kW	46.5	171.6	102.8
Rated COP	-	9.38	5.09	6.37
Rated SPC	kW/TR	0.37	0.69	0.55
Chiller Set Point	°C	7	7	7
Chilled water inlet temperature	°C	9.7	14.9	12.5
Chilled water outlet temperature	°C	7.1	10.2	8.3
Chilled Water Flow Rate	m ³ /hr	150	150	150
Chilled Water temperature difference	°C	2.6	4.7	4.2
Chiller Approach	°C	1.6	2.1	2.0
Condenser Flow Rate	m ³ /hr	160	160	160
Condenser water inlet temperature	°C	23.9	26.3	25.4
Condenser water outlet temperature	°C	27.0	31.7	30.2
Condenser Water temperature difference	°C	3.1	5.4	4.8
Condenser Approach	°C	1.1	1.4	1.3
Measured power	kW	78	124	121
Net Refrigerant Capacity	TR	129	233	209
TR loading	%	52	93	84
Actual COP	-	5.81	6.61	6.08
Specific power consumption	kW/TR	0.60	0.53	0.58

Remarks:

- Specific power consumption of 250 TR Water Cooled Chiller-3 at actual flow condition is 0.53 kW/TR. Average power consumption of chiller is 124 kW respectively; the measured capacity is 233 TR at around 10.2°C chiller outlet and 14.9°C Chiller inlet.
- Evaporator water flow rate into the chiller-1 is around 150 m³/hr against the design value of 114 m³/hr which is slightly higher than design flow rate.
- Condenser water flow rate into the Chiller-1 is around 160 m³/hr against the design value of 170 m³/hr which is slightly lesser than design condenser Flow rate.
- Evaporator approach is around 2.1°C which is slightly higher than the limit.
- Condenser approach is around 1.4°C which is within the limit.

PART LOAD DESIGN DETAILS:

Table 22: NSEZ chiller part load design details

% of loading	TR	Rated kW	kW/TR	COP	Chilled water inlet temperature, °C	Chilled water outlet temperature, °C	Condenser water inlet temperature, °C	Condenser water outlet temperature, °C
100	248.2	171.6	0.69	5.09	13.3	6.7	32.2	37.50
75	186.1	102.8	0.55	6.37	11.6	6.7	25.3	29.11
50	124.1	46.5	0.37	9.38	10.0	6.7	18.3	20.77
24	62.0	26.9	0.43	8.10	8.3	6.7	18.3	19.57

4.4 COOLING TOWER:

SEZ AREA

The cooling tower performance of the water-cooled chiller are as follows:

Table 23: Cooling tower Performance.

Parameters	Unit	SEZ Area	
		Cooling tower 1	Cooling tower 2
Cooling tower inlet temperature	°C	33.4	28.7
Cooling tower outlet temperature	°C	29.9	25.8
Range	°C	3.5	2.9
Wet bulb temperature	°C	20.8	18.5
Dry bulb temperature	°C	29.3	29.1
Approach	°C	9.2	7.3
CT fan 1 & 2 power	kW	10.83	13.11
CT fan 3 & 4 power	kW	10.70	OFF Condition
Effectiveness	%	28	28.4

Remarks:

SEZ Area:

- The effectiveness of cooling tower 1 was calculated to be 28 % and approach is calculated to be 9.2 °C which is very high. Need to do regular maintenance of C.T to further increase the C.T Effectiveness.
- The effectiveness of cooling tower 2 was calculated to be 28.4 % and approach is calculated to be 7.3 °C which is very high. Need to do regular maintenance of C.T to further increase the C.T Effectiveness.

NSEZ

The cooling tower performance of the water-cooled chiller are as follows:

Parameters	Unit	NSEZ Area
		Cooling tower 3
Cooling tower inlet temperature	°C	30.6
Cooling tower outlet temperature	°C	25.8
Range	°C	4.8
Wet bulb temperature	°C	20.5
Dry bulb temperature	°C	29.3
Approach	°C	5.3
CT fan 1	kW	3.24
CT fan 2	kW	3.28
Effectiveness	%	47.5

Table 24: Cooling tower performance.

Remarks:

NSEZ Area:

- The effectiveness of cooling tower 3 was calculated to be 47.5 % and approach is calculated to be 5.3 °C.
- It is recommended to remove algae formation and do regular maintenance to improve the effectiveness of cooling tower.

4.5 CHILLER VIBRATION STUDY

The chiller vibration study has been carried out and details are as follows.

SEZ AREA_ WATER COOLED CHILLER 1:

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor_ DE	Velocity (mm/s)	1.8	2.9	2.0	2.7	2.7	3.3
Compressor_ NDE	Velocity (mm/s)	1.9	2.8	2.0	2.6	2.4	3.2
Condenser	Velocity (mm/s)	0.1	0.1	0.1	0.1	0.5	0.7
Evaporator	Velocity (mm/s)	0.1	0.5	0.1	0.1	0.3	1.1

Table 25: SEZ_ Water cooled chiller 1 vibration study.

SEZ AREA_ WATER COOLED CHILLER 2:

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor_ DE	Velocity (mm/s)	2.0	2.7	1.3	2.0	3.6	4.9
Compressor_ NDE	Velocity (mm/s)	2.0	2.5	1.4	2.2	3.5	4.8
Condenser	Velocity (mm/s)	0.2	0.3	0.5	0.9	0.4	0.4
Evaporator	Velocity (mm/s)	0.1	0.1	0.1	0.1	0.4	0.4

Table 26 : SEZ_ Water cooled chiller 2 vibration study.

SEZ AREA_ WATER COOLED CHILLER 3:

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor_ DE	Velocity (mm/s)	1.4	2.3	1.0	1.2	1.7	2.2
Compressor_ NDE	Velocity (mm/s)	1.2	2.1	1.0	1.1	1.8	2.3
Condenser	Velocity (mm/s)	0.1	0.2	0.2	0.2	0.5	0.5
Evaporator	Velocity (mm/s)	0.1	0.2	0.2	0.5	0.2	0.2

Table 27: SEZ_ Water cooled chiller 3 vibration study.

SEZ AREA_ WATER COOLED CHILLER 4:

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor_ DE	Velocity (mm/s)	0.8	1.2	1.4	2.5	1.5	3.5
Compressor_ NDE	Velocity (mm/s)	0.9	1.3	1.0	2.1	1.1	3.3
Condenser	Velocity (mm/s)	0.5	0.7	0.1	0.1	0.8	0.8
Evaporator	Velocity (mm/s)	0.1	0.1	0.2	0.3	0.8	1.6

Table 28: SEZ_ Water cooled chiller 4 vibration study.

NSEZ AREA_ WATER COOLED CHILLER 1:

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor 1_ DE	Velocity (mm/s)	0.7	0.9	0.2	0.4	0.4	0.5
Compressor 1_ NDE	Velocity (mm/s)	0.5	0.8	0.1	0.3	0.4	0.5
Compressor 2_ DE	Velocity (mm/s)	0.6	0.6	1.4	2.0	4.8	5.2

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor 2_ NDE	Velocity (mm/s)	0.6	0.5	1.5	2.1	4.9	5.2
condenser	Velocity (mm/s)	0.7	0.8	1.0	1.1	4.8	5.1
Evaporator	Velocity (mm/s)	0.2	0.7	0.5	1.4	0.3	0.3

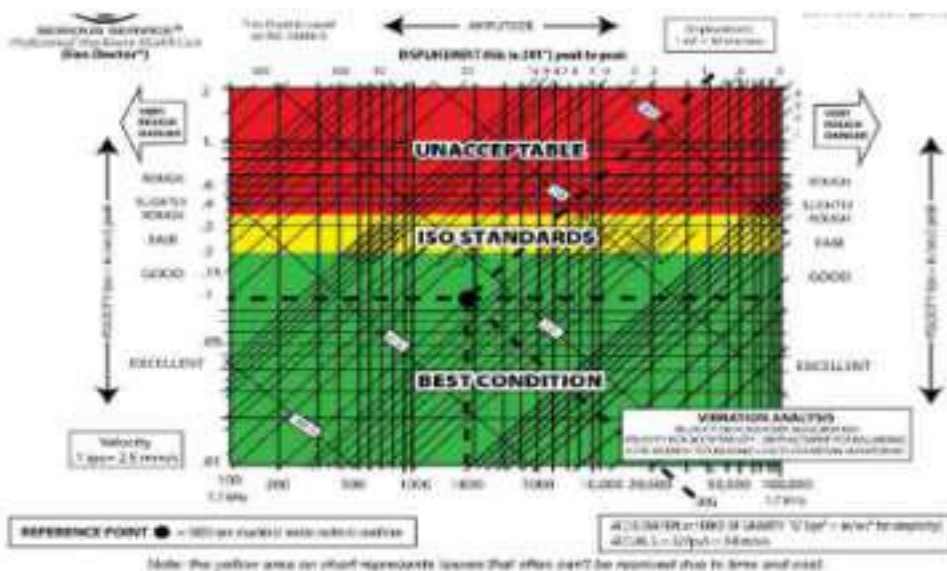
Table 29: NSEZ_ Water cooled chiller 1 vibration study.

NSEZ AREA_ WATER COOLED CHILLER 2:

Location	Parameters	Vertical		Horizontal		Axial	
		RMS	Peak	RMS	Peak	RMS	Peak
Compressor 1_ DE	Velocity (mm/s)	1.0	2.5	1.2	1.5	4.9	5.2
Compressor 1_ NDE	Velocity (mm/s)	1.0	2.6	1.2	1.2	4.8	5.1
Compressor 2_ DE	Velocity (mm/s)	0.6	0.7	0.6	0.7	3.4	4.5
Compressor 2_ NDE	Velocity (mm/s)	0.5	0.7	0.4	0.6	3.4	4.8
condenser	Velocity (mm/s)	0.3	0.4	0.5	0.7	0.5	2.2
Evaporator	Velocity (mm/s)	0.5	0.7	0.1	0.1	0.5	0.5

Table 30: NSEZ_ Water cooled chiller 2 vibration study.

Remarks: No major issues observed.



4.6 PUMP PERFORMANCE DETAILS

4.6.1 SEZ WATER COOLED PRIMARY PUMPS

Pump Efficiency Calculation

The Pump efficiency calculation has been obtained by the following equation:

$$\text{Hydraulic Power } P_h = Q \text{ (m}^3/\text{s)} \times \text{Total Differential head, } h_d - h_s \text{ (m)} \times \rho \text{ (kg/m}^3) \times g \text{ (m/s}^2) / 1000$$

Where h_d - discharge head, h_s - suction head, ρ - density of the liquid, g - acceleration due to gravity

$$\text{Pump Shaft Power } P_s = \text{Hydraulic power, } P_h / \text{Pump Efficiency, } \eta_{\text{pump}}$$

$$\text{Motor Input Power } P_m = \text{Pump shaft power } P_s / \text{Motor Efficiency, } \eta_{\text{motor}}$$

(OR)

$$\text{Hydraulic Power (kW)} = (\text{Flowrate(m}^3/\text{hr)} \times \text{Head(m)}) / 367$$

$$\text{Pump Efficiency (\%)} = \text{Hydraulic Power(kW)} / \{\text{Motor Input Power(kW)} \times \text{Motor Efficiency(\%)}\}$$

(Where USGPM to m³/hr conversion is (GPM/4.4 = m³/hr) and average design motor efficiency will be around 90%)

The performance of water-cooled primary pump details are as follows:

Table 31: WCC primary pump performance.

Pump Name	Unit	Primary Pump-2	Primary Pump-5
Rated Flow rate	m ³ /hr	273	273
Rated Power	kW	18.5	18.5
Rated head	m	18.0	18.0
Measured Flow rate	m ³ /hr	365.0	370.0
Measured Power	kW	20.4	22.5
Suction head	m	40.0	39.0
Delivery head	m	52.0	52.0
Total head (Hd-Hs)	m	12.0	13.0
Pump shaft power	kW	18.3	20.3
Pump efficiency	%	65	65
Overall Pump efficiency	%	58.6	58.2

OBSERVATIONS & RECOMMENDATIONS

- Pumps are delivering more Flow rate than design, Actual Flow of 365 m³/hr as against design flow of 273 m³/hr due to lesser operating head of 13 m resulting in surge in water Flow.
- Pumps Measured Power of 20.4 kW which is operating at full load due to more flow as against design Motor of 18.5 kW.
- Pumps Operating Efficiency is 65% as against the design Efficiency of 78% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency.

4.6.2 SEZ CONDENSER PUMPS:

The performance of condenser pump details are as follows:

Table 32: Condenser pump performance.

Pump Name	Unit	Condenser pump 2	Condenser pump 3	Condenser pump 4	Condenser pump 5
Rated Flow rate	m ³ /hr	409	409	409	409
Rated Power	kW	37	37	37	37
Rated head	m	25	25	25	25
Measured Flow rate	m ³ /hr	384.0	380.0	375.0	360
Measured Power	kW	45.6	43.2	43.8	41.78
Suction head	m	6.0	5.9	6.1	6
Delivery head	m	17.0	17.9	18	17
Total head (Hd-Hs)	m	11.0	12.0	11.9	11.0
Pump shaft power	kW	41.5	38.9	39.4	37.6
Pump Efficiency	%	28	32	31	29
Overall Pump efficiency	%	25	29	28	26

OBSERVATIONS & RECOMMENDATIONS

- Pumps Actual Flow of 380 m³/hr as against design flow of 409 m³/hr at operating head of 12 m.
- Ideally Pumps has to deliver more Flow rate than design due to less operating head, but due to heavy Throttling observed in Balancing Valve in Cooling Tower Return Header the Actual Flow of 385 m³/hr as against design flow of 410 m³/hr even though with lesser operating head of 12 m.
- Pumps Measured Power of 41.5 kW which is operating at full load as against design Motor of 37 kW
- Due to selection of higher margin of head than required during design stage. Pumps Operating Efficiency is 32% as against the design Overall Efficiency of 77% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency.
- It is Observed that Cooling Water return line is heavily Throttled which is shear Energy Loss and leads to Pumps Operating at lesser Efficiency.
- It is advisable to opt for the correct duty point selection of pump to operate the pumping system at a better efficiency which is discussed in detail in ECM Chapter ECM-6.

4.6.3 SEZ SECONDARY PUMPS:

The performance of secondary pump details are as follows:

Table 33: Secondary pump performance.

Pump Name	Unit	Secondary pump 1	Secondary pump 3	Secondary pump 4	Secondary pump 5
Rated Flow rate	m ³ /hr	273	273	273	273
Rated Power	kW	30	30	30	30
Rated head	m	30.0	30.0	30.0	30.0
Measured Flow rate	m ³ /hr	450.0	447.0	440.0	451.0
Measured Power	kW	30.6	29.1	29.5	30.0
Suction head	m	39.0	38.0	38.0	39.0
Delivery head	m	53.0	53.0	53.0	54.0
Total head (Hd-Hs)	m	14.0	15.0	15.0	15.0
Pump shaft power	kW	27.6	26.2	26.6	27.0
Pump efficiency	%	62	70	68	68
Overall Pump efficiency	%	56	63	61	62

OBSERVATIONS & RECOMMENDATIONS:

- Secondary Pumps Efficiency are in the Range of 68 to 70%
- All secondary pumps are installed with VFD but operated manually by fixed VFD setting.
- It is recommended to provide feedback from Return Header Pressure to modulate the VFD automatically to Save Pumping Power.

4.6.4 NSEZ WATER COOLED PRIMARY PUMPS

The performance of water-cooled primary pump details are as follows:

Table 34: NSEZ WCC primary pumps performance

Pump Name	Unit	Primary pump 1	Primary pump 2	Primary pump 3
Rated Flow rate	m ³ /hr	114	114	114
Rated Power	kW	7.5	7.5	7.5
Rated head	m	17.0	17.0	17.0
Measured Flow rate	m ³ /hr	135	150	155
Measured Power	kW	8.78	8.46	8.2
Suction head	m	46	46	46
Delivery head	m	60	58	57.5
Total head (Hd-Hs)	m	14.0	12.0	11.5
Pump shaft power	kW	7.7	7.4	7.2
Pump efficiency	%	67	66	67
Overall Pump efficiency	%	59	58	59

OBSERVATIONS & RECOMMENDATIONS

- Pumps are delivering more Flow rate than design, Actual Flow of 135 m³/hr as against design flow of 114 m³/hr due to lesser operating head of 12 m resulting in surge in water Flow.
- Pumps Measured Power of 8.78 kW which is operating at full load due to more flow as against design Motor of 7.5 kW.
- Pumps Operating Efficiency is 67% as against the design Efficiency of 78% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency.

4.6.5 NSEZ CONDENSER PUMPS:

The performance of condenser pump details are as follows:

Table 35: NSEZ WCC Condenser Pumps Performance

Pump Name	Unit	Condenser pump 1	Condenser pump 2
Rated Flow rate	m ³ /hr	170	170
Rated Power	kW	18.5	18.5
Rated head	m	25.0	25.0
Measured Flow rate	m ³ /hr	160	160
Measured Power	kW	19.6	17.2
Suction head	m	6	6
Delivery head	m	23	23
Total head (Hd-Hs)	m	17	17
Pump shaft power	kW	17.5	15.5
Pump efficiency	%	42	48
Overall Pump efficiency	%	38	43

OBSERVATIONS & RECOMMENDATIONS

- Pumps Actual Flow of 160 m³/hr as against design flow of 170 m³/hr at operating head of 17 m.
- Ideally Pumps must deliver more Flow rate than design due to less operating head, but due to heavy Throttling observed in Cooling Tower line the Actual Flow of 160 m³/hr as against design flow of 170 m³/hr even though with lesser operating head of 17 m.
- Pumps Measured Power of **19.6 kW** which is operating at full load as against design Motor of 18.5 kW
- Due to selection of higher margin of head than required during design stage. Pumps Operating Efficiency is **42 to 48%** as against the design Efficiency of 77% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency.
- It is Observed that Cooling Water return line is Throttled which is shear Energy Loss and leads to Pumps Operating at lesser Efficiency.
- It is advisable to opt for the correct duty point selection of pump to operate the pumping system at a better efficiency.

4.6.6 NSEZ SECONDARY PUMPS:

The performance of secondary pump details are as follows:

Table 36: NSEZ WCC Secondary Pumps performance

Pump Name	Unit	Secondary pump 2	Secondary pump 3
Rated Flow rate	m ³ /hr	114	114
Rated Power	kW	11	11
Rated head	m	22.0	22.0
Measured Flow rate	m ³ /hr	160	140
Measured Power	kW	10.3	11.3
Suction head	m	46	46
Delivery head	m	56	56
Total head (Hd-Hs)	m	10.0	10.0
Pump shaft power	kW	9.0	9.9
Pump efficiency	%	49	38
Overall Pump efficiency	%	42	34

OBSERVATIONS & RECOMMENDATIONS.

- Secondary Pumps Efficiency are in the Range of 38 to 49% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency.
- All secondary pumps are installed with VFD but operated manually by fixed VFD setting.
- It is recommended to provide feedback from Return Header Pressure to modulate the VFD automatically to Save Pumping Power.

4.7 AHU PERFORMANCE ASSESSMENT DETAILS:**Performance Calculation of AHU**

The AHU Tonnage calculation has been obtained by the following equation:

$$TR = \frac{Q \times \rho \times (h_{in} - h_{out})}{3024}$$

Where,

Q is the air flow in m³/h

ρ is density of air kg/m³

h_{in} is enthalpy of inlet air kcal/kg

h_{out} is enthalpy of outlet air kcal/kg

(Where CFM to m³/hr conversion is (CFM * 1.699 = m³/hr), Density of air = 1.2 kg/m³ approx, and kJ to kcal conversion is (kJ / 4.18 = kcal)).

Estimation of Specific Energy Consumption (kW/TR):

$$\text{Specific Energy Consumption} = \frac{\text{Measured AHU Fan Power, Kw}}{\text{Heat Load, TR}}$$

4.7.1 TOWER 1 AHU

Tower 1 AHU performance as follows:

Table 37: Tower 1 AHU performance.

AHU ID	Unit	Ground floor_RHS_AHU-1	Ground floor_AHU-5	Ground floor_LHS_AHU-8	First floor_AHU-5	First floor_AHU-1
Rated capacity	CFM	20000	10000	20000	10500	16000
Rated power	kW	9.3	5.5	9.3	5.5	7.5
Measured Voltage	V	418	420	425	425	429
Measured current	A	3.08	1.96	1.90	2.0	3.31
Measured power	kW	2.25	1.43	1.34	1.6	2.50
Measured Power Factor	PF	0.98	0.98	0.92	1.0	0.98
Filter Length	cm	209	144	203	105.0	202
Filter Breadth	cm	164	116	164	53.0	145
Air Velocity	m/s	0.58	0.68	0.36	2.35	0.77
Filter Area	m ²	3.4	1.7	3.3	0.6	2.9
Actual flow	CFM	4246	2419	2508	2766	4779
CFM loading	%	21	24	13	26	30
Supply Air DBT	°C	15.9	16.7	15.8	16.4	17.4
Supply air RH	%	68.0	68.4	69.8	69.9	61.1
Return Air DBT	°C	22.3	19.3	20.8	20.5	21.5
Return air RH	%	51.3	60.8	59.9	56.0	52.8
Supply Enthalpy	kJ/kg	35.31	37.58	35.89	37.33	36.90

AHU ID	Unit	Ground floor_RHS_AHU-1	Ground floor_AHU-5	Ground floor_LHS_AHU-8	First floor_AHU-5	First floor_AHU-1
Return Enthalpy	kJ/kg	44.62	41.23	44.56	42.28	43.36
TR	TR	6.40	1.43	3.52	2.22	5.00
Actual kW/TR	kW/TR	0.35	1.00	0.38	0.72	0.50
Rated W/CFM	W/CFM	0.47	0.55	0.47	0.52	0.47
Actual W/CFM	W/CFM	0.53	0.59	0.53	0.58	0.52
Running Hours/Day	Hrs/day	24	8	24	24	24
Type of driven direct/belt	-	Belt driven	Belt driven	Belt driven	Belt driven	Belt driven
Fresh air supply details	-	Available	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Normal	Normal	Normal	Normal	Not available
Cooling Coil Condition	-	Normal	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Normal	Normal	Normal	Normal	Not available
CHW Actuator Feedback	-	Connected	Connected	Connected	Connected	Not available
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
Remarks	-	-	-	-	-	Actuator is not available

AHU ID	Unit	Second floor_AHU-1	Second floor_AHU-2	Second floor_AHU-5	Second floor_AHU-4	Third floor_AHU-8
Rated capacity	CFM	13000	16000	15000	8000	16000
Rated power	kW	5.5	7.5	7.5	3.7	7.5

AHU ID	Unit	Second floor_AHU-1	Second floor_AHU-2	Second floor_AHU-5	Second floor_AHU-4	Third floor_AHU-8
Measured Voltage	V	426	420	421	421	420
Measured current	A	4.43	2.99	6.32	1.78	2.30
Measured power	kW	3.30	2.20	4.70	1.32	1.93
Measured Power Factor	PF	0.98	0.99	0.96	0.99	0.95
Filter Length	cm	150	202	175	116	202
Filter Breadth	cm	86	145	144	116	145
Air Velocity	m/s	2.49	0.72	1.53	0.96	0.61
Filter Area	m ²	1.3	2.9	2.5	1.3	2.9
Actual flow	CFM	6809	4468	8187	2747	3780
CFM loading	%	52	28	55	34	24
Supply Air DBT	°C	15.6	18.0	17.2	17.3	16.4
Supply air RH	%	67.8	64.7	68.2	64.0	66.5
Return Air DBT	°C	20.4	23.4	22.5	19.7	21.7
Return air RH	%	54.9	49.6	52.9	56.9	54.4
Supply Enthalpy	kJ/kg	34.86	39.48	38.71	37.61	36.30
Return Enthalpy	kJ/kg	41.61	46.50	45.81	40.74	44.51
TR	TR	7.44	5.08	9.41	1.39	5.02
Actual kW/TR	kW/TR	0.44	0.43	0.50	0.95	0.38
Rated W/CFM	W/CFM	0.42	0.47	0.50	0.46	0.47
Actual W/CFM	W/CFM	0.48	0.49	0.57	0.48	0.51
Running Hours/Day	Hrs/day	24	24	24	8	24
Type of driven direct/belt	-	Belt driven	Belt driven	Belt driven	Belt driven	Belt driven
Fresh air supply details	-	Available	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Not available	Manual
Cooling Coil Condition	-	Normal	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not available	Not connected
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not available	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available

AHU ID	Unit	Second floor_AHU-1	Second floor_AHU-2	Second floor_AHU-5	Second floor_AHU-4	Third floor_AHU-8
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
Remarks	-	Actuator is available but chilled water valve position is manually operated.	Actuator is available but chilled water valve position is manually operated.	-	Actuator is not available	Actuator is available but chilled water valve position is manually operated.

AHU ID	Unit	Third floor_AHU-5	Third floor_AHU-1	Fourth floor_AHU-1	Fourth floor_AHU-2	Fourth floor_AHU-5
Rated capacity	CFM	11000	16000	20000	16000	11000
Rated power	kW	5.5	7.5	9.3	7.5	5.5
Measured Voltage	V	421	423	420	423	421
Measured current	A	3.20	2.30	1.87	3.52	2.20
Measured power	kW	2.30	1.83	1.44	2.42	1.75
Measured Power Factor	PF	0.98	0.98	0.99	0.98	0.95
Filter Length	cm	175	202	202	202	172
Filter Breadth	cm	116	145	174	145	116
Air Velocity	m/s	1.33	0.63	0.57	0.66	0.65
Filter Area	m ²	2.0	2.9	3.5	2.9	2.0
Actual flow	CFM	5735	3893	4270	4123	2764
CFM loading	%	52	24	21	26	25
Supply Air DBT	°C	16.9	16.6	16.6	16.8	19.1
Supply air RH	%	64.6	64.4	72.7	63.8	62.1
Return Air DBT	°C	21.3	22.3	22.0	22.2	22.6
Return air RH	%	52.8	52.0	56.0	51.5	52.0
Supply Enthalpy	h(in) kJ/kg	36.87	36.13	38.66	36.39	41.22
Return Enthalpy	h(in) kJ/kg	42.89	44.93	45.92	44.47	45.66
TR	TR	5.59	5.54	5.02	5.39	1.99
Actual kW/TR	kW/TR	0.41	0.33	0.29	0.45	0.88
Rated W/CFM	W/CFM	0.50	0.47	0.47	0.47	0.50
Actual W/CFM	W/CFM	0.40	0.47	0.34	0.59	0.63
Deviation	%	47.86	75.67	78.65	74.23	74.87
Running Hours/Day	Hrs/day	8	24	24	24	8
Type of driven direct/belt	-	Belt driven	Belt driven	Belt driven	Belt driven	Belt driven
Fresh air supply details	-	Available	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Manual	Manual
Cooling Coil Condition	-	Normal	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected	Not connected

AHU ID	Unit	Third floor_AHU-5	Third floor_AHU-1	Fourth floor_AHU-1	Fourth floor_AHU-2	Fourth floor_AHU-5
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
Remarks	-	-	Actual is available but chilled water valve position is manually operated.	Actual is available but chilled water valve position is manually operated.	Actual is available but chilled water valve position is manually operated.	-

Remarks:

- Most of the AHUs at the IT-01 have VFD units for the AHU blowers.
- AHU's CHW actuators are not connected to the BMS system.
- Observed during the audit wherever the VFD's are available are operated in manual with frequency range between 25-40 HZ.
- AHU fan blower with belt coupled motor types were installed in all AHUs. The fans with belt coupled motors will be having transmission losses around 5%, additional breakdown and maintenance cost of belt changing is also significant. It is recommended to replace existing inefficient belt driven fans with direct driven fans in AHUs for energy savings.
- The advantages of direct driven type fans over belt driven fans are as follows:
- Combined efficiency of plug type direct driven fans is above 70%.
- Transmission losses due to belt driven type is eliminated.
- Further breakdown and maintenance cost of belt changing is also eliminated.

General observation:

- ✓ AHU strainer area is not insulated. It is recommended to provide removable type insulator for the strainer in AHU to reduce heat loss.

4.7.2 TOWER 2 AHU:

Tower 2 AHU performance as follows:

AHU ID	Unit	Ground floor_AHU Room-5	Ground floor_AHU Room-3	Ground floor_AHU Room-2	Ground floor_AHU Room-1	Ground floor_AHU Room-4
Rated capacity	CFM	18000	10000	13000	7000	16000
Rated power	kW	13.2	8.4	8.8	4.4	13.2
Measured Voltage	V	415	415	415	415	415
Measured current	A	4.96	3.00	6.50	2.8	1.00
Measured power	kW	3.46	2.11	3.97	1.91	0.68
Measured Power Factor	PF	0.97	0.98	0.85	0.95	0.95
Filter Length	cm	260	144	144	116.0	464
Filter Breadth	cm	116	116	116	116.0	116
Air Velocity	m/s	1.52	2.04	0.00	0.48	0.00
Filter Area	m ²	3.0	1.7	1.7	1.3	5.4
Actual flow	CFM	9704	7205	0	1378	0
CFM loading	%	54	72	0	20	0
Supply Air DBT	°C	16.7	15.8	17.5	16.5	14.3
Supply air RH	%	78.4	78.0	75.0	78.0	79.1
Return Air DBT	°C	22.1	22.3	22.4	24.4	21.9
Return air RH	%	65.4	65.5	65.7	62.0	65.6
Supply Enthalpy	kJ/kg	40.67	38.28	41.64	40.03	34.94
Return Enthalpy	kJ/kg	50.28	50.86	51.24	55.19	49.80
TR	TR	15.09	14.67	0.00	3.38	0.00
Actual kW/TR	kW/TR	0.23	0.14	0.28	0.57	0.69
Rated W/CFM	W/CFM	0.73	0.84	0.68	0.63	0.83
Actual W/CFM	W/CFM	0.36	0.29	0.89	1.39	0.47
Running Hours/Day	Hrs/day	24	24	24	24	24
Type of blower	-	EC fan	EC fan	EC fan	EC fan	EC fan
Fresh air supply details	-	Available	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Manual	Manual
Cooling Coil Condition	-	Normal	Normal	Normal	Normal	Normal

AHU ID	Unit	Ground floor_AHU Room-5	Ground floor_AHU Room-3	Ground floor_AHU Room-2	Ground floor_AHU Room-1	Ground floor_AHU Room-4
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
Remarks	-	Actuator is available but chilled water valve position is manually operated.	Actual is available but chilled water valve position is manually operated.	Actual is available but chilled water valve position is manually operated.	Actual is available but chilled water valve position is manually operated.	Actual is available but chilled water valve position is manually operated.

Remarks:

- All AHUs Fans at the IT-02 have installed with EC Fans
- AHU's CHW actuators are not connected to the BMS system.

General observation:

- ✓ AHU strainer area is not insulated. It is recommended to provide removable type insulator for the strainer in AHU to reduce heat loss.

4.7.3 TOWER 3 AHU:

Tower 3 AHU performance as follows:

AHU ID	Unit	Ground floor_AHU-1 (ODC 2, 3 & server room)	Ground floor_AHU-1 (ODC 1)	Ground floor_AHU-4 (ODC 4,5,6)	Ground floor_AHU-9 (ODC 9)
Rated capacity	CFM	12000	5500	15000	13000
Rated power	kW	5.5	3.7	7.5	7.5
Measured Voltage	V	412	413	411	412
Measured current	A	4.97	1.87	2.89	3.0
Measured power	kW	3.42	1.44	2.03	2.14
Measured Power Factor	PF	0.97	0.99	0.99	0.99
Filter Length	cm	171	141	141	198
Filter Breadth	cm	114	114	171	114
Air Velocity	m/s	2.83	1.55	1.51	2.06
Filter Area	m2	1.9	1.6	2.4	2.3
Actual flow	CFM	11683	5264	7720	9831
CFM loading	%	97	96	51	76
Supply Air DBT	°C	16.6	17.7	16.5	16.4
Supply air RH	%	78.7	74.8	79.5	80.3
Return Air DBT	°C	20.5	21.8	20.5	20.9
Return air RH	%	68.2	64.8	68.5	67.5
Supply Enthalpy	kJ/kg	40.50	42.09	40.5	40.48
Return Enthalpy	kJ/kg	47.08	49.19	47.20	47.87
TR	TR	12.44	6.05	8.37	11.76
Actual kW/TR	kW/TR	0.27	0.24	0.24	0.18
Rated W/CFM	W/CFM	0.46	0.67	0.50	0.58
Actual W/CFM	W/CFM	0.29	0.27	0.26	0.22
Running Hours/Day	Hrs/day	24	24	24	24
Type of driven direct/belt	-	Belt driven	Belt driven	Belt driven	Belt driven
Fresh air supply details	-	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Manual
Cooling Coil Condition	-	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not connected

AHU ID	Unit	Ground floor_AHU-1 (ODC 2, 3 & server room)	Ground floor_AHU-1 (ODC 1)	Ground floor_AHU-4 (ODC 4,5,6)	Ground floor_AHU-9 (ODC 9)
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available
Remarks	-	-	Chilled water valve opening position is 70%	-	-

AHU ID	Unit	Ground floor_AHU-9 (ODC 8)	First floor_AHU-2 (LV room, Passage)	First floor_AHU-1 (ODC 1)
Rated capacity	CFM	7000	9500	5500
Rated power	kW	3.7	5.5	3.7
Measured Voltage	V	412	412	411
Measured current	A	3.20	3.00	1.48
Measured power	kW	2.40	2.22	1.11
Measured Power Factor	PF	0.99	0.99	0.97
Filter Length	cm	114	141	84
Filter Breadth	cm	114	114	114
Air Velocity	m/s	1.97	1.93	0.89
Filter Area	m2	1.3	1.6	1.0
Actual flow	CFM	5425	6585	1801
CFM loading	%	77	69	33
Supply Air DBT	°C	18.4	17.7	19.1
Supply air RH	%	73.7	76.7	73.8
Return Air DBT	°C	21.5	23.3	24.3
Return air RH	%	65.9	62.1	60.8
Supply Enthalpy	kJ/kg	43.54	42.72	45.43
Return Enthalpy	kJ/kg	48.84	52.11	54.30
TR	TR	4.65	10.00	2.58
Actual kW/TR	kW/TR	0.52	0.22	0.43
Rated W/CFM	W/CFM	0.53	0.58	0.67
Actual W/CFM	W/CFM	0.44	0.34	0.62

AHU ID	Unit	Ground floor_AHU-9 (ODC 8)	First floor_AHU-2 (TV room, Passage)	First floor_AHU-1 (ODC 1)
Deviation	%	22.50	30.69	67.26
Running Hours/Day	Hrs/day	24	24	24
Type of driven direct/belt	-	Belt driven	Belt driven	Belt driven
Fresh air supply details	-	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual
Cooling Coil Condition	-	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected
CHW Actuator Feedback	-	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available
Remarks	-	-	Chilled water valve opening position is 95%	-

Remarks:

- Most of the AHUs at the IT-03 have VFD units for the AHU blowers.
- AHU's CHW actuators are not connected to the BMS system.
- Observed during the audit wherever the VFD's are available are operated in manual with frequency range between 25-40 HZ.
- AHU fan blower with belt coupled motor types were installed in all AHUs. The fans with belt coupled motors will be having transmission losses around 5%, additional breakdown and maintenance cost of belt changing is also significant. It is recommended to replace existing inefficient belt driven fans with direct driven fans in AHUs for energy savings.
- The advantages of direct driven type fans over belt driven fans are as follows:
- Combined efficiency of plug type direct driven fans is above 70%.
- Transmission losses due to belt driven type is eliminated.
- Further breakdown and maintenance cost of belt changing is also eliminated.

General observation:

- ✓ AHU strainer area is not insulated. It is recommended to provide removable type insulator for the strainer in AHU to reduce heat loss.

4.7.4 SDC 1 AHU

SDC 1 AHU performance as follows:

AHU ID	Unit	Ground floor_AHU-3 (Server room)	Ground floor_AHU-2 (Training room 5,6,7)	Ground floor_AHU-2 (Board room, Passage)	Ground floor_AHU room 2
Rated capacity	CFM	2500	9000	9000	6500
Rated power	kW	1.5	5.5	5.5	3.7
Measured Voltage	V	401	402	402	402
Measured current	A	1.50	3.52	1.00	5.2
Measured power	kW	1.10	2.61	0.88	3.80
Measured Power Factor	PF	0.96	0.99	0.90	0.99
Filter Length	cm	60	141	141	198
Filter Breadth	cm	23	114	114	57
Air Velocity	m/s	6.58	2.20	0.81	1.31
Filter Area	m ²	0.1	1.6	1.6	1.1
Actual flow	CFM	1925	7493	2767	3133
CFM loading	%	77	83	31	48
Supply Air DBT	°C	21.0	18.1	19.3	22.8
Supply air RH	%	65.0	71.9	66.4	63.1
Return Air DBT	°C	22.7	23.8	23.7	23.8
Return air RH	%	63.2	59.8	60.7	60.0
Supply Enthalpy	kJ/kg	47.13	42.15	43.27	51.19
Return Enthalpy	kJ/kg	50.95	52.42	52.56	52.52
TR	TR	1.19	12.45	4.16	0.67
Actual kW/TR	kW/TR	0.92	0.21	0.21	5.64
Rated W/CFM	W/CFM	0.60	0.61	0.61	0.57
Actual W/CFM	W/CFM	0.57	0.35	0.32	1.21
Running Hours/Day	Hrs/day	12	According to requirement	According to requirement	According to requirement
Type of driven direct/belt	-	Belt driven	Belt driven	Belt driven	Belt driven
Fresh air supply details	-	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Manual

AHU ID	Unit	Ground floor_AHU-3 (Server room)	Ground floor_AHU-2 (Training room 5,6,7)	Ground floor_AHU-2 (Board room, Passage)	Ground floor_AHU room 2
Cooling Coil Condition	-	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not connected
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available
Remarks	-	-	-	-	-

Remarks:

- Most of the AHUs at the SDC-01 have VFD units for the AHU blowers.
- AHU's CHW actuators are not connected to the BMS system.
- Observed during the audit wherever the VFD's are available are operated in manual with frequency range between 25-40 HZ.
- AHU fan blower with belt coupled motor types were installed in all AHUs. The fans with belt coupled motors will be having transmission losses around 5%, additional breakdown and maintenance cost of belt changing is also significant. It is recommended to replace existing inefficient belt driven fans with direct driven fans in AHUs for energy savings.
- The advantages of direct driven type fans over belt driven fans are as follows:
- Combined efficiency of plug type direct driven fans is above 70%.
- Transmission losses due to belt driven type is eliminated.
- Further breakdown and maintenance cost of belt changing is also eliminated.

4.7.5 SDC 2 AHU

SDC 1 AHU performance as follows:

AHU ID	Unit	Ground floor_AHU-1	Ground floor_AHU Room-3_AHU-1	First floor_AHU Room-1_AHU-1	First floor_AHU Room-1_AHU-2	First floor_AHU Room-3_AHU-1
Rated capacity	CFM	7800	6100	4000	5500	8500
Rated power	kW	3.7	2.5	1.9	2.5	4.1
Measured Voltage	V	416	417	418	418	423
Measured current	A	7.69	4.40	5.00	5.0	6.79
Measured power	kW	5.48	3.15	3.62	3.59	4.88
Measured Power Factor	PF	0.99	0.99	0.99	0.99	0.98
Filter Length	cm	118	75	118	172	143
Filter Breadth	cm	116	42	58	59	118
Air Velocity	m/s	2.40	5.27	2.61	2.18	2.30
Filter Area	m2	1.4	0.3	0.7	1.0	1.7
Actual flow	CFM	6961	3515	3785	4683	8223
CFM loading	%	89	58	95	85	97
Supply Air DBT	°C	16.7	15.9	18.9	21.8	14.6
Supply air RH	%	75.6	76.8	69.1	62.3	79.7
Return Air DBT	°C	23.1	20.9	26.0	23.4	21.2
Return air RH	%	59.2	64.6	52.0	58.4	62.1
Supply Enthalpy	kJ/kg	39.80	38.18	43.23	48.13	35.84
Return Enthalpy	kJ/kg	50.21	46.70	54.42	50.65	46.47
TR	TR	11.73	4.85	6.85	1.91	14.14
Actual kW/TR	kW/TR	0.47	0.65	0.53	1.88	0.35
Rated W/CFM	W/CFM	0.47	0.42	0.47	0.46	0.48
Actual W/CFM	W/CFM	0.79	0.90	0.96	0.77	0.59
Running Hours/Day	Hrs/day	24	12	12	24	24
Type of blower	-	EC fan	EC fan	EC fan	EC fan	EC fan
Fresh air supply details	-	Available	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Manual	Manual
Cooling Coil Condition	-	Normal	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not connected	Not connected

AHU ID	Unit	Ground floor_AHU-1	Ground floor_AHU Room-3_AHU-1	First floor_AHU Room-1_AHU-1	First floor_AHU Room-1_AHU-2	First floor_AHU Room-3_AHU-1
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available	Not available
Remarks	-	-	-	Chilled water valve opening position is 70%	Chilled water valve opening position is 70%	-

AHU ID	Unit	Third floor_AHU Room-2_AHU-19	Third floor_AHU Room-3_AHU-17 (ODC 3)	Third floor_AHU Room-3_AHU-16 (ODC 2)	Fourth floor_AHU Room-3_AHU-15 (ODC 2)
Rated capacity	CFM	3400	5500	4800	4800
Rated power	kW	1.5	2.5	2.2	2.2
Measured Voltage	V	421	414	415	416
Measured current	A	2.40	5.32	5.10	5.01
Measured power	kW	1.72	3.77	3.63	3.57
Measured Power Factor	PF	0.98	0.99	0.99	0.99
Filter Length	cm	118	170	170	170
Filter Breadth	cm	58	59	59	59
Air Velocity	m/s	2.22	2.32	2.16	2.16
Filter Area	m2	0.7	1.0	1.0	1.0
Actual flow	CFM	3219	4935	4581	4598
CFM loading	%	95	90	95	96
Supply Air DBT	°C	16.3	18.5	20.1	20.8
Supply air RH	%	78.1	75.7	71.9	68.9
Return Air DBT	°C	21.2	23.1	22.6	23.5
Return air RH	%	63.9	61.9	63.5	60.8
Supply Enthalpy	kJ/kg	39.56	44.49	47.43	48.16
Return Enthalpy	kJ/kg	47.21	51.47	50.82	52.06
TR	TR	3.99	5.57	2.51	2.90
Actual kW/TR	kW/TR	0.43	0.68	1.44	1.23
Rated W/CFM	W/CFM	0.45	0.46	0.46	0.46
Actual W/CFM	W/CFM	0.53	0.76	0.79	0.78
Running Hours/Day	Hrs/day	12	24	24	24

AHU ID	Unit	Third floor_AHU Room-2_AHU-19	Third floor_AHU Room-3_AHU-17 (ODC 3)	Third floor_AHU Room-3_AHU- 16 (ODC 2)	Fourth floor_AHU Room-3_AHU-15 (ODC 2)
Type of driven direct/belt	-	EC fan	EC fan	EC fan	EC fan
Fresh air supply details	-	Available	Available	Available	Available
Chilled Water Actuator Working Condition	-	Manual	Manual	Manual	Manual
Cooling Coil Condition	-	Normal	Normal	Normal	Normal
Communication with BMS Server	-	Not connected	Not connected	Not connected	Not connected
CHW Actuator Control signal	-	Not connected	Not connected	Not connected	Not connected
CHW Actuator Feedback	-	Not connected	Not connected	Not connected	Not connected
CHW inlet pressure gauge condition	-	Not available	Not available	Not available	Not available
CHW inlet temperature gauge condition	-	Not available	Not available	Not available	Not available
CHW outlet pressure gauge condition	-	Not available	Not available	Not available	Not available
CHW outlet temperature gauge condition	-	Not available	Not available	Not available	Not available
Remarks	-	-	-	-	Chilled water valve opening position is 60%

Remarks:

- All AHUs Fans at the SDC-02 have installed with EC Fans
- AHU's CHW actuators are not connected to the BMS system.

General observation:

- ✓ AHU strainer area is not insulated. It is recommended to provide removable type insulator for the strainer in AHU to reduce heat loss.

4.7.5 DX AHU UNIT:

The DX AHU unit performance details are as follows.

Table 22: DX AHU unit performance

AHU ID		IT-05_Boiler Room-05 AHU-5	IT-5_First Floor_ AHU Room-4 DH AHU-5	IT-5_Ground Room-4_AHU AHU-7	IT-05_Ground Room-5 AHU-8	IT-05_Ground Room-4_AHU AHU-9	IT-05_First Floor_AHU Room-5_AH	IT-05_First Floor_AHU Room-5_AH	IT-05_Ground Room-4_AHU AHU-10
Rated capacity	CFM	8000	11000	11000	4000	10000	12500	12500	8000
Rated power	kW	3.7	5.5	5.5	1.9	5.5	5.5	5.5	3.7
Measured Voltage	V	417	416	418	411	412	418	418	413
Measured current	A	3.96	5.50	3.79	3.0	3.66	3.70	3.66	3.26
Measured power	kW	2.84	4.06	3.90	1.40	3.86	3.91	3.48	1.89
Measured Power Factor	PF	0.99	0.99	0.99	0.96	0.99	0.99	0.97	0.97
Measured VPP Power	V	420	416	418	419	412	418	418	413
	A	5.99	9.80	9.00	1.10	9.20	1.95	1.94	2.90
	kW	1.88	3.46	3.45	0.76	3.76	1.11	1.07	1.73
	PF	0.71	0.96	0.96	0.96	0.96	0.99	0.97	0.97
Fiber Length	cm	118	177	202	118	177	110	110	100
Fiber Breadth	cm	116	114	116	38	116	53	53	42
Air Velocity	m/s	2.47	2.49	1.80	1.88	2.18	2.08	1.78	5.12
Fiber Area	m ²	1.3	2.0	2.3	0.7	2.1	0.6	0.6	0.6
Actual flow	CFM	7059	10541	8987	2217	9593	4282	1590	1849
CFM loading	%	88	87	81	56	78	34	13	23
Supply Air DBT	°C	19.4	17.8	17.5	18.2	18.9	20.9	19.9	14.9
Supply air RH	%	66.8	61.3	60.3	71.2	71.3	69.1	70.8	80.7
Return Air DBT	°C	21.3	22.1	20.0	20.9	19.7	23.6	22.6	20.8
Return air RH	%	56.2	63.8	66.3	70.4	67.6	58.2	59.8	66.0
Supply Enthalpy	kJ/kg	34.13	42.93	42.43	42.16	42.97	46.13	39.02	26.09
Return Enthalpy	kJ/kg	44.19	49.83	48.28	47.94	44.79	51.09	51.48	49.94
TR	TR	11.16	9.80	3.51	2.08	2.66	3.06	2.46	4.23
Actual kW/TR	kW/TR	0.41	0.77	3.99	1.64	1.11	0.99	0.74	0.79

AHU ID		IT-01, Second Floor, 01 AHU-1	IT-01, First-Floor, AHU Room-4, 01 AHU-2	IT-01, Ground Floor, AHU Room-4, 01 AHU-3	IT-01, Ground Floor, 01 Room, 01 AHU-4	IT-01, Ground Floor, AHU Room-2, 01 AHU-5	IT-01, First Floor, AHU Room-3, 01 AHU-6	IT-01, Third Floor, AHU Room-5, 01 AHU-7	IT-01, Second Floor, AHU Room-4, 01 AHU-8
Rated W/GPM	W/GPM	0.40	0.50	0.50	0.30	0.40	0.40	0.40	0.40
Actual W/GPM	W/GPM	0.40	0.49	0.38	0.49	0.30	0.40	0.40	0.40
Running Hours/Day	Hrs/day	12	12	12	12	12	12	12	12
Type of driven direct/belt		Belt driven	Belt driven	Belt driven	Belt driven	Belt driven	Belt driven	Belt driven	Belt driven

Remarks:

- Most of the AHUs at the IT-01 & IT-02 are Belt Driven.
- AHU fan blower with belt coupled motor types were installed in all AHUs. The fan with belt coupled motors will be having transmission losses around 5%, additional breakdown and maintenance cost of belt changing is also significant. It is recommended to replace existing inefficient belt driven fans with direct driven fans in AHUs for energy savings.
- The advantages of direct driven type fans over belt driven fans are as follows:
- Combined efficiency of plug type direct driven fans is above 70%.
- Transmission losses due to belt driven type is eliminated.
- Further breakdown and maintenance cost of belt changing is also eliminated.

4.7.7 PAC PERFORMANCE

The precision air conditioner (PAC) performance as follows:

Table 39: Precision air conditioner performance.

AHU ID	-	IT-03_First floor_PAC-2	IT-01_First floor_PAC-2	SDC-01_First floor_PAC-2
Rated capacity	TR	38	30	15
Blower Rated power	kW	5.9	5.9	5.9
Total Measured power	kW	28.77	16.50	10.40
Blower measured power	kW	3.43	3.93	2.15
Filter Length	cm	192	224	160
Filter Breadth	cm	82	82	82
Air Velocity	m/s	1.86	2.09	1.58
Filter Area	m2	1.6	1.8	1.3
Actual flow	CFM	6213	8124	4386
Supply Air DBT	°C	18.9	17.6	18.4
Supply air RH	%	65.9	70.2	67.7
Return Air DBT	°C	24.0	22.0	22.0
Return air RH	%	60.1	60.2	61.2
Supply Enthalpy	kJ/kg	42.08	40.33	41.46
Return Enthalpy	kJ/kg	53.11	47.75	48.18
TR	TR	11.09	9.75	4.77
Rated kW/TR	kW/TR	0.15	0.20	0.39
Actual kW/TR	kW/TR	0.31	0.40	0.45
Actual W/CFM	W/CFM	4.63	2.03	2.37
Running Hours/Day	Hrs/day	24	24	24
Type of blower	-	EC fan	EC fan	EC fan

Remarks:

- Average PAC SPC is around 0.31 to 0.45 kW/T.R
- All PAC are provided with EC fan which is good.

4.7.8 HEAT RECOVERY WHEEL

The HRW performance are as follows.

Table 40: HRW performance.

Parameters	Unit	IT-03_TFA-2	IT-03_TFA-1	IT-01_TFA-1	IT-01_TFA-2
Fresh air fan					
Rated power	KW	5.5	5.5	11	11
Rated capacity	CFM	6200	6200	18000	19000
Fresh air (Entering)					
Filter Length	cm	88	82	128	138
Filter Breadth	cm	42	42	83	80
Area	m ²	0.37	0.34	1.06	1.10
Velocity	m/s	4.14	3.38	6.00	3.65
Temperature	°C	33.3	31.6	30.1	30
RH	%	39.2	43.7	45	46.8
Fresh air (Leaving)					
Temperature	°C	20.6	20.9	26.6	22.2
RH	%	64.3	62.4	51.2	56.8
Measured voltage	V	419	419	419	419
Measured current	I	3.7	3.2	18.06	8.39
Measured power	KW	2.62	2.36	12.84	6.14
Measured power factor	PF	0.98	0.98	0.98	0.98
Actual flow	CFM	3244	2467	13507	8538
CFM loading	%	52	40	75	45
Entering air Enthalpy	kJ/kg	66.19	64.87	61.49	62.47
Leaving air Enthalpy	kJ/kg	45.80	45.81	55.61	46.78
Tons of refrigerant	TR	10.88	7.73	13.06	22.04
Actual kW/TR	KW/TR	0.24	0.31	0.98	0.28
Rated SEC	W/CFM	0.89	0.89	0.61	0.58
Actual SEC	W/CFM	0.81	0.96	0.95	0.46
Deviation	%	48	60	25	55
Exhaust fan					
Rated power	KW	3.7	1.5	7.5	7.5
Rated capacity	CFM	9000	3000	18000	19000
Exhaust air (Entering)					
Temperature	°C	29.5	25.7	26.9	27
RH	%	47.7	55.4	51.6	50.5
Exhaust air (Leaving)					
Filter Length	cm	102	88	116	117
Filter Breadth	cm	47	57	120	120
Area	m ²	0.48	0.50	1.39	1.40
Velocity	m/s	5.33	2.29	3.99	1.00
Temperature	°C	32.1	27.2	26.9	27
RH	%	41.6	51.1	51.6	50.5
Measured voltage	V	419	419	418	419
Measured current	I	1.49	3.18	5.35	5.55
Measured power	KW	1.18	2.32	3.87	3.90
Measured power factor	PF	0.98	0.99	0.98	0.98

Parameters	Unit	IT-03_TFA-2	IT-03_TFA-1	IT-01_TFA-1	IT-01_TFA-2
Actual flow	CFM	5409	2431	11761	2975
CFM loading	%	60	81	65	16
Entering air Enthalpy	kJ/kg	61.63	55.45	56.68	56.31
Leaving air Enthalpy	kJ/kg	64.69	57.23	56.68	56.31
Tons of refrigerant	TR	2.72	0.71	0.00	0.00
Rated SEC	W/CFM	0.41	0.50	0.42	0.39
Actual SEC	W/CFM	0.22	0.95	0.33	2.06

Remarks:

IT-03_TFA-2:

Fresh air fan:

- ✓ The rated W/CFM is calculated to be 0.89 W/CFM.
- ✓ The actual W/CFM is calculated to be 0.81 W/CFM.
- ✓ The actual flow is calculated to be 3244 CFM
- ✓ The actual TR is calculated to be 10.88 TR.
- ✓ The actual kW/TR is calculated to be 0.24 kW/TR.

Exhaust fan:

- ✓ The rated W/CFM is calculated to be 0.41 W/CFM.
- ✓ The actual W/CFM is calculated to be 0.22 W/CFM.
- ✓ The actual flow is calculated to be 5409 CFM
- ✓ The actual TR is calculated to be 2.72 TR.
- ✓ The actual kW/TR is calculated to be 0.43 kW/TR.
- ✓ Chilled water line is always in open position. It is recommended to use exhaust air temperature for heat transfer process.

IT-03_TFA-1:

Fresh air fan:

- ✓ The rated W/CFM is calculated to be 0.89 W/CFM.
- ✓ The actual W/CFM is calculated to be 0.96 W/CFM.
- ✓ The actual flow is calculated to be 2467 CFM
- ✓ The actual TR is calculated to be 7.73 TR.
- ✓ The actual kW/TR is calculated to be 0.31 kW/TR.

Exhaust fan:

- ✓ The rated W/CFM is calculated to be 0.50 W/CFM.
- ✓ The actual W/CFM is calculated to be 0.95 W/CFM.

- ✓ The actual flow is calculated to be 2431 CFM which is 19 % deviation from the rated value of 3000 CFM.
- ✓ The actual TR is calculated to be 0.71 TR.
- ✓ The actual kW/TR is calculated to be 3.26 kW/TR.
- ✓ Chilled water line is always in open position. It is recommended to use exhaust air temperature for heat transfer process.



CHAPTER – 5: LIGHTING SYSTEM

5.1 LIGHTING DETAILS:**5.1.1 IT-01**

IT-01 has installed following lights for illumination purposes and the details as follows.

Table 41: IT-01_ Lighting details

S. No	Floor	Location	Nos of 15W LED	Nos of 36W LED	Load, KW
1	Ground floor	Corridor	95	0	1.43
2	Ground floor	AHU room	0	22	0.79
3	Ground floor	Lift Lobby	0	10	0.36
4	Ground floor	Breakout	0	0	0.00
5	Ground floor	Electrical room + UPS room + Battery room	0	49	1.76
6	First floor	Corridor	95	0	1.43
7	First floor	AHU room	0	22	0.79
8	First floor	Breakout	0	10	0.36
9	First floor	Electrical room + UPS room + Battery room	0	12	0.43
10	Second floor	Corridor	95	0	1.43
11	Second floor	AHU room	0	22	0.79
12	Second floor	Breakout	0	10	0.36
13	Second floor	Electrical room + UPS room + Battery room	0	12	0.43
14	Third floor	Corridor	95	0	1.43
15	Third floor	AHU room	0	22	0.79
16	Third floor	Breakout	0	10	0.36
17	Third floor	Electrical room + UPS room + Battery room	0	9	0.32
18	Fourth floor	Corridor	95	0	1.43
19	Fourth floor	AHU room	0	22	0.79
20	Fourth floor	Breakout	0	10	0.36
21	Fourth floor	Electrical room + UPS room + Battery room	0	9	0.32
Total load, kW					16.16

5.1.2 IT-02

IT-02 has installed following lights for illumination purposes and the details as follows.

Table 42: IT-02_ Lighting details

S. No	Floor	Location	Nos of 15W LED	Load, KW
1	Ground floor	Corridor	40	0.60
2	Ground floor	AHU room	26	0.39
3	Ground floor	Breakout	4	0.06
Total load, kW				1.05

5.1.3 IT-03

IT-03 has installed following lights for illumination purposes and the details as follows.

Table 43: IT-03_ Lighting details

S. No	Floor	Location	Nos of 15W LED	Nos of 36W LED	Load, KW
1	Ground floor	Corridor	40	0	0.60
2	Ground floor	AHU room	0	36	1.30
3	Ground floor	Staircase	0	18	0.65
4	Ground floor	Canopy	18	0	0.27
5	Ground floor	Lift Lobby	14	0	0.21
6	Ground floor	Breakout	36	0	0.54
7	Ground floor	LV room	0	2	0.07
8	Ground floor	Electrical room + UPS room + Battery room	0	10	0.36
9	Ground floor	Reception	25	0	0.38
10	First floor	Corridor	40	0	0.60
11	First floor	AHU room	0	36	1.30
12	First floor	Staircase	0	0	0.00
13	First floor	Lift Lobby	14	0	0.21
14	First floor	Breakout	36	0	0.54
15	First floor	LV room	0	2	0.07
16	First floor	Electrical room + UPS room + Battery room	0	4	0.14
17	Second floor	Corridor	40	0	0.60
18	Second floor	AHU room	0	36	1.30
19	Second floor	Lift Lobby	14	0	0.21
20	Second floor	Breakout	36	0	0.54
21	Second floor	LV room	0	2	0.07
22	Second floor	Electrical room + UPS room + Battery room	0	12	0.43
Total load, kW					10.38

5.1.4 SDC-01

SDC-01 has installed following lights for illumination purposes and the details as follows.

Table 44: SDC-01_ Lighting details

S. No	Floor	Location	Nos of 15W LED	Nos of 36W LED	Load, KW
1	Ground floor	Corridor	92	0	1.38
2	Ground floor	AHU room	0	12	0.43
3	Ground floor	Staircase	0	46	1.66
4	Ground floor	Electrical room + UPS room + Battery room	0	17	0.61

S. No	Floor	Location	Nos of 15W LED	Nos of 36W LED	Load, KW
5	First floor	Corridor	92	0	1.38
11	First floor	AHU room	0	12	0.43
16	First floor	Electrical room + UPS room + Battery room	0	5	0.18
17	Second floor	Corridor	92	0	1.38
18	Second floor	AHU room	0	12	0.43
19	Second floor	Electrical room + UPS room + Battery room	0	5	0.18
Total load, kW					8.06

5.1.5 SDC-02

SDC-01 has installed following lights for illumination purposes and the details as follows.

Table 46: SDC-01_ Lighting details

S. No	Floor	Location	Nos of 15W LED	Nos of 36W LED	Load, KW
1	Ground floor	Corridor	65	0	0.98
2	Ground floor	AHU room	0	13	0.47
3	Ground floor	Staircase	90	0	1.35
4	Ground floor	Electrical room + UPS room + Battery room	0	10	0.36
5	Ground floor	Reception		28	1.01
6	First floor	Corridor	65		0.98
7	First floor	AHU room	0	13	0.47
8	First floor	Electrical room + UPS room + Battery room	0	10	0.36
9	Second floor	Corridor	65	0	0.98
10	Second floor	AHU room	0	13	0.47
11	Second floor	Electrical room + UPS room + Battery room	0	10	0.36
12	Third floor	Corridor	65	0	0.98
13	Third floor	AHU room	0	13	0.47
14	Third floor	Electrical room + UPS room + Battery room	0	10	0.36
15	Fourth floor	Corridor	65	0	0.98
16	Fourth floor	AHU room		13	0.47
17	Fourth floor	Electrical room + UPS room + Battery room	0	10	0.36
18	Fifth floor	Corridor	65	0	0.98
19	Fifth floor	AHU room	0	13	0.47
20	Fifth floor	Electrical room + UPS room + Battery room	0	10	0.36
21	Sixth floor	Corridor	65	0	0.98
22	Sixth floor	AHU room	0	13	0.47

S. No	Floor	Location	Nos of 15W LED	Nos of 36W LED	Load, KW
23	Sixth floor	Electrical room + UPS room + Battery room	0	10	0.36
Total load, kW					14.98

5.2 LUX LEVEL MEASUREMENT DETAILS:

Lighting Lux Level Standards (IS3646)		
S.No	Area	Lux level
1	Public areas with dark surroundings	20 - 50
2	Simple orientation for short visits	50 - 100
3	Working areas where visual tasks are only occasionally performed	100 - 150
4	Warehouses, Homes, Theatres, Archives	150
5	Easy Office Work, Classes	250
6	Normal Office Work, PC Work, Study Library, Groceries, Show Rooms, Laboratories	300-500
7	Supermarkets, Mechanical Workshops, Office Landscapes	750
8	Normal Drawing Work, Detailed Mechanical Workshops, Operation Theatres	1,000
9	Detailed Drawing Work, Very Detailed Mechanical Works	1750
10	Performance of visual tasks of low contrast and very small size for prolonged periods of time	3000
11	Performance of very prolonged and exacting visual tasks	7500
12	Performance of very special visual tasks of extremely low contrast and small size	15000

The lux measurement is carried out in various location and details are as follows.

Table 47: Lux measurement.

S. No	Location	Average Lux value	Recommended lux level
1	IT 01_ ground floor_ ODC-1	382	300
2	IT 01_ ground floor_ ODC-2	412	300
3	IT 01_ ground floor_ ODC-5	394	300
4	IT 01_ first floor_ ODC-1	398	300
5	IT 01_ first floor_ ODC-2	401	300
6	IT 01_ first floor_ ODC-6	433	300
7	IT 01_ second floor_ ODC-2	378	300
8	IT 01_ second floor_ ODC-8	396	300
9	IT 01_ second floor_ ODC-6	404	300
10	IT 01_ third floor_ ODC-5	395	300
11	IT 01_ third floor_ ODC-1	332	300
12	IT 01_ third floor_ ODC-2	372	300
13	IT 01_ fourth floor_ ODC-7A	396	300
14	IT 01_ fourth floor_ ODC-3	385	300
15	IT 01_ fourth floor_ ODC-2	398	300
16	IT 03_ second floor_ ODC-4	392	300
17	IT 03_ second floor_ ODC-2	420	300
18	IT 03_ first floor_ ODC-8	415	300
19	IT 03_ first floor_ ODC-1	410	300
20	IT 03_ ground floor_ ODC-5	411	300
21	IT 03_ ground floor_ ODC-3	434	300
22	SDC 02_ fourth floor_ ODC-3	259	300
23	SDC 02_ fourth floor_ ODC-2	254	300
24	SDC 02_ fourth floor_ ODC-1	263	300
25	SDC 02_ third floor_ ODC-3	276	300
26	SDC 02_ third floor_ ODC-2	253	300
27	SDC 02_ third floor_ ODC-1	251	300
28	SDC 02_ second floor_ ODC-2	251	300
29	SDC 02_ second floor_ ODC-1	259	300
30	SDC 01_ ground floor_ TR-02	377	300
31	SDC 01_ ground floor_ TR-01	380	300

Remarks:

- LUX level measurements are taken at IT-01, IT-03, SDC-01 and SDC-02 buildings and observed the levels are within the standard limits.

5.3 INDOOR AIR QUALITY STUDY

Indoor air quality study:

The air quality measurement is carried out using the air quality meter in various locations and details are as follows:

Table 48: Indoor air quality study.

S. No	Location	CO2 in ppm	Temperature, °C	RH %
1	IT 01_ ground floor_ ODC-1	427	22.7	52.7
2	IT 01_ ground floor_ ODC-2	415	22.6	52.8
3	IT 01_ ground floor_ ODC-5	562	22.5	55.1
4	IT 01_ first floor_ ODC-1	514	23.9	50.9
5	IT 01_ first floor_ ODC-2	509	23.9	50.9
6	IT 01_ first floor_ ODC-6	499	23.1	56.1
7	IT 01_ second floor_ ODC-2	492	24.0	51.1
8	IT 01_ second floor_ ODC-8	628	24.0	51.2
9	IT 01_ second floor_ ODC-6	633	24.8	51.3
10	IT 01_ third floor_ ODC-5	479	23.9	51.9
11	IT 01_ third floor_ ODC-1	461	23.0	53.6
12	IT 01_ third floor_ ODC-2	460	23.1	53.3
13	IT 01_ fourth floor_ ODC-7A	631	22.0	56.2
14	IT 01_ fourth floor_ ODC-3	626	22.3	56.3
15	IT 01_ fourth floor_ ODC-2	421	23.4	51.5
16	IT 03_ second floor_ ODC-4	670	25.1	52.1
17	IT 03_ second floor_ ODC-2	772	25.1	54.0
18	IT 03_ first floor_ ODC-8	784	24.6	55.1
19	IT 03_ first floor_ ODC-1	960	23.3	53.8
20	IT 03_ ground floor_ ODC-5	911	23.3	59.9
21	IT 03_ ground floor_ ODC-3	910	23.2	58.7
22	SDC 02_ fourth floor_ ODC-3	708	23.1	55.2
23	SDC 02_ fourth floor_ ODC-2	709	22.9	56.2
24	SDC 02_ fourth floor_ ODC-1	519	24.1	50.2
25	SDC 02_ third floor_ ODC-3	509	21.8	55.9
26	SDC 02_ third floor_ ODC-2	510	21.9	21.9
27	SDC 02_ third floor_ ODC-1	514	22.0	22.0
28	SDC 02_ second floor_ ODC-2	472	22.5	56.7
29	SDC 02_ second floor_ ODC-1	479	22.6	28.7
30	SDC 01_ ground floor_ TR-02	444	23.9	57.6
31	SDC 01_ ground floor_ TR-01	401	23.9	56.8

Remarks:

- Indoor Air Quality measurements is taken at all tower buildings and observed most of the CO₂ levels in the rooms are within the standard limits.
- Observed very few of the places IAQ level seems to be over 900 PPM which can be addressed by the site operation team to balance the airflow inside the ODCs. (IT-03 – 1st floor ODC 1 Ground floor ODC 3 & ODC 5).

- All ODC room temperatures are maintained above 22°C which can be operated further without compromising on the room comfort level. Standard room temperature to maintained around 23°C to 25°C to ensure the human comfort (as per Bureau of Energy Efficiency guidelines). However, it is suggested to install temperature-based auto diffuser control system to control on the ODC room temperatures.
- It is recommended to operate the HRW in auto mode based on CO₂ level to maintain the IAQ inside the ODCs within the standard limit.



CHAPTER – 6: ENERGY CONSERVATION OPPORTUNITIES

(Observations, Field Trials, Analysis and Key Result Areas)

ECM-1 SURRENDER THE 500 KVA DEMAND FOR NSEZ TO MVVNL AND TO REDUCE THE BILLING DEMAND AND SAVE DEMAND COST

ECM 01	Surrender the 500 KVA demand for NSEZ to MVVNL and to reduce the billing demand and save demand cost			
Power Savings (kWh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (INR)	ROI (Year)
-	2,013,840	-	NIL	Immediate
Details	➤ As per analysis of EB bills for 2023 (Jan to Dec) and observed the permitted/Sanctioned demand of NSEZ Facility is 1366 kVA and billed demand is 1138 KVA (i.e. 83.3% of Total permitted demand). ➤ Maximum recorded demand of the building during year 2023 is 553 kVA. ➤ Maximum recorded demand of HCL from permitted demand i.e. $1366 \times 40.5\% = 553$ kVA. ➤ Actual billing demand cost per month for HCL alone is Rs. 455,332 (Rs. 400/kVA). ➤ Annual Demand cost for HCL is Rs. 5,463,984 Per Annum			
Rational	➤ It is proposed to surrender the 500 KVA to MVVNL for NSEZ Facility and reduce the billing demand cost. ➤ After surrendering the demand of 500 KVA, permitted demand is 866 kVA & billing demand is 721 kVA which is higher than the maximum recorded demand of the building of 553 kVA. ➤ Proposed maximum Billable demand of HCL is $866 \times 83.3\% = 721$ KVA. ➤ Actual billing demand cost per month is Rs.288,400 (Rs. 400/kVA) ➤ Expected demand cost saving per month is Rs. 166,780			
Risk	➤ Once surrender the demand to MVVNL and also check with MVVNL for feasibility to take back of demand			
Next step	➤ Management to take the decision and to move further.			

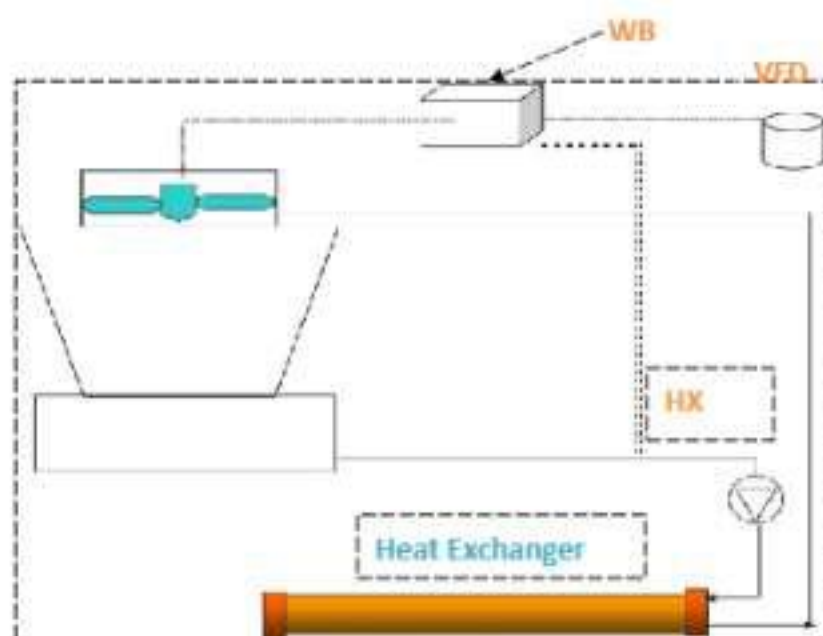
ECM 01: Backup calculation:

ECM : 01 - Surrender the 500 KVA demand for NSEZ to MVVNL and to reduce the billing demand and save demand cost

Description	Unit	Formula	Value
Present System:			
NSEZ EB Connection Service Number		7388863094	
MVVNL Permitted Demand per month	kVA	A	1366
MVVNL Billed Demand per month @83.3% of Permitted Demand	kVA	$B=A*0.833$	1138
MVVNL Maximum recorded demand at year 2023	kVA	C	553
HCL recent billed demand cost per month (Rs.400/kVA)	Rs.	$E=D*400$	455,332
% billed Demand to HCL from Permitted Demand	%	$F=C/B$	40.5%
Proposed System:			
Surrender the demand to MVVNL	kVA	G	500
MVVNL Permitted Demand per month	kVA	$H=A-G$	866
MVVNL Billed Demand per month @83.3% of Permitted Demand	kVA	$I=H*0.833$	721
MVVNL Billed Demand per month as per maximum recorded Demand	kVA	$J=C$	553
% billed Demand to HCL from Permitted Demand	kVA	$K=J/I$	63.9%
Difference in billed demand per month of HCL	Rs.	$L=B-I$	417
Difference in billed demand cost per month (Rs. 400/KVA)	Rs.	$M=L*400$	166,780
Annual demand cost saving	Rs.	$N=M*12$	2,001,364
Investment	Rs.	O	NIL
Payback	Years	P	Immediate

ECM-2 INSTALLATION OF WET BASED SENSOR FOR THE COOLING TOWER TO OPTIMIZE FAN POWER

ECM-02	Installation of Wet Based Sensor for The Cooling Tower to Optimize Fan Power			
Energy Savings (kWh/year)	Cost Saving (INR)	CO ₂ saving (Tons)	Investment (INR)	ROI (Years)
16,065	153,903	13.22	25,000	0.16
Details	- During audit it was observed that cooling tower fans are installed with VFD and running in full speed by manual RPM Setting irrespective of climate condition. - CT fans are set at manually Frequency based on CT outlet temperature of 29°C at fixed setting.			
Rational	- It is recommended to install the Wet Bulb based sensor, the Installation of Wet bulb in cooling tower fans will be very effective in optimizing chiller & Fan Energy consumption. - This system will sense Wet Bulb Temperature (WBT) and outlet temperature of cooling tower inlet water, Instead of monitoring system based on only cooling tower inlet or outlet temperature. - The CT approach will be calculated in the microprocessor and feedback will be given to CT fan VFD. - Based on the feedback from wet bulb-based sensors Fan will modulate air flow rate thereby reduce fan power consumption without compromising on output. - This system also saves power in chiller compressor due to less condenser inlet temperature. - The expected power savings is around 15%.			
Risk	Nil			
Next step	Implement the proposal.			



Advantages:

- Reduces energy consumption of cooling tower fan by up to 15 %.
- Achieves best operating temperature for user equipment based on ambient wet bulb temperature.
- Power Savings achieved in Chiller due to reduced condenser inlet temperature.

ECM: 02 Backup calculation:

ECM-2 Installation Of Wet Based Sensor For The (Sez Area) Cooling Tower To Optimize Fan Power			
Description	Units	Formula	Values
Present System:			
Total number of Cooling Tower CT Fan for 2 No's C.T	Nos	A	8
Rated capacity (Each fan)	kW	B	7.5
Present Power Consumption of CT Fan (4 No's)	kW	C	21
Proposed System:			
Power Savings on CT Fan	kW	D	3.2
Annual operating hours Considering (S100)	Hrs/ Annum	E	5,100
Unit cost of electricity	INR	F	9.58
Annual Energy Savings On CT Fans	kWh/Annum	G	16,065
Annual cost savings	INR/Annum	H=F*G	153,903
Budgetary Investment for WBT Sensors & Controls	INR	S	25,000
Payback	Years	T	0.16

ECM-3 DOWNSIZE THE OVERCAPACITY UPS TO RIGHT SIZED UPS – NSEZ AREA

ECM 03 Downsize the overcapacity UPS to Right sized UPS				
Energy Savings (kWh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (INR)	ROI (Year)
109,936	3,114,326	90.48	1,920,000	0.62
Details	- During audit it was observed that UPS loading is less than 10% and efficiency is lower - HCL has total 11 no's of major UPS system installed (NSEZ Area) at the premises to handle both workstation & servers separately. - Loading percentage details of the individual UPS is given in above UPS performance section. - Observed some of the UPS loading capacity is not matching with design capacity. Most of the UPS are loaded very low which will result in poor efficiency of the unit.			
Rational	- It is recommended to downsize the overcapacity UPS to Right sized UPS. - It is proposed to downsize the UPS capacity matching with the actual loading. This will improve the efficiency of the UPS system. - It is suggested to downsize 9 no's of identified UPS system at NSEZ SDC-1 & SDC-2 - The harmonics will be reduced and also improves the power factor to achieve Cost Savings in Electricity Bill. - Detailed saving calculation sheet is given in below: - Expected energy savings per annum is 109,936 kWh.			
Risk	Not identified			
Next step	- Obtain the supplier quotations - Post commercial approval; Check with IT team and implement it implement the project with vendor			

ECM 03: Backup calculation:

ECM:3 - Downsize the overcapacity UPS to Right sized UPS - NSEZ Area						
Description	Unit	Formula	Server Room	Work station	Server Source 1	Server Source 2
			NSEZ_SDC 02_Ground floor_UPS 01_120 kVA	NSEZ_SDC 02_Ground floor_UPS 05_80 kVA	NSEZ_SDC 01_Ground floor_UPS 01_60 kVA	NSEZ_SDC 01_Ground floor_UPS 03_60 kVA
Present System:						
Total no of UPS	Nos	A	3	2	2	2
Rated Capacity	kVA	B	120	80	60	60
Present Total UPS Load	kVA	C	12.2	8.3	2.2	1.8
Present UPS Loading %	%	D	3.39	5.19	1.85	1.49
Present Total UPS Input Power	kW	E	27.3	10.2	3.8	3.5
Present Total UPS Output Power	kW	F	11.6	7.7	1.8	1.4335
Present Total UPS Loss	kW	G=E-F	15.7	2.5	2.0	2.1
Present UPS Efficiency	kW	H	42%	75%	47%	41%

Proposed System:						
Proposed Capacity	kVA	I	40	20	20	20
Proposed UPS Loading %	%	$J=(C/A)/I$	10%	21%	6%	4%
Proposed UPS Efficiency	kVA	K	85%	85%	85%	85%
Proposed Total UPS Input Power	kW	$L=F/K$	13.6	9.1	2.1	1.7
Energy Savings	kW	$M=E-L$	13.7	1.1	1.7	1.8
Anticipated Annual operating hours	Days	N	6000	6000	6000	6000
Annual Energy saving	kWh	$O=M*N$	81,918	6,847	10,290	10,881
Annual PF improvement cost savings	Rs.		453,679	456,666	456,666	456,666
Energy cost	Rs./kWh	P	11.74	11.74	11.74	11.74
Annual cost saving	Rs.	$Q=O*P$	1,415,393	537,050	577,476	584,407
Investment:						
Budgetary Investment for UPS	Rs.	R	960,000	320,000	320,000	320,000
Payback	Years	$S=R/Q$	0.7	0.6	0.6	0.5

ECM-4 REPLACE THE EXISTING CHW PUMPING SYSTEM (SEZ AREA) WITH VARIABLE PRIMARY PUMPING SYSTEM TO OPTIMIZE THE CHW PUMPING ENERGY CONSUMPTION

Option-1

ECM-04	ECM : 4 - Replace The Existing CHW Pumping System (SEZ) With Variable Primary Pumping System to Optimize the CHW Pumping Energy Consumption			
Energy Savings (kwh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (Rs)	ROI (Years)
234,600	2,247,468	193.08	1,500,000	0.67
Details	- Present chilled water Pumping system installed in the plant is constant primary - variable secondary system for chillers. - It is Observed during our Audit VFD are installed for Secondary Pumps, but it is set at Fixed Frequency by manual setting. - It is also observed from Logbooks multiple Secondary pumps are being operated due to which excess flow is by-pass through decoupler which is also resulted in Mean supply temperature further increase going to AHU. Even though Chiller Outlet Set Temperature is set at 7°C			
Rational	- It is recommended for the Replacement of Existing Chilled water pumping system along with Secondary Pumps with High efficient variable primary pumping system to achieve Energy Savings in Pumping System. - This system will control Flow by varying the VFD RPM based on DP which will save Power. - Expected energy savings per annum is 234,600 kWh.			
Risk	Not Identified			
Next step	- Review and discussion with technical team - Implement the proposal.			

ECM 04: Backup calculation: Option-1

ECM : 4 - Replace the Existing CHW Pumping system (SEZ) with Variable Primary Pumping system to optimize the CHW Pumping Energy Consumption

Description	Unit	Formula	Year 2023
Present System:			
Average power of existing chilled water pumps- 1 Primary, 2 No's Secondary Pumps	kW	A	81
Annual hours of operation	Hrs	B	5100
Existing CHW Pump Energy Consumption (Primary +Secondary) Energy consumption	kWh	$C=A \times B$	413100
TRH Generation per annum	TRH	D	2736190
Average Existing CHW pump kW/TR	kW/TR	$E=C/D$	0.151
Proposed System:			
Average Power of the new VPF system based on the load demand requirement on month wise TRH demand requirement	kW	F	35
Annual hours of operation	Hrs	G	5100
Expected New 55 kW motor capacity VPF system with VFD	kWh	$H=F \times G$	178500
TRH Generation per annum	TRH	I	2736190
New Pump SPC	kW/TR	$J=H/I$	0.065
Annual energy savings with new CHW pumping systems	kWh	$K=C-H$	234600
Annual cost saving	Rs.	$L=K \times 9.58$	2,247,468
Investments:			
Budgetary Investment for One New Variable Primary Pump	Rs.	R	1,500,000
Payback	Years	$S=R/Q$	0.67

Option-2

ECM-04 (Option-2)	ECM : 4 - Providing Automation on Secondary Pump based of Differential Pressure (DP) and to vary the VFD of Secondary Pump to achieve Energy Saving			
Energy Savings (kwh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (Rs)	ROI (Years)
61,200	5,86,296	50.18	3,00,000	0.51
Details	- Present chilled water Pumping system installed in the plant is constant primary - variable secondary system for chillers. - It is Observed during our Audit VFD are installed for Secondary Pumps, but it is set at Fixed Frequency by manual setting. - It is also observed from Logbooks multiple Secondary pumps are being operated due to which excess flow is by-pass through decoupler which also resulted in Mean supply temperature further increase going to AHU. Even though Chiller Outlet Set Temperature is set at 7°C			
Rational	- It is recommended for the Automation of Secondary Pumps based on the Differential Pressure (DP) feedback to achieve Energy Savings in Secondary Pumps. - This system will control Flow by varying the VFD RPM based on DP which will save Power. - Expected energy savings per annum is 61,200 kWh.			
Risk	Not identified			
Next step	- Review and discussion with technical team - Implement the proposal.			

ECM 04: Backup calculation: Option-2

ECM : 4 Providing Automation on Secondary Pump based of Differential Pressure (DP) and to vary the VFD of Secondary Pump to achieve Energy Saving

Description	Unit	Formula	Year 2023
Present System:			
Average power of existing 2 No's Secondary Pumps	kW	A	60
Annual hours of operation	Hrs	B	5,100
Existing Secondary Pump Energy consumption	kWh	$C=A \times B$	3,06,000
TRH Generation per annum	TRH	D	27,36,190
Proposed System:			
Excepted Average Secondary Pumps Power Consumption based on the load demand requirement on month wise TRH demand requirement	KW	E	48
Annual hours of operation	Hrs	F	5,100
Expected Energy Consumption	kWh	$G=E \times F$	2,44,800
Annual energy savings with new CHW pumping systems	kWh	$H=C-G$	61,200
Annual cost saving	Rs.	$I=H \times 9.58$	5,86,296
Investment:			
Budgetary Investment for Secondary Pump Automation & DP Sensor	Rs.	J	3,00,000
Payback	Years	$K=J/I$	0.51

ECM-5 REPLACE THE EXISTING CHW PUMPING SYSTEM (NSEZ) WITH VARIABLE PRIMARY PUMPING SYSTEM TO OPTIMIZE THE CHW PUMPING ENERGY CONSUMPTION

Option-1

ECM-05	ECM : 5 Replace The Existing CHW Pumping System (NSEZ) With Variable Primary Pumping System to Optimize the CHW Pumping Energy Consumption			
Energy Savings (kwh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (Rs)	ROI (Years)
46,494	545,840	38.12	500,000	0.92
Details	- Present chilled water Pumping system installed in the plant is constant primary - variable secondary system for chillers. - It is Observed during our Audit VFD are installed for Secondary Pumps, but it is set at Fixed Frequency by manual setting. - It is also observed from Logbooks multiple Secondary pumps are being operated due to which excess flow is by-pass through decoupler which is also resulted in Mean supply temperature further increase going to AHU. Even though Chiller Outlet Set Temperature is set at 7°C			
Rational	- It is recommended for the Replacement of Existing Chilled water pumping system along with Secondary Pumps with High efficient variable primary pumping system to achieve Energy Savings in Pumping System. - This system will control Flow by varying the VFD RPM based on DP which will save Power. - Expected energy savings per annum is 46,494 kWh.			
Risk	Not Identified			
Next step	- Review and discussion with technical team - Implement the proposal.			

ECM 05: Backup calculation:

Option-1

ECM : 05 - Replace the Existing CHW Pumping system (NSEZ) with Variable Primary Pumping system to optimize the CHW Pumping Energy Consumption

Description	Unit	Formula	Year 2023
Present System:			
Average power of existing chilled water pumps- 1 Primary, 2 No's Secondary Pumps	KW	A	25
Annual hours of operation	Hrs	B	3321
Existing CHW Pump Energy Consumption (Primary +Secondary) Energy consumption	kWh	$C=A \times B$	83025
TRH Generation per annum	TRH	D	570964
Average Existing CHW pump kW/TR	kW/TR	$E=C/D$	0.145
Proposed System:			
Average Power of the new VPF system based on the load demand requirement on month wise TRH demand requirement	KW	F	11
Annual hours of operation	Hrs	G	3321
Expected New 18.5 kW motor capacity VPF system with VFD	kWh	$H=F \times G$	36531
TRH Generation per annum	TRH	I	570964
New Pump SPC	kW/TR	$J=H/I$	0.064
Annual energy savings with new CHW pumping systems	kWh	$K=C-H$	46494
Annual cost saving	Rs.	$L=K \times 11.74$	545,840
Investment:			
Budgetary Investment for One New Variable Primary Pump with Motor	Rs.	R	500,000
Payback	Years	$S=R/Q$	0.92

Option-2

ECM-05 (Option-2)	ECM : 5 Providing Automation on Secondary Pump based of Differential Pressure (DP) and to vary the VFD of Secondary Pump to achieve Energy Saving			
Energy Savings (kwh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (Rs)	ROI (Years)
7,173	84,215	5.9	1,50,000	1.78
Details	- Present chilled water Pumping system installed in the plant is constant primary - variable secondary system for chillers. - It is Observed during our Audit VFD are installed for Secondary Pumps, but it is set at Fixed Frequency by manual setting. - It is also observed from Logbooks multiple Secondary pumps are being operated due to which excess flow is by-pass through decoupler which is also resulted in Mean supply temperature further increase going to AHU. Even though Chiller Outlet Set Temperature is set at 7°C			
Rational	- It is recommended for the Automation of Secondary Pumps based on the Differential Pressure (DP) feedback to achieve Energy Savings in Secondary Pumps. - This system will control Flow by varying the VFD RPM based on DP which will save Power. - Expected energy savings per annum is 7,173 kWh.			
Risk	Not identified			
Next step	- Review and discussion with technical team - Implement the proposal.			

ECM 05: Backup calculation:
Option-2

ECM : 5 - Replace the Existing CHW Pumping system (NSEZ) with Variable Primary Pumping system to optimize the CHW Pumping Energy Consumption

Description	Unit	Formula	Year 2023
Present System:			
Average power of existing Secondary Pumps	kW	A	10.8
Annual hours of operation	Hrs	B	3321
Existing Secondary Pump Energy consumption	kWh	$C=A \times B$	35867
TRH Generation per annum	TRH	D	570964
Proposed System:			
Excepted Average Secondary Pumps Power Consumption based on the load demand requirement on month wise TRH demand requirement	kW	E	8.6
Annual hours of operation	Hrs	F	3321
Expected Energy Consumption	kWh	$G=E \times F$	28693
Annual energy savings with new CHW pumping systems	kWh	$H=C-G$	7173
Annual cost saving	Rs.	$I=H \times 11.74$	84,215
Investments:			
Budgetary Investment for Secondary Pump Automation & DP Sensor	Rs.	R	150,000
Payback	Years	$S=R/Q$	1.78

ECM: 6 REPLACEMENT OF SEZ CONDENSER COOLING WATER PUMPS WITH CORRECT DUTY EE PUMPS

ECM: 06	Replacement of SEZ Condenser Cooling water pumps with Correct Duty EE Pumps			
Energy Savings (kWh/year)	Cost Saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Years)
100,249	960,386	82.50	1,000,000	1.04
Details	➤ During Energy Audit Performance test was carried out for the condenser pumps. ➤ The pumps are designed to deliver the water flow rate of 410 m³/h and mismatch in selection vis-à-vis design head of 25 m as against a system head of 12 to 15 m at design stage would have resulted in a surge in the water flow rate. ➤ Ideally Pumps has to deliver more Flow rate than design due to less operating head, but due to heavy Throttling observed in Balancing Valve in Cooling Tower Return Header the Actual Flow of 385 m³/hr as against design flow of 410 m³/hr even though with lesser operating head of 12 m. ➤ Pumps Measured Power of 42 kW which is operating at full load due to more flow as against design Motor of 37 kW ➤ Due to heavy Throttling observed in Balancing Valve in Cooling Tower Return Header, Pumps Operating Efficiency is 30% which is very low as against the design Overall Efficiency of 78% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency. ➤ It is advisable to opt for the correct duty point selection of pump in order to operate the pumping system at a better efficiency. ➤ Design Condenser Pressure drop is 0.25 kg/cm² ➤ Design Condenser Flow requirement 410 m³/hr			
Rational	➤ It is recommended to Replace SEZ Condenser Water pumps with correct capacity new energy efficient pumps with lesser head. ➤ Flow Rate-410 m³/hr and Design Head- 15 m Motor- 22 kW			
Risk	Nil			
Next step	Implement the Proposal			

ECM: 06 Backup calculation:

ECM-6 Replacement of SEZ Condenser Cooling water pumps with Correct Duty EE Pumps			
Description	Unit	Formula	Values
Present System:			
Design Pump Flow Rate	m ³ /hr	A	409
Design Pump Head	m	B	25
Design Power	kW	C	37
Pump Measured Flow Rate	m ³ /hr	D	385
Measured Total Head	m	E	12
Actual Power Consumption for one pump	kW	F	42
Proposed System:			
Proposed Flow Rate	m ³ /hr	G	410
Proposed Head	m	H	15
Anticipated EE improvement by replacing with Correct duty pump of Overall Efficiency	%	I	75
Anticipated power consumption	kW	J	22.3
Power Saving achievable	kW	K=J-F	19.7
Annual Energy savings considering pumps running for (5100 Hrs Per Annum)	kWh / y	L	100,249
Power cost	Rs. / kWh	M	9.58
Annual Cost Savings Possible	INR/Annum	N=L*M	960,386
Investment for Pump & Motor	INR	O	1,000,000
Pay-back period	Years	P	1.04

ECM-7 DOWNSIZE THE OVERCAPACITY UPS TO RIGHT SIZED UPS – SEZ AREA

ECM: 07	Downsize the Over Capacity UPS to Right sized UPS – SEZ Area			
Power Savings (kWh/year)	Cost Saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Year)
248,329	4,860,841	204.38	5,200,000	1.07
Details	➤ During audit it was observed that UPS loading is less than 10% and efficiency is lower ➤ HCL has total 17 no's of major UPS system installed (SEZ Area) at the premises to handle both workstation & servers separately. ➤ Loading percentage details of the individual UPS is given in above UPS performance section. ➤ Observed some of the UPS loading capacity is not matching with design capacity. Most of the UPS are loaded very low which will result in poor efficiency of the unit.			
Rational	➤ It is recommended to downsize the overcapacity UPS to Right sized UPS. ➤ It is proposed to downsize the UPS capacity matching with the actual loading. This will improve the efficiency of the UPS system. ➤ It is suggested to downsize 13 no's of identified UPS system at SEZ Area IT-01 & IT-03 ➤ The harmonics will be reduced and also improves the power factor to achieve Cost Savings in Electricity Bill . ➤ Detailed saving calculation sheet is given in below: ➤ Expected energy savings per annum is 248,329 kWh.			
Risk	Not identified			
Next step	➤ Obtain the supplier quotations ➤ Post commercial approval; Check with IT team and implement it implement the project with vendor			

ECM: 07 Backup calculation:

ECM: 11 - Downsize the overcapacity UPS to Right sized UPS S&Z Area								
Description	Unit	Formula	Work station	Server Room	Server Room	Server Room - Source 1	Server Room - Source 2	Work station
			S&Z IT 3, Ground Floor, UPS 01, 300 KVA	S&Z IT 3, Ground Floor, UPS 02, 300 KVA	S&Z IT 3, 2nd floor floor, UPS 06, 300 KVA	S&Z IT 3, Ground floor, UPS 01, 120 KVA	S&Z IT 3, Second floor, UPS 03, 120 KVA	S&Z IT 3, Second floor, UPS 07, 120 KVA
Present System:								
Total no of UPS	No.	A	3	3	3	3	3	3
Rated Capacity	KVA	B	300	300	300	120	120	120
Present Total UPS Load	KVA	C	24.4	26.1	25.1	10.1	11.2	20.6
Present UPS Loading %	%	D	8.0%	8.7%	8.3%	7.9%	8.9%	8.8%
Present Total UPS Input Power	kW	E	48.3	57.3	55.7	25.0	24.6	52.3
Present Total UPS Output Power	kW	F	29	22.8	21.3	17.4	18.21	24.40
Present Total UPS loss	kW	G=E-F	17.3	14.7	14.2	5.6	5.4	7.9
Present UPS efficiency	kW	H	60%	61%	60%	70%	76%	76%
Proposed System:								
Proposed Capacity	KVA	I	30	30	30	30	30	30
Proposed UPS Loading %	%	J=(C/I)/1	80%	87%	83%	10%	11%	20%
Proposed UPS Efficiency	KVA	K	85%	85%	85%	85%	85%	85%
Proposed Total UPS Input Power	kW	L=F/K	24.1	16.8	13.3	20.3	22.6	28.7
Energy Savings	kW	M=E-L	12.3	10.7	10.4	3.3	1.0	3.6
Anticipated Annual operating hours	Days	N	6000	6000	6000	6000	6000	6000
Annual Energy saving	kWh	O=M*N	73,094	64,089	62,433	13,176	12,000	21,365
Annual PF improvement cost savings	Rs.		405,419	415,383	415,383	415,383	415,383	415,383
Energy cost	Rs./kWh	P	5.26	5.26	5.26	5.26	5.26	5.26
Annual cost saving	Rs.	Q=O*P	1,306,440	1,038,949	1,014,415	69,476	63,346	111,876
Investment:								
Budgetary Investment for UPS	Rs.	R	800,000	800,000	800,000	800,000	800,000	1,200,000
Payback	Years	S=R/Q	0.7	0.8	0.8	1.4	1.3	1.9

ECM-8 INSTALL VOLTAGE REGULATOR FOR CAFETERIA – SEZ AREA

ECM : 08 Install Voltage Regulator for Cafeteria SEZ Area				
Power Savings (kWh/year)	Cost Saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Year)
2,224	21,301	1.83	30,000	1.41
Details	➤ During audit it was observed that lights in the canteen are in ON condition during the day time.			
Rational	➤ It is recommended to install voltage regulator/dimmer to reduce the voltage of lighting to achieve the following energy savings.			
Risk	➤ No risk			
Next step	➤ Check with team and implement it			

ECM 08: Backup calculation:

Install voltage regulator for cafeteria area			
Description	Units	Formula	Values
Present situation			
Total light ON condition	Nos	-	100
Wattage of each light	w	-	15
Total connected load	kW	A	1.50
Present voltage level	V	B	433.00
Present current consumption	A	D	2.10
Present Power factor	PF	E	0.95
Proposed situation			
Proposed voltage	V	C	390.00
Present operating hours	Hours/Day	F	5
No of working days	Days	G	330
Average unit cost	INR/kWh	H	9.58
Power savings	kW	$I = 1.732 * C * D * E / 1000$	1.3
Annual Energy savings	kWh/Annum	$J = I * F * G$	2,224
Cost Savings	INR/Annum	$K = J * H$	21,301
Voltage regulator	Nos	J	1
Investment	INR	K	30,000
Payback period	Years	$L = K / H$	1.41

ECM: 9 REPLACEMENT OF NSEZ CONDENSER COOLING WATER PUMPS WITH CORRECT DUTY EE PUMPS

ECM: 09	Replacement of NSEZ Condenser Cooling water pumps with Correct Duty EE Pumps			
Energy Savings (kWh/year)	Cost Saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Years)
30,223	354,813	24.87	500,000	1.41
Details	- During Energy Audit Performance test was carried out for the condenser pumps. - The pumps are designed to deliver the water flow rate of 170 m³/h and mismatch in selection vis-à-vis design head of 25 m as against a system head of 15 to 17 m at design stage would have resulted in a surge in the water flow rate. - Ideally Pumps has to deliver more Flow rate than design due to less operating head, but due to Throttling/Valve Control observed the Actual Flow of 160 m³/hr as against design flow of 170 m³/hr even though with lesser operating head of 17 m. - Pumps Measured Power of 19.6 kW which is operating at full load due to more flow as against design Motor of 18.5 kW - Due to Throttling/Valve Control observed in the system. Pumps Operating Efficiency is 43% which is very low as against the design Overall Efficiency of 78% due to shift in duty points operation against BEP resulted in pumps operating at lower Efficiency. - It is advisable to opt for the correct duty point selection of pump in order to operate the pumping system at a better efficiency. - Design Condenser Pressure drop is 0.35 kg/cm² - Design Condenser Flow requirement 170 m³/hr			
Rational	- It is recommended to Replace NSEZ Condenser Water pumps with correct capacity new energy efficient pumps with lesser head. - Flow Rate-170 m³/hr and Design Head- 17 m Motor- 11 kW			
Risk	Nil			
Next step	Implement the Proposal			

ECM: 09 Backup calculation:

ECM-9 Replacement of NSEZ Condenser Cooling water pumps with Correct Duty EE Pumps			
Description	Unit	Formula	Values
Present System:			
Design Pump Flow Rate	m ³ /hr	A	170
Design Pump Head	m	B	25
Design Power	kW	C	18.5
Pump Measured Flow Rate	m ³ /hr	D	160
Measured Total Head	m	E	22
Actual Power Consumption for one pump	kW	F	19.6
Proposed System:			
Proposed Flow Rate	m ³ /hr	G	170
Proposed Head	m	H	17
Anticipated EE improvement by replacing with Correct duty pump of Overall Efficiency	%	I	75
Anticipated power consumption	kW	J	10.5
Power Saving achievable	kW	K=J-F	9.1
Annual Energy savings considering pumps running for (3321 Hrs Per Annum)	kWh / y	L	30,223
Power cost	Rs. / kWh	M	11.74
Annual Cost Savings Possible	INR/Annum	N=L*M	354,813
Investment for Pump & Motor	INR	O	500,000
Pay-back period	Years	P	1.41

ECM: 10 REPLACE COOLING TOWER FAN BLADES WITH FRP BLADES

– SEZ AREA

ECM: 10 REPLACE COOLING TOWER FAN BLADES WITH FRP BLADES				
Energy Savings (kWh/Year)	Cost saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Year)
8,791	84,219	7.24	120,000	1.42
Details	➤ During audit it was observed that cooling tower fans are made up of metals which consumes more power.			
Rational	➤ It is recommended to replace the metal blades with FRP blades to reduce the power consumption of fan. ➤ The expected power savings is around 5 to 10%.			
Risk	➤ Check with OEM implementation of proposal.			
Next step	➤ Check with OEM and get proper approval from OEM to implement the proposal with the help of OEM team.			

ECM 10: Backup calculation:

Description	Units	Formula	SEZ Area, Cooling tower 1 & 2
Present system:			
Total number of cooling tower CT fan	Nos	A	4
Power consumption of one cooling tower CT fan	kW	B	5.38
Present operating hours	Hours/Annum	C	5104
Unit cost of electricity	INR	E	9.58
Proposed system:			
Expected savings	%	F	10
Annual energy consumption	kWh/Annum	$G=A*B*C*D$	87911
Annual energy savings	kWh/Annum	$H=G*F/100$	8791
Annual cost savings	INR/Annum	$I=H*E$	84219
Cost of one FRP blade	INR	J	30000
Investment	INR	$K=A*J$	120000
Payback	Years	$L=K/I$	1.42

ECM-11 INSTALL OCCUPANCY SENSOR FOR REST ROOMS – SEZ AREA

ECM: 11				
INSTALL OCCUPANCY SENSOR FOR REST ROOMS – SEZ AREA				
Energy Savings (kWh/Year)	Cost saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Year)
8,424	80,702	6.93	180,000	2.23
Details	➤ During audit it was observed that lights are in ON condition for all the time in the rest room.			
Rational	➤ It is recommended to install occupancy/motion sensor in rest room to reduce power consumption. ➤ The expected power savings is around 20%.			
Risk	➤ No risk.			
Next step	➤ Check with OEM and get proper approval from OEM to implement the proposal with the help of OEM team.			

ECM 11: Backup calculation:

Description	Units	Formula	IT-01	IT-02	IT-03
Present system					
Total connected load	kW	A	3.60	0.72	2.70
Present operating hours	Hours/Day	B	24	24	24
No of working days	Days	C	250	250	250
Average unit cost	INR/kWh	D	9.58	9.58	9.58
Energy consumption	kWh/Annum	$E = A \times B \times C$	21,600	4,320	16,200
Proposed system					
Expected savings	%	F	20	20	20
Energy savings	kWh/Annum	$G = E \times F / 100$	4,320	864	3,240
Annual cost savings	INR/Annum	$H = G \times D$	41,386	8,277	31,039
Occupancy sensors have to install	Nos	I	20	4	12
Cost of one occupancy sensor	INR	J	5,000	5,000	5,000
Investment	INR	$K = I \times J$	1,00,000	20,000	60,000
Payback period	Years	$L = K / H$	2.42	2.42	1.93

ECM-12 INSTALL 50 KW ROOF TOP SOLAR PV – NSEZ AREA

ECM:12	INSTALL 50 KW ROOF TOP SOLAR PV – NSEZ AREA			
Energy Savings (kWh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (INR)	ROI (Year)
73,000	857,020	60.08	2,000,000	2.86
Details	- During audit it was observed space is available for the roof top solar panel - Solar Photo Voltaic System is a mature, proven, reliable technology for generating electricity; nowadays they are economically more attractive			
Rational	- It is recommended to install Roof top Solar PV of 50 kW for NSEZ SDC-01 & SDC-02 to reduce the Energy Consumption in Grid considering the following benefits, - Cheaper energy source - LCOE is almost par or lesser than EB rates. - Green source of energy - Renewable obligations can be fulfilled. - Environmental concern			
Risk	No risk			
Next step	Check with team and implement it			

ECM 12: Backup calculation:

Description	Unit	Formula	Value
Present situation			
SDC 1& 2 Area	Sq. Ft	-	3162
SDC1 & 2 No of panel	Nos	-	152
Present situation			
SDC1 & 2 Total Solar PV Installation Capacity	kW	-	50
Expected Solar Power Generation Per Day	kW	A	200
Energy savings	kWh/Day	B=A	200
Annual Energy Savings	kWh/Annum	C=B*365	73,000
Energy cost	Rs./kWh	D	11.74
Annual cost savings	INR/Annum	E=C*D	857020
Investment	INR	F	2,000,000
Payback	Years	G=F/E	2.33

ECM-13 INSTALL 250 KW ROOF TOP SOLAR PV – SEZ AREA

ECM: 13				
INSTALL 250 KW ROOF TOP SOLAR PV – SEZ AREA				
Energy Savings (kWh/year)	Cost Saving (INR)	CO ₂ saving (Tonnes)	Investment (INR)	ROI (Year)
365,000	3,49,700	300.40	10,000,000	2.86
Details	- During audit it was observed space is available for the roof top solar panel - Solar Photo Voltaic System is a mature, proven, reliable technology for generating electricity; nowadays they are economically more attractive.			
Rational	- It is recommended to install Roof top Solar PV of 250 kW for SEZ Area IT-01 & IT-02 to reduce the Energy Consumption in Grid considering the following benefits, - Cheaper energy source - LCOE is almost par or lesser than EB rates. - Green source of energy - Renewable obligations can be fulfilled. - Environmental concern			
Risk	No risk			
Next step	Check with team and implement it			

ECM 13: Backup calculation:

Description	Unit	Formula	Value
Present situation			
Tower 1 & 2 Total Roof Top Area Available	Sq. Ft	-	16,276
Tower 1 & 2 No of Panels	Nos	-	780
Present situation			
Tower 1 & 2 Total Solar PV Installation Capacity	kW	-	250
Expected Solar Power Generation Per Day	kW	A	1000
Energy savings	kWh/Day	B=A	1000
Annual Energy savings	kWh/Annum	C=B*365	365,000
Energy cost	Rs. /kWh	D	9.58
Annual cost savings	INR/Annum	E=C*D	3,496,700
Investment	INR	F	10,000,000
Payback	Years	G=F/E	2.86

ECM-14 INSTALL OCCUPANCY SENSOR FOR REST ROOMS – NSEZ

AREA

ECM: 14	INSTALL OCCUPANCY SENSOR FOR REST ROOMS – NSEZ AREA			
Energy Savings (kWh/Year)	Cost saving (INR)	CO ₂ saving (Tonnes)	Investment (INR)	ROI (Year)
2,016	23,688	1.66	70,000	2.96
Details	➤ During audit it was observed that lights are in ON condition for all the time in the rest room.			
Rational	➤ It is recommended to install occupancy/motion sensor in rest room to reduce power consumption. ➤ The expected power savings is around 20%.			
Risk	➤ No risk.			
Next step	➤ Check with OEM and get proper approval from OEM to implement the proposal with the help of OEM team.			

ECM 14: Backup calculation:

Description	Units	Formula	SDC-01	SDC-02
Present system				
Total connected load	kW	A	0.84	0.84
Present operating hours	Hours/Day	B	24	24
No of working days	Days	C	250	250
Average unit cost	INR/kWh	D	11.74	11.74
Energy consumption	kWh/Annum	$E=A*B*C$	5,040	5,040
Proposed system				
Expected savings	%	F	20	20
Energy savings	kWh/Annum	$G=E*F/100$	1,008	1,008
Cost savings	INR/Annum	$H=G*D$	11,834	11,834
Occupancy sensors have to install	Nos	I	7	7
Cost of one occupancy sensor	INR	J	5000	5000
Investment	INR	$K=I*J$	35,000	35,000
Payback period	Years	$L=K/H$	2.96	2.96

ECM-15 REPLACE COOLING TOWER FAN BLADES WITH FRP BLADES

– NSEZ AREA

ECM: 15 REPLACE COOLING TOWER FAN BLADES WITH FRP BLADES				
Energy Savings (kWh/Year)	Cost saving (INR)	CO2 saving (Tonnes)	Investment (INR)	ROI (Year)
866	10,168	0.71	60,000	3.93
Details	➤ During audit it was observed that cooling tower fans are made up of metals which consumes more power.			
Rational	➤ It is recommended to replace the metal blades with FRP blades to reduce the power consumption of fan. ➤ The expected power savings is around 5 to 10%.			
Risk	➤ Check with OEM implementation of proposal.			
Next step	➤ Check with OEM and get proper approval from OEM to implement the proposal with the help of OEM team.			

ECM 15: Backup calculation:

Description	Units	Formula	NSEZ Area_ Cooling tower 3
Present system:			
Total number of cooling tower CT fan	Nos	A	2
Power consumption of one cooling tower CT fan	kW	B	3.26
Present operating hours	Hours/Annum	C	3321
Unit cost of electricity	INR	E	11.74
Proposed system:			
Expected savings	%	F	10
Annual energy consumption	kWh/Annum	$G=A*B*C*D$	8661
Annual energy savings	kWh/Annum	$H=G*F/100$	866
Annual cost savings	INR/Annum	$I=H*E$	10,168
Cost of one FRP blade	INR	J	30000
Investment	INR	$K=A*J$	40000
Payback	Years	$L=K/I$	3.93

ECM-16 INSTALL EC FANS FOR AHU AND DX AHU – NSEZ AREA

ECM: 16	INSTALL EC FANS FOR AHU AND DX AHU – NSEZ Area (SDC-01)			
Energy Savings (kWh/Year)	Cost saving (INR)	CO ₂ Saving (Tonnes)	Investment (INR)	ROI (Year)
11,113	130,469	9.1	800,000	6.13
Details	➤ During audit it was observed that belt driven AC motor used in AHU which consumes more power.			
Rational	➤ It is recommended to replace the belt driven AC motor with EC fan for (SDC-01) to reduce the power consumption of fan. ➤ The expected power savings is around 15%.			
Risk	➤ Check with OEM implementation of proposal.			
Next step	➤ Check with OEM and get proper approval from OEM to implement the proposal with the help of OEM team.			

ECM 16: Backup calculation:

Description	Units	Formula	Values	Values
Present system				
Rated power of AHU and DX AHU	kW	A	3.7	5.5
Total number AHU and DX AHU	Nos	B	1	2
Present operating hours	Hours/Day	C	24	24
No of working days	Days	D	250	250
Average unit cost	INR/kWh	E	11.74	11.74
Average loading of blower	%	F	70	70
Actual power consumption	kWh/Annum	$G = A \cdot B \cdot (F/100) \cdot C \cdot D$	18,648	55,440
Proposed system				
Expected savings	%	H	15	15
Annual energy savings	kWh/Annum	$I = G \cdot H/100$	2797	8316
Annual cost savings	INR/Annum	$J = G \cdot E$	32,839	97,630
Cost of one EC fan	INR	K	200,000	300,000
Investment	INR	$L = B \cdot K$	200,000	600,000
Payback	Months	$M = L/J$	6.09	6.15

ECM-17 INSTALL EC FANS FOR AHU AND DX AHU – SEZ AREA

ECM: 17	INSTALL EC FANS FOR AHU AND DX AHU – SEZ Area (IT-01 & IT-03)			
Energy Savings (kWh/Year)	Cost saving (INR)	CO ₂ saving (Tonnes)	Investment (INR)	ROI (Year)
133,132	1,275,401	109.6	9,800,000	7.68
Details	➤ During audit it was observed that belt driven AC motor used in AHU which consumes more power.			
Rational	➤ It is recommended to replace the belt driven AC motor with EC fan for IT-01 & IT-03 Tower to reduce the power consumption of fan. ➤ The expected power savings is around 15%.			
Risk	➤ Check with OEM implementation of proposal.			
Next step	➤ Check with OEM and get proper approval from OEM to implement the proposal with the help of OEM team.			

ECM 17: Backup calculation:

Description	Units	Formula	Values	Values	Values	Values
Present system						
Rated power of AHU and DX AHU	kW	A	3.7	5.5	7.5	9.3
Total number AHU and DX AHU	Nos	B	6	12	8	3
Present operating hours	Hours/Day	C	24	24	24	24
No of working days	Days	D	250	250	250	250
Average unit cost	INR/kWh	E	9.58	9.58	9.58	9.58
Average loading of blower	%	F	70	70	70	70
Actual power consumption	kWh/Annum	$G = A \cdot B \cdot (F/100) \cdot C \cdot D$	111888	332640	302400	140616
Proposed system						
Expected savings	%	H	15	15	15	15
Annual energy savings	kWh/Annum	$I = G \cdot H / 100$	16783	49896	45360	21092
Annual cost savings	INR/Annum	$J = I \cdot E$	160783	478004	434549	202065
Cost of one EC fan	INR	K	200,000	300,000	400,000	600,000
Investment	INR	$L = B \cdot K$	1,200,000	3,600,000	3,200,000	1,800,000
Payback	Years	$M = L / J$	7.5	7.5	7.4	8.9

CHAPTER – 6: MAJOR OBSERVATIONS

S. No	Location	Visual Image	Remarks
1	AHU Chilled water line		All AHU chilled water line strainer is not insulated it is recommended to insulate the strainer to avoid heat loss.
2	AHU Unit		Belt driven were used in AHU unit. It is recommended to change EC fan.
3	NSEZ Cooling tower		Algae formation found in cooling tower. It is recommended to clean the cooling tower.
4	SEZ and NSEZ Cooling tower fan		Metal blades were used. It is recommended to replace the metal blade with FRP blade.

S. No	Location	Visual Image	Remarks
5	Heat recovery wheel		The chilled water line is always in open position. It is recommended to use exhaust air temperature for heat transfer process.
6	Pathway		All tower Pathway lights are ON condition in day time. It is recommended to turn OFF some lights to reduce the energy consumption.
7	Pressure Gauge		Few pressure and temperature gauges are not working. It is recommended to replace the not working pressure gauge to new one.
8	AHU filter		Few AHU filter are in blocked condition. It is recommended to clean the filter regularly.



Chapter – 7: OPENBLUE ENTERPRISE MANAGEMENT AUDIT FINDING DOCUMENTS

7.1 Synopsis of the BMS and Digital Audit:

Synopsis of the BMS and Digital Audit -Lucknow		
Equipment's	BAS Automation View	Digital Readiness View
Diesel Generators	a. No Functioning BMS in the campus, BMS currently under rectification.	a. Implement a functioning BMS with DG integrated. B. Install communicable flow meters for measuring fuel consumption
Battery Monitoring System	a. Not connected to BMS. Working as independent system in HCL network	Option 1: Supports TCP IP protocol for integration. Option 2: Battery Monitoring System Can be brought to network same as BMS so that the integration with Command Center becomes seamless.
Transformer System	a. Implement a functioning BMS with DG integrated. b. Transformers needs to be integrated to BAS for remote control, monitoring and alarm management. c. HT breaker to be integrated to BMS for ON/OFF control. d. HT meters can be integrated over Modbus RTU to the BMS.	HT meters are connected to IOT system and data can be pulled to the command center by API integration. Transformers can be integrated to command center through the BMS.
Elevator Management System	a. No Functioning BMS in the campus BMS currently under rectification. b. No existing elevator management system. c. Integration of elevators system to BMS to be considered	The elevator management vendor shall ensure communication availability for BMS integration.
HVAC High Side Equipment	CPM is not in working condition	a. BMS and CPM are to be brought to a single subnetwork.

HVAC Low Side Equipment	a. BMS needs retrofitting. During the retrofit, the building HVAC to be strategized to run in auto logic.	a. Campus needs to have a working BMS first for Command Centre integration and day-to-day operations.
Lighting Management System	a. Implement lighting management system in the campus and integrate with BMS.	a. While implementing the LMS, HCL to ensure integration with BMS or a centralized LMS for 7 locations with open API to integrate with Command Center.
Water Management System	a. Flow meters are integrated to Forbes Marshal system. b. Once integrated to BMS over Modbus RTU, flow meter data can be taken to Command Center. c. STP and WTP systems to be integrated to BMS for water quality use cases.	a. Integration can be achieved using Modbus RTU with command center. b. Modbus RTU needs to be converted to BACnet IP and brought in the same Subnet as the BMS. c. Integration of command center with Access Control system can help in automatic capture of LPHD/WUI.
Fire Alarm System	a. Campus needs to have a working BMS first for Command Centre integration and day-to-day operations.	a. FAS to be integrated with BMS first and then to command center.
Roof Top Solar System	Not Applicable	Not Applicable

The IOT systems were found to be standardized across the 7 locations. These can be integrated via API or at field to the command center as shown in the fig. below..

1. LT Monitoring System
2. Water Monitoring System (Most of the locations are still under deployment)
3. HT Monitoring systems
4. Battery Monitoring System
5. Solar Monitoring (Some of the Sites do not have Roof Top Solar)

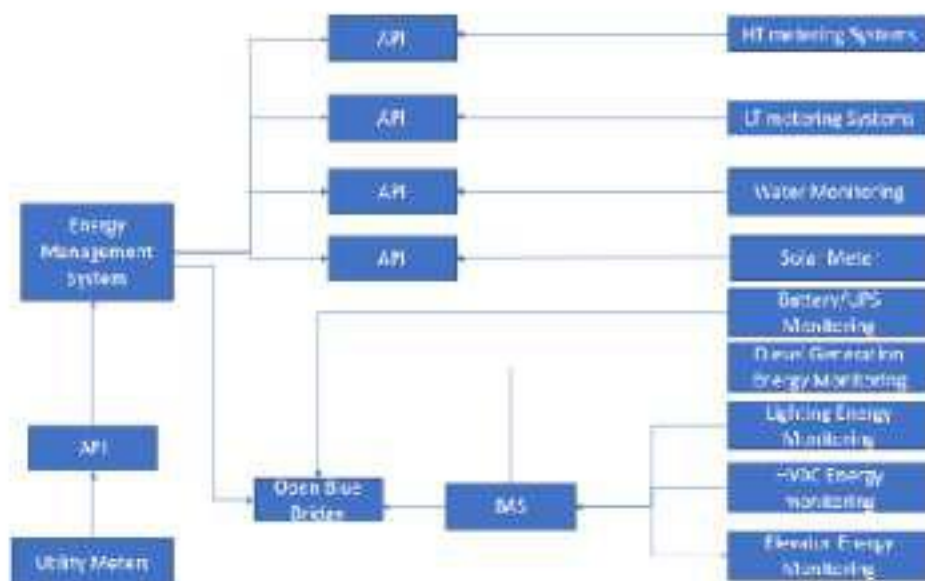


Fig. showing integration of IOT systems.

7.2 System Architecture of the Command Center



7.3 Lucknow Site Assessment overview

The overall site is consisting of 3 towers, 1 BMS systems, with an occupancy capacity of around 10,000 and with a schedule of 24 hours of operations per day.

Sl. No	System Type	Connected to BAS (Yes/No)	Connected to 3 rd party cloud (yes/no)	BAS system connected	3 rd party Cloud vendor connected	Quantity	Remarks
1	Chiller systems	Yes	No	Siemens	-	7	
2	Differential Pressure switch	Yes	No	Siemens	-	20	
3	Cooling tower	Yes	No	Siemens	-	7	
4	Chiller Water pumps	Yes	No	Siemens	-	7	
5	Condensor Water pumps	Yes	No	Siemens	-	7	
6	Primary Pump	Yes	No	Siemens	-	7	
7	Secondary Pump	Yes	No	Siemens	-	7	
8	Hot water Generator	Yes	No	Siemens	-	2	
9	AHU & integrated products	Yes	No	Siemens	-	145	
10	TFA	No	No	-	-	12	
11	VRF/VRV AHU	Yes	NO	Siemens	-	49	
12	Air Washers	Yes	No	Siemens	-	8	
13	Variable speed/ Frequency drive	Yes	No	Siemens	-	132	
14	Heat recovery unit	Yes	No	Siemens	-	8	
15	Stair case/Lobby pressurizing system	Yes	No	Siemens	-	23	

16	Exhaust systems	Yes	Yes	Siemens	Aeron	22	
17	Lift Exhaust systems	Yes	No	Siemens	-	9	
18	Basement Ventilation System (Axial Jet Fan)	Yes	No	Siemens	-	1	
19	VAV	Yes	No	Siemens	-	480	
20	PAC System	Yes	No	Siemens	-	16	
24	Water flow meter	No		-		14	
25	Diesel Generator	Yes				7	
26	Elevators	Yes				28	Monitoring only ON/Off status
27	HT/ LT Main Breaker (Status)	Yes				46	
28	UPS Systems	Yes				35	
29	Critical Energy meters	No	Yes	Siemens	Atlandra	318	LT meters planned to connect to BMS as well. Voltage, Amps, kW, KVA, PF, KVAR, Frequency, kWh - Monitoring DG HSD consumption and Specific fuel consumption (units/litre diesel)
30	HT Metering system	No	Yes	-	Atlandra	1	Voltage, Amps, kW, KVA, PF, KVAR, Frequency, kWh, ITHD, VTHD, demand - monitoring Alarms for low PF and high PF, Demand, daily reports & dashboard
31	Battery monitoring system	No	Yes	-	HCL	1	Command Center use cases around energy balance

							and on -site energy usage
32	Water Flow meters monitoring	No	Yes	-	Forbes Marshal	76	Below parameters are measured Procurement, consumption, recycling, STP in let and outlet, HVAC consumption and blow down, Individual building consumption, garden irrigation system and flushing system, rain water treatment and collection, WTP inlet and outlet, Softening, fire fighting systems Wishlist: Avoidance of Manual entry of head count for LPHD calculations
33	Indoor Air quality & ambient temp. sensor (Hand held device)	No	No	-	-	1	Quarterly measured by 3rd party vendor

System 1: Diesel Generation System

Command centre Use cases for Diesel Generation Systems

- Use Case 1: Remotely start, stop, and control diesel generators based on demand response signals, grid conditions, or facility requirements.
- Use Case 2: Schedule automatic start/stop sequences or load shedding strategies to optimize generator operation and fuel consumption.
- Use Case 3: Monitor and maintain compliance with environmental regulations, emissions standards, and safety guidelines applicable to diesel generator operation.

Key KPI needed for Command Centre operations for Diesel Generator System

Availability

- Generator Availability: Measure the percentage of time the diesel generator is available to meet demand.
- Generator Mean Time Between Failure: Calculate the average time between generator failures to assess reliability. (Needs CMMS integrations from cloud software end to end)
- Generator Reliability: Measure the frequency and severity of unplanned generator outages or failures. (Needs CMMS integrations from cloud software end to end)

Fuel Efficiency

- Fuel Consumption Rate: fuel consumption per unit of power output to assess efficiency.
- Fuel Efficiency Ratio: The ratio of energy output (electricity generated) to energy input (fuel consumed) to evaluate efficiency.

Performance

- Generator Load Factor: Measure the percentage of rated capacity at which the generator operates over time.

Environmental and Regulatory Compliance

- Emissions Monitoring: Check emissions of pollutants such as nitrogen oxides (NOx), sulfur oxides (SOx), particulate matter (PM), and carbon dioxide (CO2).
- Regulatory Compliance: Ensure compliance with applicable regulations, standards, and permits related to emissions, safety, and generator operation.

Digital Audit view of the system connected.

Is diesel Generator system connected to BMS system: Yes (BMS is under renovation)

Is diesel Generator system connected to 3rd party cloud : No

System 2: Battery Monitoring System/UPS systems

Use cases for Battery Monitoring System

- Use Case 1: Optimize energy storage and utilization strategies based on demand patterns, grid conditions, and renewable energy integration.
- Use Case 2: Identify and diagnose faults or abnormalities in battery cells, modules, or system components using advanced diagnostics and analytics.

- Use Case 3: Analyze historical data and performance trends to optimize battery charging and discharging profiles for maximum efficiency and lifespan.
- Use case 4: Net zero measuring on battery monitoring systems as a part of overall net zero goals

Key KPI needed for Command Center operations for Battery Monitoring System

State of Charge

- State of Charge (SOC): Measure the current state of charge of the battery, indicating the percentage of available energy relative to the total capacity (Target V/s Actual)

Temperature Management

- Battery Temperature: Monitor battery temperature levels to ensure safe operating conditions and prevent thermal runaway or overheating.
- Temperature Differential: Assess temperature differentials across battery cells or modules to detect potential hotspots or thermal imbalances.

Efficiency and Performance:

- Energy Throughput (SEC): Monitoring specific energy consumption for the battery monitoring system.
- Charge/Discharge efficiency: Evaluate the efficiency of energy conversion during charging and discharging cycles to optimize energy utilization and minimize losses.

Maintenance and Service

- Scheduled Maintenance Compliance: Track adherence to scheduled maintenance tasks, inspections, or calibrations to ensure system reliability and longevity.
- Mean time to Repair : Measure the average time taken to diagnose and repair faults or failures in the battery system to minimize downtime.(Needs integration with CMMS system and parameter to be reported or fetched from CMMS systems)

Digital Audit view of the system connected.

In the Battery Monitoring System, Voltage level and Insulation Resistance is measured and monitored for deviation. In case of deviation, the vendor is called for corrective action.

CMMS and its integration with command center would automate the work order management and reporting and analysis.

The Battery Monitoring System is connected to the HCL network and deployed on HCL cloud. IT approvals should be taken care before integrating to Command Center.

BMS Audit view of the System.

The UPS systems are connected to BMS as per IO summary. BMS yet to be brought to working condition.

System 3: Transformer Systems

Use cases for Transformer Systems

- Use Case 1: Load Management of transformer system including overall peak and non-peak load management strategies.

- Use Case 2: Overall energy efficiency monitoring for transformers running.
- Use Case 3: HT metering analysis for net zero requirements.
- Use case 4: Remote control operations of transformers : Enable remote monitoring and control of transformer operations, including tap changer adjustments, cooling fan control, and alarm acknowledgment.

Key KPI needed for Command Centre operations for Transformer System

Transformer Health

- Insulation Resistance: Measure the insulation resistance to assess the insulation condition and detect potential faults or deterioration.
- Power Factor: Monitor the power factor to evaluate the dielectric properties and insulation integrity of the transformer.
- Winding Temperature: Monitor the winding temperature to ensure it remains within safe operating limits and detect overheating conditions.

Performance and Efficiency:

- Load Factor: Measure the load factor to assess the utilization of the transformer capacity and identify potential overloading or underutilization.
- Efficiency: Calculate the efficiency of the transformer to evaluate energy losses and identify opportunities for optimization.
- Voltage Regulation: Monitor the voltage regulation to ensure the transformer maintains stable voltage levels under varying load conditions.

Transformer Availability:

- Mean Time Between Failures (MTBF): Calculate the average time between failures to assess the reliability and performance of the transformer. (Needs CMMS Integrations)
- Mean Time to Repair (MTTR): Measure the average time taken to repair the transformer after a failure occurs to minimize downtime. (Needs CMMS Integrations)

Safety and Compliance:

- Oil Quality: Monitor the oil quality parameters such as acidity, moisture content, and dissolved gas levels to assess the health of the transformer insulation.
- Leak Detection: Monitor for oil leaks or spills to ensure environmental compliance and prevent safety hazards.

Digital Audit view of the system connected.

The HT & LT meters are connected to a IOT platform for monitoring and reporting. However, it is working as a siloed system.

BMS Audit view of the System.

Meters can be integrated to BMS by using the available Modbus RTU ports.

System 4: Elevator Management System

Use cases for Elevator Management System

- Use Case 1: Overall Traffic and foot-fall management for elevator systems.

- Use Case 2: Energy Management of elevator management systems.
- Use case 3: Schedule based command and control for elevator management systems

KPI for command center for Elevator Management System

Elevator Availability

- Elevator Uptime: Measure the percentage of time that elevators are operational and available for passenger use during scheduled hours.
- Downtime Rate: Track the frequency and duration of elevator downtime, including unplanned outages and scheduled maintenance periods.

Response Time and Efficiency

- Average Travel Time: Measure the average duration of elevator trips from one floor to another, including stops and door opening/closing times.
- System Efficiency: Assess the efficiency of elevator dispatching and allocation algorithms in minimizing passenger wait times and optimizing traffic flow.

Maintenance and Reliability

- Mean Time Between Failures (MTBF): Calculate the average time elapsed between elevator failures or breakdowns, reflecting system reliability.
- Maintenance Downtime: Measure the duration of scheduled maintenance activities, inspections, repairs, or component replacements affecting elevator availability.
- Maintenance Cost: Track the cost of preventive maintenance, corrective repairs, and replacement parts for elevator systems over time.

All of the above needs end to end integrations with CMMS systems.

Energy Consumption and Efficiency

- Energy Usage: Monitor energy consumption of elevator systems, including power usage, motor efficiency, and lighting consumption.
- Energy Cost: Calculate the cost of energy used by elevators, including electricity charges and operating expenses.
- Energy-saving Initiatives: Implement energy-saving strategies such as standby mode operation, lighting control, or regenerative braking to reduce energy consumption and operating costs.

Remote Monitoring and Control

- Remote Access and Diagnostics: Provide remote access and control capabilities for elevator systems, allowing operators to monitor performance, troubleshoot issues, and adjust settings from a centralized interface.
- System Alarms and Notifications: Generate alerts and notifications for abnormal conditions, equipment malfunctions, or safety hazards requiring attention or intervention.

Digital Audit view of the system connected.

The elevators need to be connected to BMS so that they can be integrated to the Command Center.

If not, the elevator system should be brought to same subnet as BMS to connect to command center.

System 5: HVAC High Side Equipment's

HVAC high side system to consist of the following list of equipment's.

- Chilled water System: Chillers, Cooling Towers, Chilled water Pumps, condenser water pumps, Cooling tower operations
- Any Chilled water system meter monitoring should be clubbed with Chilled water systems and not measured exclusively.

Use cases for Chilled water system.

- Use Case 1: Chiller Plant optimization Chiller Plant optimization based on demand based requirements
- Use Case 2: Chilled water system monitoring for net zero requirements.
- Use case 3: Equipment uptime and necessary retrofits identified with priority at each locations

KPI's Needed for command centre operations of Chilled water system.

Efficiency

- Tracking efficiency for Plant room and each individual system including Chiller, Condenser water Pumps, cooling tower fans, Chilled water pumps. Overall with efficiency following parameters are also tracked
 - Staging and sequencing of plant room
 - Staging and sequencing of Chiller and Pumps

Energy

- Energy consumption of the Chilled water system as per benchmark and tracking performance against the benchmark and based on reset strategies set as per load, commonly applied strategies would include
 - Chilled water reset strategy.
 - Condenser water reset strategy.
 - Free -cooling based on load and weather conditions

System Reliability and Maintenance

- Understanding System reliability and Maintenance by doing end to end integrations done with CMMS system to understand the following metrics which would be tracked in the CMMS system
 - Mean time to Respond (MTTR)
 - Mean Time Between Failures (MTBF)
 - Sensor Failures on the sites

Digital Audit view of the system connected.

CPM and BMS are single software which eases the integration.

BMS Audit view of the System.

CPM should be working in auto logic. Currently CPM is not in working condition.

System 6: HVAC Low Side Equipment's

Low Side HVAC systems would include the following.

- Air Side Supply Units: Air Handling Units all types, Outside Air Unit, PAHU
- Energy Recovery Units/Heat Recovery Units
- DX systems/ Package Air cooling
- Terminal Units including FCU, VAV, Exhaust fans and any other terminal units.
- Winter cool units/Economizer units
- Any local Critical temperature and air quality done.

Use cases for HVAC System – Low side.

- Use Case 1: Overall Air Side system Efficiency maintained
- Use Case 2: HVAC low side EUI monitoring for net zero requirements.
- Use case 3: Equipment uptime and necessary retrofits identified with priority at each locations
- Use case 4: Healthy Buildings based on Indoor air quality

KPI's Needed for command centre operations of Low side HVAC system

Energy Efficiency

- Energy Consumption : Overall Energy consumption of the HVAC system-low side
- Energy Usage Index (EUI): Overall Energy Usage index of the HVAC system -low side
- Energy Cost : Overall Energy Cost of the Air -side system

System Performance

- Temperature Control: Overall Temperature control of the space with limits and autonomous control
- Humidity Control: Overall monitoring humidity control with acceptable ranges for humidity for occupant comfort
- Air flow Rates : Measuring air flow rates for distribution within the building

Occupant Comfort and Indoor Air Quality (IAQ):

- IAQ parameters: Monitoring IAQ parameters in the limit.
- Demand Control Ventilation: How mechanical cooling is substituted using outdoor air units and autonomous controls.
- Natural cooling: Making use of Economy operations for doing natural cooling or combination of mechanical and natural cooling achieving both occupant comfort and energy efficiency by autonomous controls.
- Occupant complaints and Feedback: Common Centralized work order system to register common complaints from occupant if needed via local app control

System Efficiency and Optimizations

- Efficiency Metrics: Calculate efficiency metrics such as Seasonal Energy Efficiency Ratio (SEER) and Energy Efficiency Ratio (EER) for HVAC equipment.
- Load Matching: Optimize HVAC system operation to match heating or cooling output to building thermal loads, minimizing energy waste during part-load conditions.

- Demand Response Participation: Assess the system's participation in demand response programs to reduce peak energy demand and support grid reliability.

Maintenance and Reliability

- system Downtime: Measure the frequency and duration of HVAC system downtime due to maintenance, repairs, or equipment failures.
- Mean Time Between Failures (MTBF): Calculate the average time elapsed between system failures or breakdowns, reflecting system reliability. (Done in CMMS Systems)
- Maintenance Costs: Track the cost of preventive maintenance, repairs, and replacement of HVAC equipment and components. (Done in CMMS systems)

Digital Audit view of the system connected.

Siloed IOT systems can be integrated via API/global protocols to command center or to BMS via global protocols.

BMS Audit view of the System.

- BMS needs to be brought to working condition. Work is under progress.

System 7: Water Management System

Water Management System to include the following

- Water Extraction System
- Sewage Treatment Plant
- Wastewater Treatment Plant
- Irrigation System

Use cases for Water Management System

- Use Case 1: Leak Detection and Prevention
- Use Case 2: Water Utilization Index for net zero requirements.
- Use case 3: Water Quality Management
- Use case 4: Water Demand Management
- Use Case 5: Regulatory compliance and reporting.
- Use Case 6: Remote Command and Control

KPI's Needed for command centre operations of Water Management System

Water Usage and Conservation

- Water Consumption: Measure the total water consumption of the property over a specific period, typically in gallons or cubic meters.
- Water Conservation Rate: Calculate the percentage reduction in water usage achieved through conservation measures such as leak detection, irrigation optimization, and fixture upgrades.
- Water Intensity: Assess the water consumption per unit area (e.g., gallons per square foot) to evaluate efficiency relative to building size and occupancy.

Leak Detection and Prevention

- Leak Detection Rate: Calculate the number of water leaks detected and resolved by the command center compared to the total number of leaks identified.
- Leak Repair Time: Measure the average time taken to identify, locate, and repair water leaks from the time of detection to resolution.

Water Quality and Compliance

- Water Quality Compliance: Monitor compliance with water quality standards, regulations, and permits governing drinking water, wastewater discharge, and environmental protection.
- Water Contamination Incidents: Track the number and severity of water contamination incidents, spills, or exceedances of regulatory limits requiring remediation or reporting.

Energy Efficiency and Cost

- Energy Consumption: Assess the energy consumption of water management systems, including pumps, treatment plants, and distribution networks, typically in kilowatt-hours (kWh).
- Energy Cost Savings: Calculate the monetary savings achieved through energy-efficient operation, optimization strategies, and equipment upgrades in water systems.

Environmental Impact and Sustainability

- Water Conservation Measures: Evaluate the effectiveness of water conservation initiatives, reuse/recycling programs, and sustainable water management practices in reducing water usage and environmental impact.
- Water Footprint Reduction: Measure the reduction in the property's water footprint achieved through efficiency improvements, conservation measures, and sustainable practices.

Digital Audit view of the system connected.

Integration can be achieved using Modbus RTU with command center. Integration of command center with Access Control system can help in automatic capture of LPHD.

Leak detection is already integrated to BMS which eases the integration to command center.

BMS Audit view of the System.

BMS must be brought to working condition.

System 8: Fire Alarm Systems

Use cases for Fire Alarm Systems

- Use Case 1: Tracking of training and inventory for response.
- Use case 2: Early detection and diagnostics including alarm management.
- Use case 3: Integrated HVAC approach using Digital twin.
- Use Case 4: Incidence documenting and reporting.

KPI's Needed for command centre operations of fire Alarm systems.

Alarm Response Time

- Alarm Acknowledgment Time: Measure the time taken by operators to acknowledge incoming fire alarm signals after detection.
- Emergency Response Time: Calculate the time elapsed between the activation of a fire alarm and the initiation of emergency response actions, such as evacuation procedures or notification of emergency services.
- False Alarm Rate: Monitor the frequency of false alarms triggered by environmental factors, system malfunctions, or user error relative to the total number of alarm activations.
- Operator Response Rate: Measure the percentage of fire alarms acknowledged and responded to by operators within a specified timeframe.

System Reliability and Maintenance

- System Availability: Assess the percentage of time that fire alarm systems operate without interruptions or failures during scheduled hours.
- Preventive Maintenance Compliance: Monitor adherence to scheduled maintenance tasks, inspections, and testing procedures for fire alarm devices and systems.

Emergency Preparedness and Training

- Drill Participation Rate: Assess the participation and attendance rates for fire drills, tabletop exercises, and emergency response training sessions among command center operators, building occupants, and emergency responders.
- Emergency Response Effectiveness: Conduct post-incident evaluations and debriefings to assess the effectiveness of emergency response procedures, communication protocols, and evacuation plans during simulated or actual fire events.

Regulatory compliance and Reporting

- Compliance with Standards: Ensure compliance with local, state, and national fire safety codes, regulations, and standards governing fire alarm systems, testing, inspection, and maintenance requirements.
- Incident Reporting Accuracy: Generate accurate and comprehensive incident reports, documentation, and records for regulatory compliance, insurance purposes, and legal liability.

Digital Audit view of the system connected.

FAS is integrated with BMS, data can be picked from the BMS to command center.

ECM-18 OPERATIONAL COST REDUCTIONS BY IMPLEMENTING DIGITAL ENHANCEMENT

ECM 18: Backup calculation:

ECM : 18 - Operational cost reductions by implementing Digital enhancement			
Description	Unit	Formula	Value
Present System:			
Annual Chiller Plant Energy consumption at SEZ	kWh	A	2,325,993
Annual Chiller Plant Energy consumption at NSEZ	kWh	B	585,708
Overall Annual Chiller Plant Energy consumption for both SEZ & NSEZ	kWh	C=A+B	2,911,701
Overall Annual Chiller Plant Energy cost for both SEZ & NSEZ	INR	D	31,038,733
Proposed System:			
Anticipated cost reduction after Digital Enhancement	%	E	4%
	kWh	F=D*E	116,468
	INR	G=C*E	1,241,549
Investments:			
Investment for Open Blue Digital solution with one year subscription	INR	G	10,389,691
Payback:	Years	H=G/F	8.4
Note:			
1. One time charges for Third party integration connector to our Open Blue platform is 22,000 US dollars.			
2. Year on year subscription charges will be accountable to HCL.			
3. Above digital deployment will act as a command center prospective which will give further 4% operational cost reduction from the facility operations.			