TSL/MOEFCC/CRM/2024/11-1
November 29, 2024

**The Deputy Director General of Forests (C)**
Integrated Regional Office
Ministry of Environment, Forest and Climate Change,
Kendriya Bhawan, 5th Floor, Sector "H", Aliganj,
Lucknow – 226020

**Subject:** Half yearly EC compliance reports of existing production facilities for 0.91 MTPA Cold rolled strips & sheets (1250 MT/Day) and Galvanized plain/corrugated sheets (1250 MT/Day) at Plot no-23, Site-IV, Industrial Area, Sahibabad, District Ghaziabad, Uttar Pradesh by M/s Tata Steel Limited for April'24 to September'2024.

**Reference:** EC vide letters no. IA-J-11011/497/2021-IA-II(IND-I) Dated 09.07.2024

Dear Sir,

This has reference to the captioned subject and cited references. It is to inform that we are herewith submitting six monthly compliance reports for the period from April'24 to September'2024. for the conditions stipulated in Environmental Clearance of 0.91 MTPA Cold rolled strips & sheets (1250 MT/Day) and Galvanized plain/corrugated sheets (1250 MT/Day) at Plot no-23, Site-IV, Industrial Area, Sahibabad, District Ghaziabad, Uttar Pradesh by M/s Tata Steel Limited for your kind considerations.

The copy of above compliance report is also being sent in soft format through email (rocz.lko-mef@nic.in, monitoring-ec@nic.in) for your kind perusal. Also copy of EC compliance is being uploaded on MoEF&CC website on Parivesh Portal-2 http:// environmentalclearance.nic.in.

Hope, the above are in line with the statutory requirements.

Thanking you,

Yours faithfully,
**For Tata Steel Limited**

Anoop Srivastava

**Anoop Srivastava**
**Chief Environment -TSM**

**Copy to:**

I. The Member Secretary, Uttar Pradesh State Pollution Control Board, Building. No. TC-12V. Vibhuti Khand, Gomti Nagar. Lucknow-226 010
II. The Regional Officer, Uttar Pradesh Pollution Control Board, Vasundhara Ghaziabad.

| Sl. N. | EC Conditions | Compliance Status |
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| **1.** | **Specific Conditions** | |
| 1.1 | This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project. | **Agreed.** Unit abide all the directions & conditions of nodal bodies. |
| 1.2 | The PP shall strictly comply with the Directions issued by the Commission for Air Quality Management in National Region and Adjoining Areas. | **Agreed.** Compliance to all the applicable directions issued by the Commission for Air Quality Management in National Region and Adjoining Areas are being ensured. |
| 1.3 | In pursuance to MoEF&CC OMs dated 31st October, 2019 & 30th December, 2019 issued in compliance of the order of Hon'ble NGT in OA No. 1038/2018 dated 19th August, 2019, the compliance of all the conditions applicable to CEPI shall be implemented as per the submitted plan. | **Agreed &** complied all the conditions applicable to CEPI are being ensured, as per the submitted plan. |
| 1.4 | The industry shall use PNG gas as per direction no. 64 of the Commission for Air Quality Management in National Region and Adjoining Areas by 30.09.2022. | **Complied.** The industry has been using LNG on plant operation. |
| 1.5 | The PP shall strictly implement the mitigation measures to minimise the ambient air pollution so that the Air Quality Data will be as per notified Standards. | **Complied.** The industry has strictly implemented all the mitigation measures to minimize the ambient air pollution and to improve the Air Quality Data. |
| 1.6 | The project proponent shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented. | **Complied.** The industry has been complied all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. And the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project are being ensured. |
| 1.7 | The project proponent shall utilize modern technologies for capturing of carbon emitted and shall also develop carbon sink/carbon sequestration resources capable of capturing more than emitted. The implementation report shall be submitted to the IRO, MoEF&CC in this regard. | **Complied.** The industry has implemented energy efficiency project to reduce carbon emission per metric ton steel production. SDA & BEE report attached as **annexure-1** for your kind reference. |
| 1.8 | Ghaziabad is at a distance of 1 km and other sensitive areas such as Health centers, Schools etc. within the study area of the project site. Proponent shall take appropriate environmental safeguard measures to minimise the impact on the habitation of the locals. The project proponent needs to strengthen green belt all around the plant area to reduce the dust pollution. The PP shall also | **Complied.** The industry has been taken & implemented all the appropriate environmental safeguard measures to minimize the impact on the local habitations.<br>Unit has targeted to develop a green belt of 40% of land in and outside the plant premises. The industry has been conducted Environmental Monitoring program in define locations in plant area through NABL approved laboratory. |

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| | include some of these locations in its environmental monitoring programme. | Ambient air quality reports attached as **annexure-2** for your kind reference. |
| 1.9 | As reported, Hindon Cut is at a distance of 1.5 km, eastern Yamuna Canal at 2 km along with other water bodies within the study area of the project site. A robust and full proof Drainage Conservation scheme to protect the natural drainage and its flow parameters; along with Soil conservation scheme and multiple Erosion control measures shall be implemented. | Compliance to the stipulated condition is being ensured. |
| 1.10 | Approved Management plan for Okhla Bird Sanctuary shall be strictly implemented. | **Being Complied**. Compliance to the stipulated condition is being ensured. |
| 1.11 | The water requirement of 1962 KLD, is proposed to be obtained from ground water. PP shall obtain necessary permission from the Competent Authority. Also as committed, PP shall undertake gradual phasing out of groundwater and switch to alternate source of water. | **Complied.** The industry has been reducing the water requirement and obtained NOC for drawl of 1530 KLD from Uttar Pradesh Ground Water Department (UPGWD). NOC attached as **annexure-3** for your kind reference. We have make an agreement with Ghaziabad Nagar Nigam (GNN) for supply of STP Treated water for plant operation. Agreement Copy attached as Annexure-3(a). |
| 1.12 | Three tier Green Belt shall be developed in atleast 40% of the project area in a period of 1 year of adequate width and tree density shall not be less than 2500 per ha. Survival rate of green belt developed shall be monitored on periodic basis to ensure that damaged plants are replaced with new plants in the subsequent years. PP shall develop greenbelt in the form of shelter belt comprising of total of 6 rows of 2x2 m plantation with tall trees & broad leaves with thick canopy along with windshield inside the plant premises to act as green barrier for air pollution & noise levels towards sensitive areas nearby project site. Compliance status in this regard, shall be submitted to concerned Regional Office of the MoEF&CC. | **Being Complied.** Plantation is being done in and around the existing plant as per the patches of land as allotted by Ghaziabad Nagar Nigam. Efforts are being put to plant more no. of saplings to go beyond the compliance requirement of 40% (7.12 ha) of the total existing plant area of 17.8 ha. Details attached as **annexure-4** for your kind reference. |
| 1.13 | All the commitments made towards socio-economic development of the nearby villages shall be satisfactorily implemented. The action plan based on the social impact assessment study of the project as per the EMP in accordance to the Ministry's OM dated 30.09.2020 shall be strictly implemented and progress shall be submitted to the Regional Office of MoEF&CC. | **Shall be complied.** The industry has been initiated multiple development program nearby village under CSR initiatives. Report Attached as **annexure-5** for your kind reference. |
| 1.14 | The project proponent shall undertake village adoption program and prepare and implement the action plan to develop them into a model village. | **Shall be Complied.** |
| 1.15 | The recommendations of the approved Site-Specific Wildlife Management Plan shall be | **Shall be complied**. A Management plan for Okhla Bird Sanctuary (2022-23 to 2031-32) has |

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| | implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report to the concerned Regional Office of the MoEF&CC. | been prepared by Divisional Forests Officer, Gautam Budh Nagar and same has been approved from Principal Chief Conservator of Forest, Wildlife, Uttar Pradesh vide letter no. 3115/ 23-7-9, Lucknow dated 26th May 2022 |
| 1.16 | Tree Plantation to be developed in 7.12 Ha and the same should be taken up under #एक पेड़ माँ के नाम campaign and their survival be ensured. | **Being Complied.** The Industry has been initiated and being planted 55000 Saplings under the campaign #एक पेड़ माँ के नाम in this year. |
| **Standard EC Conditions** | | |
| **1. Specific Conditions** | | |
| 1.1 | The Environment Clearance (EC) granted to the project/ activity is strictly under the provisions of the EIA Notification, 2006 and its amendments issued from time to time. It does not tantamount/ construe to approvals/ consent/ permissions etc., required to be obtained or standards/conditions to be followed under any other Acts/Rules/Subordinate legislations, etc., as may be applicable to the project. | **Agreed.** The industry shall be abiding all the applicable conditions as stipulated in the Acts/Rules/Subordinate legislation. |
| 1.2 | This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project. | Agreed. |
| **2. Air Quality Monitoring And Preservation** | | |
| 2.1 | The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission as well as 04 Nos. Continuous Ambient Air Quality Station (CAAQMS) for monitoring AAQ parameters with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time. The CEMS and CAAQMS shall be connected to SPCB and CPCB online servers and calibrate these systems from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories. (case to case basis small plants: Manual; Large plants: Continuous and their no's.) | Complied. The industry has been installed CEMS at all process stack and connected with CPCB/SPCB server.<br>The industries have installed 01 No. of Continuous Ambient Air Quality Station (CAAQMS) for the monitoring of AAQ parameters with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time. Connectivity of CAAQMS to CPCB/SPCB server will be initiated. We have also conducted manual Environment monitoring through NABL approved laboratory and report has been attached as **annexure-2** for your kind reference. |
| 2.2 | The project proponent shall carryout Continuous Ambient Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g. PM10 and PM2.5 in reference to PM emission, and SO2 and NOx in reference to SO2 and NOx emissions) within and outside the plant area (at least at four locations one | The industries have installed 01 No. of Continuous Ambient Air Quality Station (CAAQMS) for the monitoring of AAQ parameters with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time and conducted manual Ambient Air Quality monitoring at 4 |

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| | within and three outside the plant area at an angle of 120° each), covering upwind and downwind directions. | location covering upward & downward location. Test report attached as **annexure 2**. |
| 2.3 | The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through laboratories recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories. | **Complied.** Fugitive Emissions in the plant premises are being monitored through NABL accredited laboratory. monitoring reports attached as **annexure 2** for your kind reference. |
| 2.4 | Sampling facility at process stacks and at quenching towers shall be provided as per CPCB guidelines for manual monitoring of emissions. | **Complied.** Sampling facility for manual monitoring of emissions at process stacks and at quenching towers are provided as per the CPCB guidelines. |
| 2.5 | Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed stack emission and fugitive emission standards. | **Complied.** The industry has installed appropriate Air Pollution Control (APC) system for all the dust generating points so as to comply prescribed stack emission standards. Stack monitoring report attached as **annexure 2** for your kind reference. |
| 2.6 | The project proponent shall provide leakage detection and mechanized bag cleaning facilities for better maintenance of bags. | **Not Applicable.** |
| 2.7 | Sufficient number of mobile or stationery vacuum cleaners shall be provided to clean plant roads, shop floors, roofs, regularly. | **Complied.** The industry has been deployed road sweeping machine to improve housekeeping in plant area. |
| 2.8 | Ensure covered transportation and conveying of raw material to prevent spillage and dust generation. The project proponent use leak proof trucks/dumpers carrying coal and other raw materials and cover them with tarpaulin. | **Complied.** The industry has been provided tarpaulin cover when applicable to prevent spillage. |
| 2.9 | The project proponent shall provide primary and secondary fume extraction system at all heat treatment furnaces. | **Complied.** Industry has installed the fume extraction system at heat treatment furnaces. |
| 2.10 | Wind shelter fence and chemical spraying shall be provided on the raw material stock piles. | **Not applicable.** The industries having no Stockpiles in plant**.** |
| 2.11 | Design the ventilation system for adequate air changes as per prevailing norms for all tunnels, motor houses, Oil Cellars. | **Complied.** The industries have provided adequate ventilation system in oil cellars to increase air circulation. |
| 2.12 | Pollution control system in the plant shall be provided as per the CREP Guidelines of CPCB. | **Complied.** The industries have provided adequate Pollution control devices as per CPCB/SECB norms. |
| 2.13 | The project proponent shall adopt the Clean Air practices like mechanical collectors, wet scrubbers, fabric filters (bag houses), electrostatic precipitators, combustion systems (thermal oxidizers), condensers, absorbers, adsorbers, and biological degradation. Controlling emissions related to transportation shall include emission controls on vehicles as well as use of cleaner fuels. | **Complied.** The industries have provided adequate Pollution control devices to arrest pollutants generated due to operation. The industry have using LNG as fuel hence no contribution in increase the pollutants load in atmosphere. |

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| | Sufficient numbers of additional truck mounted Fog/Mist water cannons shall be procured and operated regularly inside the project premises and also in the surrounding villages to arrest suspended dust in the atmosphere. | |
| 2.14 | Bag filters shall be cleaned regularly and efficiency of bag filter system shall be monitored at regular intervals. | **Not applicable.** |
| 2.15 | Water Sprinklers/Water mist system shall be installed near raw material yards, operational units and other strategic locations to control fugitive emissions from the plant. | **Not applicable.** |
| 2.16 | The particulate matter emissions from the process stacks shall be less than 30 mg/Nm3 and measures shall be undertaken as per the submitted action plan. Efficient Air monitoring equipment shall be installed. | **Complied.** The industries have using LNG as fuel hence particulate matter emissions are well under the prescribed norms. Stack Monitoring report attached as **annexure 2** for your kind reference. |
| 2.17 | Following additional arrangements to control fugitive dust shall be provided: a. Fog / Mist Sprinklers at all on bulk raw material storage area (at the transfer points) like Iron Ore, Coal and for Fly Ash and similar solid waste storage areas. b. Proper covered vehicle shall be used while transport of materials. c. Wheel washing mechanism shall be provided in entry and exit gates with complete recirculation system. | **Not applicable.** The industries have operating only rolling mill and using Hot rolled coil as row materials. |
| **3.** | **Water Quality Monitoring And Preservation** | |
| 3.1 | The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories. | **Complied.** The industry has been achieved Zero Effluent Discharge ZED. Aside, the Continuous effluent monitoring systems (CEMS) are in place to control the quality of effluent and improve the effectiveness of treatment processes and provided connectivity to CPCB and SPCB Server. |
| 3.2 | The project proponent shall monitor regularly ground water quality at least twice a year (pre- and post monsoon) at sufficient numbers of piezometers/sampling wells in the plant and adjacent areas through labs recognized under Environment (Protection) Act, 1986 and NABL accredited laboratories. | **Complied.** The industry are being monitored ground water quality on half yearly basis through NABL approved lab. Ground water Report attached as **annexure-2** for your ready reference. 7 numbers of piezometer are instilled in plant area to monitor ground water table. |
| 3.3 | Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off. | **Not Applicable.** Stock pile not available in plant area. |

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| 3.4 | Water meters shall be provided at the inlet to all unit processes in the steel plants. | **Complied.** Water meter is installed at inlet as well as out lets of process. |
| 3.5 | The project proponent shall make efforts to minimize water consumption in the steel plant complex by segregation of used water, practicing cascade use and by recycling treated water. | **Complied.** We have installed & Operate ZED plant to reuse and recycle of Effluent generated in plant premises. |
| 3.6 | The proposed project shall be designed as Zero Liquid Discharge Plant. ETP shall be installed and there shall be no discharge of effluent from the plant. Domestic effluent shall be treated in Sewage Treatment Plant. Suitable measures shall be adopted for sewage water handling to ensure no contamination of any kind of water body. | **Complied.** The industry has been installed 800 KLD ETP & 60 KLD STP Plant followed by ZED to treat the effluent generated in plant premises and reuse after treatment. |
| 3.7 | All stockyards shall have impervious flooring and shall be equipped with water spray system for dust suppression. Stock yards shall also have garland drains and catch pits to trap the run off material and shall be implemented as per the action plan submitted in EIA/EMP report. | **Complied.** The industry have make arrangement to store the finish good under cover shed and impervious flooring to prevent ground water contamination as well as dust generation. |
| 3.8 | Rain water harvesting shall be implemented to recharge/harvest water as per the action plan submitted in the EIA/EMP report. | **Complied.** The industry have installed and maintained rain water harvesting structure inside the plant premises through Ranmaxx technology as well as 8 Numbers of adopted village ponds to catch runoff and improve the water table. The total potential would be 432000 CUM per annum. Details report attached as **annexure 6** for your kind reference. |
| **4.** | **Water Quality Monitoring And Preservation In Case Of Rolling Mills** | |
| 4.1 | The project proponent shall provide the ETP for effluents of rolling mills to meet the standards prescribed in G.S.R 277 (E) 31st March 2012 (applicable to IF/EAF) as amended from time to time. (in case of rolling mills) | **Complied.** The industry has installed and operate 800 KLD ETP followed by ZED plant to effective treatment and reuse of effluents. |
| 4.2 | Cold Rolling Mill (CRM), color coating and galvanizing plants shall have CETP to treat and recycle the treated water from CRM complex. Sludge generated at CRM ETP shall be sent to TSDF. (in case of cold rolling mills) | **Complied.** The industry has installed and operate 800 KLD ETP followed by ZED plant to effective treatment and reuse of effluents. During treatment of effluent the generated Sludge is being send to TSDF for disposal. |
| **5.** | **Noise Monitoring And Prevention** | |
| 5.1 | Noise pollution shall be monitored as per the prescribed Noise Pollution (Regulation and Control) Rules, 2000 and amendments thereof, and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report. | **Complied.** The industry has been monitored Noise pollution level through NABL accredited laboratory and monitoring report attached as **annexure 2** for your kind reference. |
| 5.2 | The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. | **Complied.** The industry has been monitored ambient noise level through NABL accredited |

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| | 75 dB(A) during day time and 70 dB(A) during night time. | laboratory and monitoring report attached as **annexure 2** for your kind reference. |
| **6.** | **Energy Conservation Measures** | |
| 6.1 | Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly; | **Complied.** The industry has been installed and maintain 100.4 KVA rooftop solar panel to promote renewal energy initiatives. |
| 6.2 | Provide LED lights in their offices and residential areas. | **Complied.** The industry has been installed LED light in plant as well as office area to reduce power consumption. |
| **7.** | **Waste Management** | |
| 7.1 | Oil Collection pits shall be provided in oil cellars to collect and reuse/recycle spilled oil. Oil collection trays shall be provided under coils on saddles in cold rolled coil storage area. | **Complied.** The industry has been made oil collection pit in cellars and same has been transfer into barrel and sent to PCB approved recycler. |
| 7.2 | Kitchen waste shall be composted or converted to biogas for further use. | **Complied.** The industry has been installed Compost machine to convert all Canteen generated Biodegradable waste in compost. |
| 7.3 | 100% utilization of fly ash shall be ensured. All the fly ash shall be provided to cement and brick manufacturers for further utilization and Memorandum of Understanding in this regard shall be submitted to the Ministry's Regional Office. | **Not Applicable**. Fly ash not generated due to plant operation. |
| 7.4 | The Plastic Waste Management Rules 2016, inter alia, mandated banning of identified Single Use Plastic (SUP) items with effect from 01/07/2022. In this regard, CPCB has issued a direction to all the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) on 30/06/2022 to ensure the compliance of Notification published by Ministry on 12/08/2021. The technical guidelines issued by the CPCB in this regard is available at https://cpcb.nic.in/technical-guidelines-3/. All the project proponents are hereby requested to sensitize and create awareness among people working within the Project area as well as its surrounding area on the ban of SUP in order to ensure the compliance of Notification published by this Ministry on 12/08/2021. A report, along with photographs, on the measures taken shall also be included in the six monthly compliance report being submitted by the project proponents. | **Complied.** The industry has been get registration of EPR for Plastic Waste Management (PWM) and disposed of accordingly.<br>We have initiated to provide awareness training in local surrounding area towards ban of single use plastic. |
| 7.5 | A proper action plan must be implemented to dispose of the electronic waste generated in the industry. | **Complied.** The industry has been disposed of all e-waste through PCB approved recycler/refurbisher. |
| **8.** | **Green Belt** | |
| 8.1 | The project proponent shall prepare GHG emissions inventory for the plant and shall submit | **Being Complied.** The industry has targeted to develop a green belt on 7.12 Ha of land, that will |

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| | the programme for reduction of the same including carbon sequestration by trees. | support as a sink & helps to sequestrate the emitted carbon. |
| 8.2 | Project proponent shall submit a study report on Decarbonization program, which would essentially consist of company's carbon emissions, carbon budgeting/ balancing, carbon sequestration activities and carbon capture, use and storage and offsetting strategies. Further, the report shall also contain time bound action plan to reduce its carbon intensity of its operations and supply chains, energy transition pathway from fossil fuels to Renewable energy etc. All these activities/ assessments should be measurable and monitor able with defined time frames. | **Complied.** The industry has been conducted study through (BEE) Burro of Energy efficiency and report has been attached as **annexure 7** for your kind reference. |
| 8.3 | Greening and Paving shall be implemented in the plant area to arrest soil erosion and dust pollution from exposed soil surface. | **Complied.** The industry has been implemented greening & paving in the plant area to protect soil erosion. |
| **9.** | **Public Hearing And Human Health Issues** | |
| 9.1 | Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented. | **Complied.** Emergency Preparedness plan has been available to handle if emergency situation occurred in plant premises. Plan attached as **annexure 8** for your kind reference. |
| 9.2 | The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms. | **Will be complied.** |
| 9.3 | 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, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project. | **Not Applicable.** The industry has been operating since 1090 and no residential facility available in plant area. |
| 9.4 | Occupational health surveillance of the workers shall be done on a regular basis and records maintained. | **Complied.** We have conducted Health examination i.e. PME for worker and record is being maintained in Plant OHC. |
| **10.** | **Environment Management** | |
| 10.1 | The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 30/09/2020. As part of Corporate Environment Responsibility (CER) activity, company shall adopt nearby villages based on the socio-economic survey and undertake community developmental activities in consultation with the village Panchayat and the District Administration as committed. | **Being Complied.** The industry has been initiated multiple programs nearby surrounding area under CSR initiative to upliftment of people and community. Report Attached as **annexure 5** for your kind reference. |

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| 10.2 | The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report. | **Complied**. The industry has a separate environmental Policy includes all aspect which is signed by CEO & MD. Copy attached as **annexure 9** for your kind reference. |
| 10.3 | A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization. | **Complied,** An Environmental Management Cell (EMC) has been formed, which is responsible for monitoring EMP and its implementation. Head - Environment is looking for environmental management at Plant who reports Chief (Environment) at corporate level. |
| 10.4 | Performance test shall be conducted on all pollution control systems every year and report shall be submitted to Integrated Regional Office of the MoEF&CC. | **Shall be Complied.** |
| **11.** | **Miscellaneous** | |
| 11.1 | The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently. | **Complied.**<br>Environmental Clearance has been advertised in two local newspapers i.e., Nav Bharat Times Ghaziabad in Hindi language and Times of India Ghaziabad in English language on July 15, 2024.<br>The same has already been communicated to the Regional Office of MOEF&CC, vide our letter no TSL/EC-CRM/2024/07-01 July 16, 2024. |
| 11.2 | The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt. | **Complied.**<br>Environmental Clearance copy has been submitted to local government authority i.e. Municipal commissioner UPPCB etc. Receiving copy attached as **annexure 10** for your kind reference. |
| 11.3 | The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis. | **Complied.**<br>Environmental Clearance has been uploaded and displayed on our company website https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports |

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| 11.4 | The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company. | **Complied.** All the pollutants level being monitored and displayed at the main gate of the Company. |
| 11.5 | Action plan for developing connecting and internal road in terms of MSA as per IRC guidelines shall be implemented. | **Being complied.** |
| 11.6 | The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal. | **Agreed.** Half yearly compliance report will be uploaded on company website after submission of 1st compliance report. |
| 11.7 | The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company. | **Complied.** The Environmental Statement in Form-V is being submitted to SPCB on before 30th September of every year. The Environment Statement for the FY 2023-24 was submitted vide letter no. TSL/UPPCB/Form-V/2024/09-1 dated- 27th September 2024. |
| 11.8 | The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project. | **Not applicable.** The industry has operated since 1990. |
| 11.9 | The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee. | **Agreed and being complied.** |
| 11.10 | The recommendations of the approved Site-Specific Wildlife Management Plan (in case of involvement of Schedule-I species) shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report to the concerned Regional Office of the MoEF&CC. | **Being Complied.** Okhla Bird Sanctuary is falling in Gautam Budh Nagar district is more than 8 km from existing plant site located at industrial area site 4, Ghaziabad. As per the EIA study report, there are no direct and indirect evidence of presence of any wildlife in the core & buffer area of the plant site. A Management plan for Okhla Bird Sanctuary (2022-23 to 2031-32) has been prepared by Divisional Forests Officer, Gautam Budh Nagar and same has been approved from Principal Chief Conservator of Forest, Wildlife, Uttar Pradesh vide letter no. 3115/ 23-7-9, Lucknow dated 26th May 2022. |
| 11.11 | The PP shall put all the environment related expenditure, expenditure related to Action Plan on the PH issues, and other commitments made in the | **Complied.** |

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| | EIA/EMP Report etc. in the company web site for the information to public/public domain. The PP shall also put the information on the left over funds allocated to EMP and PH as committed in the earlier ECs and shall be carried out and spent in next three years, in the company web site for the information to public/public domain. | Environmental Clearance and supporting documents has been uploaded and displayed on our company website https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports |
| 11.12 | No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC). | **Agreed.** |
| 11.13 | Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986. | **Agreed.** |
| 11.14 | The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory. | **Agreed.** |
| 11.15 | The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions. | Agreed & shall be complied. |
| 11.16 | The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports. | **Agreed.** |
| 11.17 | Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010. | **Agreed.** |

# FORM-3

Refer rule 3(2)

DETAILS OF ENERGY EFFICIENCY IMPROVEMENT MEASURES IMPLEMENTED, INVESTEMENT MADE AND SAVINGS IN ENERGY ACHIEVED AND PROGRESS MADE IN THE IMPLEMENTATION OF OTHER RECOMMENDATIONS

**A. Implemented : - (2023-24)**

| Sr. No. | Description of Energy efficiency Improvement measure | Category | Investment (Rupees) | Verified Savings (Rupees) – Annual) | Verified energy savings- (Annual) | Units | Fuel | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | R-LNG Saving by Installation of Condencing Economiser at Steam Boiler @ 2.93 to 2.75 MMBTU per ton Steam Generation | 26 | 7935000 | 11479628 | 9060 | MMBTU | R-LNG | Meter Readings |
| 2 | R-LNG Consumption of NOF Furnace - GP-3, saving by tuning and balancing its burners at regular time intervals @ 0.82 MMBTU/ton of Product to 0.80 MMBTU / tons of Product. | 26 | - | 2240056 | 1768 | MMBTU | R-LNG | Meter Readings |
| 3 | Reduction of R-LNG Consumption by fine tuning of burners at CCL Line @ 3.01 MMBTU/ton to 2.97 MMBTU/ton of Product. | 26 | - | 1824480 | 1440 | MMBTU | R-LNG | Meter Readings |
| 4 | Replacement of 10L Nitrogen Charged Accumulator with 32L Capacity Accumulator at exit vertical accumulator GP-3 that caused permanent stopage of 1 Nos 37 KW Motor - Pump Set. Before 2 Nos of 37 KW Motor Pump set were used. | 20 | 180000 | 1475201 | 203476 | KWh | - | Meter Readings |
| 5 | Compressed Air leakage arresting & Reduction in Air Pressure as per indiviual Complex | 17 | - | 6632010 | 914760 | KWh | - | Meter Readings |
| 6 | Installation of VFD in place of Starter in GP-1, 37 KW & 1460 rpm Motor of Air Dilution blower | 20 | 950000 | 597146 | 82365 | KWh | - | Meter Readings |

(Sunil Kr)

Kamalesh Kr

**B. Recommended Energy Conservation Measures in Mandatory Energy Audit: - November-2021**

| Sr. No. | Description of Energy efficiency Improvement measure | Category | Estimated Investment (Rupees) | Estimated Savings (Rupees) | Estimated Annual Energy Savings | Units | Fuel | Status of Implementation |
|---|---|---|---|---|---|---|---|---|
| 2 | ECM 2- Installation of return air line for Substation AHU. | | 500000 | 775000 | 109 | MWh | - | Discussions with vendors under progress |
| 3 | ECM 3- Optimization of Oxygen Level in furnace | | 12800000 | 69842000 | 1838 | KSCM | R-LNG | Discussions with vendors for feasibility under progress |

Signature

Nature of Energy Manager : EA-24842

Name of the Company : TATA STEEL LIMITED

Full Address : 23 Site-IV Sahibabad Industrial Area

Sahibabad Ghaziabad U.P. - 201010

Contact Person : SUNIL KUMAR

Email Address : sunil.kumar50@tatasteel.com

Telephone/ Fax number : 0120-2770601/0120-773602

Signature

Name of the accredited energy auditor : Kamalesh K Jha

Accreditation Details : AEA -0007

Seal

Pedmashtdar Energy Services Private Limited
Kamalesh Kumar Jha
Accredited Energy Auditor
AEA No. 0007
New Delhi

# ENVIRO-TECH SERVICES

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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-1/11/2024 ULRNO.TC130092400019051F DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 22.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Duration Of Monitoring** : 22.11.2024 To 23.11.2024
**Time Of Monitoring** : 10.50 AM To 10.50 AM (24 Hrs.)
**Sample ID No** : 1905-1
**Sampling Done By** : ETS STAFF
**Sampling Location** : NEAR MEDICAL ROOM (GREEN BELT AREA)
**Sampling Method** : ETS/STP/AIR-01
**Sampling Machine Placed At Height** : 1.5 METER FROM GROUND LEVEL
**Weather Condition** : CLOUDY **Ambient Temperature:** 25.0 $^{0}$C
**Wind Direction** : E To W
**Equipment Used** : Respirable Dust Sampler ($PM_{10}$) + Fine Particulate Sampler ($PM_{2.5}$)

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Particulate Matters,($PM_{10}$) | $\mu g/m^3$ | 174.8 | For 24 Hrs.=100 | IS 5182 (Part-23) |
| 2 | Particulate Matters,($PM_{2.5}$) | $\mu g/m^3$ | 64.2 | For 24 Hrs.=60 | IS 5182 (Part-24) |
| 3 | Sulphur Dioxide, ($SO_2$) | $\mu g/m^3$ | 12.6 | For 24 Hrs.=80 | IS: 5182 (Part-2) |
| 4 | Nitrogen Dioxide,($NO_2$) | $\mu g/m^3$ | 28.1 | For 24 Hrs.=80 | IS: 5182 (Part-6) |
| 5 | Ammonia,($NH_3$) | $\mu g/m^3$ | <20.0 | For 24 Hrs.=400 | IS 5182 (Part-25) |
| 6 | Ozone,($O_3$) | $\mu g/m^3$ | 15.0 | For 1 Hrs.=180 | IS: 5182 (Part.-9) |
| 7 | Lead,(Pb) | $\mu g/m^3$ | <0.05 | For 24 Hrs.=1 | IS 5182 (Part-22) |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMAYUN
Quality Manager



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ISO 45001

# TEST REPORT

TEST REPORT NO.: ETS/1905-1/11/2024 DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 8 | Arsenic,(As) | $ng/m^3$ | <1.0 | For Annual=06 | CPCB,Vol.-1, Pg.-48 |
| 9 | Nickel,(Ni) | $ng/m^3$ | <1.0 | For Annual=20 | IS 5182 (Part-26) |
| 10 | Carbon Monoxide,(CO) | $mg/m^3$ | 0.52 | For 1 Hrs.=4 | IS 5182 : Part 10 |
| 11 | Benzo (a) Pyrine (BaP) | $ng/m^3$ | <0.05 | For Annual=01 | IS: 5182 (Part-12) |
| 12 | Benzene,($C_6H_6$) | $\mu g/m^3$ | <1.0 | For Annual =5 | IS 5182 (Part-11) |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES
AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-2/11/2024 ULRNO.TC130092400019052F DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 22.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Duration Of Monitoring** : 22.11.2024 To 23.11.2024
**Time Of Monitoring** : 10.32 AM To 10.32 AM (24 Hrs.)
**Sample ID No** : 1905-2
**Sampling Done By** : ETS STAFF
**Sampling Location** : NEAR ETP AREA
**Sampling Method** : ETS/STP/AIR-01
**Sampling Machine Placed At Height** : 1.5 METER FROM GROUND LEVEL
**Weather Condition** : CLOUDY **Ambient Temperature:** 25.0 $^{0}$C
**Wind Direction** : E To W
**Equipment Used** : Respirable Dust Sampler ($PM_{10}$) + Fine Particulate Sampler ($PM_{2.5}$)

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Particulate Matters,($PM_{10}$) | $\mu g/m^3$ | 165.4 | For 24 Hrs.=100 | IS 5182 (Part-23) |
| 2 | Particulate Matters,($PM_{2.5}$) | $\mu g/m^3$ | 68.2 | For 24 Hrs.=60 | IS 5182 (Part-24) |
| 3 | Sulphur Dioxide, ($SO_2$) | $\mu g/m^3$ | 11.5 | For 24 Hrs.=80 | IS: 5182 (Part-2) |
| 4 | Nitrogen Dioxide,($NO_2$) | $\mu g/m^3$ | 28.0 | For 24 Hrs.=80 | IS: 5182 (Part-6) |
| 5 | Ammonia,($NH_3$) | $\mu g/m^3$ | <20.0 | For 24 Hrs.=400 | IS 5182 (Part-25) |
| 6 | Ozone,($O_3$) | $\mu g/m^3$ | 19.0 | For 1 Hrs.=180 | IS: 5182 (Part.-9) |
| 7 | Lead,(Pb) | $\mu g/m^3$ | <0.05 | For 24 Hrs.=1 | IS 5182 (Part-22) |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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ISO 45001

# TEST REPORT

TEST REPORT NO.: ETS/1905-2/11/2024 DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 8 | Arsenic,(As) | $ng/m^3$ | <1.0 | For Annual=06 | CPCB,Vol.-1, Pg.-48 |
| 9 | Nickel,(Ni) | $ng/m^3$ | <1.0 | For Annual=20 | IS 5182 (Part-26) |
| 10 | Carbon Monoxide,(CO) | $mg/m^3$ | 0.49 | For 1 Hrs.=4 | IS 5182 : Part 10 |
| 11 | Benzo (a) Pyrine (BaP) | $ng/m^3$ | <0.05 | For Annual=01 | IS: 5182 (Part-12) |
| 12 | Benzene,($C_6H_6$) | $\mu g/m^3$ | <1.0 | For Annual =5 | IS 5182 (Part-11) |

*****End of Test Report*****

CHECKED BY:
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-3/11/2024 ULRNO.TC130092400019053F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-3 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | BOILER NO.1(UP - 5447) |
| **Capacity Of Stack** | : | 10.0 TPH |
| **Quantity Of Fuel Used** | : | 602 $NM^3$/HR |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 38.0 MTR. |
| **Stack Dia At The Top** | : | 1000.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0$^0$C |
| **Flue Gas Temperature** | : | 136.0$^0$C |
| **Velocity Of Flue Gases** | : | 7.9 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 22325.4 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/$Nm^3$ | 14.6 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 12.1 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | mg/$Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | mg/$Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/1905-3/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD HOMRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-4/11/2024 ULRNO.TC130092400019054F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-4 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | ACID FUMES OLD PICKLING |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | H.C.L |
| **Stack Height Above Ground** | : | 27.0 MTR. |
| **Stack Dia At The Top** | : | 800.0 MM |
| **Material Of Construction** | : | F.R.P |
| **Attached APCS** | : | WET SCRUBBER |
| **Normal Operating Schedule** | : | AS PER REQUIREMENTS |
| **Ambient Temperature** | : | 25.0 $^{0}$C |
| **Flue Gas Temperature** | : | 60.0 $^{0}$C |
| **Velocity Of Flue Gases** | : | 9.7 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 17543.80 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/$Nm^3$ | 23.1 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | 5.8 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/$Nm^3$ | 10.4 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | 0.21 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | 0.48 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 12.5 | IS: 13270: 2008 |
| 7 | Zinc,(Zn) | mg/$Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD TIWARI
Quality Manager



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## TEST REPORT

TEST REPORT NO.: ETS/1905-4/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 8 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-5/11/2024 ULRNO.TC130092400019055F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-5 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | ACID FUMES NEW PICKLING |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | H.C.L |
| **Stack Height Above Ground** | : | 27.0 MTR. |
| **Stack Dia At The Top** | : | 650.0 MM |
| **Material Of Construction** | : | F.R.P |
| **Attached APCS** | : | WET SCRUBBER |
| **Normal Operating Schedule** | : | AS PER REQUIREMENTS |
| **Ambient Temperature** | : | 25.0$^{0}$C |
| **Flue Gas Temperature** | : | 74.0 $^{0}$C |
| **Velocity Of Flue Gases** | : | 10.6 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 12656.24 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/$Nm^3$ | 13.8 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 10.8 | IS: 13270: 2008 |
| 7 | Zinc,(Zn) | mg/$Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HOMRAJ
Quality Manager



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ETS-LAB

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An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/1905-5/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 8 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD / Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-6/11/2024 ULRNO.TC130092400019056F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-6 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | ARP – I |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 27.5 MTR. |
| **Stack Dia At The Top** | : | 600.0 MM |
| **Material Of Construction** | : | F.R.P |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0$^{0}$C |
| **Flue Gas Temperature** | : | 70.0$^{0}$C |
| **Velocity Of Flue Gases** | : | 11.9 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 12106.58 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/$Nm^3$ | 13.8 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270 |
| 6 | Oxygen,(O2) | %v/v | 11.2 | IS: 13270 |
| 7 | Zinc,(Zn) | mg/$Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD / Director / Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/1905-6/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 8 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-7/11/2024 ULRNO.TC130092400019057F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-7 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | H & T FURNACE NO.1 |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 47.0 MTR. |
| **Stack Dia At The Top** | : | 350.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | NIL |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0$^0$C |
| **Flue Gas Temperature** | : | 78.0 $^0$C |
| **Velocity Of Flue Gases** | : | 8.1 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 2804.09 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/$Nm^3$ | 14.7 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270 |
| 6 | Oxygen,(O2) | %v/v | 12.0 | IS: 13270 |
| 7 | Lead,(Pb) | mg/$Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | mg/$Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY



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An Analytical Laboratory

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## TEST REPORT

TEST REPORT NO.: ETS/1905-7/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD UMRAO
Quality Manager



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-8/11/2024 ULRNO.TC130092400019058F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-8 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | BOILER NO.2(UP - 5446) |
| **Capacity Of Stack** | : | 10.0 TPH |
| **Quantity Of Fuel Used** | : | 592 $NM^3$/HR |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 47.0 MTR. |
| **Stack Dia At The Top** | : | 1000.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0°C |
| **Flue Gas Temperature** | : | 136.0°C |
| **Velocity Of Flue Gases** | : | 7.6 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 21477.6 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 12.5 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 11.7 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | <0.05 | USEPA 6010D |

ENVIRO-TECH SERVICES ETS-LAB

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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ETS-LAB

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An Analytical Laboratory

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## TEST REPORT

TEST REPORT NO.: ETS/1905-8/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-9/11/2024 ULRNO.TC130092400019059F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-9 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | BOILER |
| **Capacity Of Stack** | : | 2×5 TPH |
| **Quantity Of Fuel Used** | : | 330 $NM^3$/HR |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 47.0 MTR. |
| **Stack Dia At The Top** | : | 1000.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0$^0$C |
| **Flue Gas Temperature** | : | 120.0$^0$C |
| **Velocity Of Flue Gases** | : | 7.4 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 20912.4 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 14.3 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 12.9 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HOMRAS
Quality Manager



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## TEST REPORT

TEST REPORT NO.: ETS/1905-9/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

ENVIRO-TECH SERVICES ETS-LAB

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES
MD HUMRAJ
Quality Manager

AUTHORIZED SIGNATORY



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-10/11/2024 ULRNO.TC130092400190510F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-10 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | **DG SET NO-01** |
| **Capacity Of Stack** | : | **12.0 MW** |
| **Quantity Of Fuel Used** | : | 1750 LPH |
| **Type Of Fuel Used** | : | L.S.H.S |
| **Stack Height Above Ground** | : | 105.0 MTR. |
| **Stack Dia At The Top** | : | 5400.0 MM |
| **Material Of Construction** | : | R.C.C |
| **Attached APCS** | : | -------- |
| **D.G. Set Comm. Date** | : | ON OR AFTER 01/07/2005 ( > 800 KW ) |
| **Normal Operating Schedule** | : | AS PER REQUIRMENTS |
| **Ambient Temperature** | : | 25.0$^{o}$C |
| **Flue Gas Temperature** | : | 270.0 $^{o}$C |
| **Velocity Of Flue Gases** | : | 9.8 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 807580.3 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Particulate Matters (PM at 15% $O_2$) | mg/$Nm^3$ | 52.8 | 100 | IS-11255 (Part-1) |
| 2 | Oxides of Nitrogen(NOx as$NO_2$ at 15% $O_2$) | Ppmv | 195.0 | 710 | IS-11255 (Part-7) |
| 3 | Carbon Monoxide (CO at 15% $O_2$) | mg/$Nm^3$ | 10.2 | 150 | IS: 13270 |
| 4 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | 48.0 | Not Specified | IS-11255 (Part-2) |
| 5 | Oxygen ($O_2$) | % by vol | 11.5 | Not Specified | IS: 13270 |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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# TEST REPORT

TEST REPORT NO.: ETS/1905-10/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 6 | Non Methane Hydro Carbon(NMHC at 15% $O_2$) | $mg/Nm^3$ | 27.4 | 100 | ETS/STP/STACK-07 |

Remark:-AT THE TIME OF MONITORING TWO D.G SET ARE ATTACHED TO SINGLE STACK.DURING MONITORING DG.SET NO-01 WAS RUNNING.

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



**Note:-**

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# ENVIRO-TECH SERVICES

An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-11/11/2024 ULRNO.TC130092400190511F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | **DG SET NO-02** |
| **Capacity Of Stack** | : | **12.0 MW** |
| **Quantity Of Fuel Used** | : | 1750 LPH |
| **Type Of Fuel Used** | : | L.S.H.S |
| **Stack Height Above Ground** | : | 105.0 MTR. |
| **Stack Dia At The Top** | : | 5400.0 MM |
| **Material Of Construction** | : | R.C.C |
| **Attached APCS** | : | -------- |
| **D.G. Set Comm. Date** | : | ON OR AFTER 01/07/2005 ( > 800 KW ) |
| **Normal Operating Schedule** | : | AS PER REQUIRMENTS |
| **Ambient Temperature** | : | 25.0$^0$C |
| **Flue Gas Temperature** | : | 275.0 $^0$C |
| **Velocity Of Flue Gases** | : | 11.2 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 922948.9 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Particulate Matters (PM at 15% $O_2$) | $mg/Nm^3$ | 53.4 | 100 | IS-11255 (Part-1) |
| 2 | Oxides of Nitrogen(NOx as$NO_2$ at 15% $O_2$) | ppmv | 188.0 | 710 | IS-11255 (Part-7) |
| 3 | Carbon Monoxide (CO at 15% $O_2$) | $mg/Nm^3$ | 11.5 | 150 | IS: 13270 |
| 4 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | 57.1 | Not Specified | IS-11255 (Part-2) |
| 5 | Oxygen ($O_2$) | % by vol | 12.8 | Not Specified | IS: 13270 |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HOMRAJ
Quality Manager



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ETS-LAB

# ENVIRO-TECH SERVICES

An Analytical Laboratory

ISO 45001

(A GOVERNMENT APPROVED LAB)

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## TEST REPORT

TEST REPORT NO.: ETS/1905-11/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 6 | Non Methane Hydro Carbon(NMHC at 15% $O_2$) | $mg/Nm^3$ | 34.8 | 100 | ETS/STP/STACK-07 |

Remark:-AT THE TIME OF MONITORING TWO D.G SET ARE ATTACHED TO SINGLE STACK.DURING MONITORING DG.SET NO-02 WAS RUNNING.

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-12/11/2024 ULRNO.TC130092400190512F DATE OF REPORT: 26.11.2024

## NOISE MONITORING REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 22.11.2024
**Monitoring Start Date** : 22.11.2024
**Monitoring End Date** : 23.11.2024
**Duration Of Monitoring** : 24 HOURS
**Sample ID No** : 1905-12
**Monitoring Done By** : ETS STAFF
**Sampling Location** : NEAR MAIN GATE
**Sampling Method** : ETS/STP/NOISE-01
**Category Of Area** : INDUSTRIAL AREA

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Day Time Noise Level | Leq :dB (A) | 67.1 | 75 | IS: 9989 |
| 2 | Night Time Noise Level | Leq :dB (A) | 55.4 | 70 | IS: 9989 |

**Remark:** Day time is reckoned in between 06.00 A.M. and 10.00 P.M.
Night time is reckoned in between 10.00 P.M. and 06.00 A.M.

*****End of Test Report*****

ENVIRO-TECH SERVICES ETS-LAB

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-13/11/2024 ULRNO.TC130092400190513F DATE OF REPORT: 26.11.2024

## NOISE MONITORING REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 22.11.2024
**Monitoring Start Date** : 22.11.2024
**Monitoring End Date** : 23.11.2024
**Duration Of Monitoring** : 24 HOURS
**Sample ID No** : 1905-13
**Monitoring Done By** : ETS STAFF
**Sampling Location** : NEAR ETP YARD AREA
**Sampling Method** : ETS/STP/NOISE-01
**Category Of Area** : INDUSTRIAL AREA

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Day Time Noise Level | Leq :dB (A) | 68.5 | 75 | IS: 9989 |
| 2 | Night Time Noise Level | Leq :dB (A) | 59.1 | 70 | IS: 9989 |

**Remark:** Day time is reckoned in between 06.00 A.M. and 10.00 P.M.
Night time is reckoned in between 10.00 P.M. and 06.00 A.M.

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager

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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-14/11/2024 ULRNO.TC130092400190514F DATE OF REPORT: 26.11.2024

## NOISE MONITORING REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 22.11.2024
**Monitoring Start Date** : 22.11.2024
**Monitoring End Date** : 23.11.2024
**Duration Of Monitoring** : 24 HOURS
**Sample ID No** : 1905-14
**Monitoring Done By** : ETS STAFF
**Sampling Location** : NEAR SHERWANI AREA
**Sampling Method** : ETS/STP/NOISE-01
**Category Of Area** : INDUSTRIAL AREA

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Day Time Noise Level | Leq :dB (A) | 62.7 | 75 | IS: 9989 |
| 2 | Night Time Noise Level | Leq :dB (A) | 48.2 | 70 | IS: 9989 |

**Remark:** Day time is reckoned in between 06.00 A.M. and 10.00 P.M.
Night time is reckoned in between 10.00 P.M. and 06.00 A.M.

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-15/11/2024 ULRNO.TC130092400190515F DATE OF REPORT: 26.11.2024

## NOISE MONITORING REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 22.11.2024
**Monitoring Start Date** : 22.11.2024
**Monitoring End Date** : 23.11.2024
**Duration Of Monitoring** : 24 HOURS
**Sample ID No** : 1905-15
**Monitoring Done By** : ETS STAFF
**Sampling Location** : NEAR DG SET AREA
**Sampling Method** : ETS/STP/NOISE-01
**Category Of Area** : INDUSTRIAL AREA

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Day Time Noise Level | Leq :dB (A) | 70.1 | 75 | IS: 9989 |
| 2 | Night Time Noise Level | Leq :dB (A) | 62.5 | 70 | IS: 9989 |

**Remark:** Day time is reckoned in between 06.00 A.M. and 10.00 P.M.
Night time is reckoned in between 10.00 P.M. and 06.00 A.M.

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-16/11/2024 ULRNO.TC130092400190516F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-16 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | H & T FURNACE NO.3 |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 47.0 MTR. |
| **Stack Dia At The Top** | : | 350.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | NIL |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | $25.0^0$C |
| **Flue Gas Temperature** | : | 74.0 $^0$C |
| **Velocity Of Flue Gases** | : | 9.4 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 3254.13 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/Nm$^3$ | 13.5 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/Nm$^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/Nm$^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270 |
| 6 | Oxygen,(O2) | %v/v | 11.4 | IS: 13270 |
| 7 | Lead,(Pb) | mg/Nm$^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | mg/Nm$^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD RUMRAJ
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/190516/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-16/11/2024 ULRNO.TC130092400190516F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-16 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP III NON OX |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 25.0 MTR. |
| **Stack Dia At The Top** | : | 860.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0°C |
| **Flue Gas Temperature** | : | 128.0°C |
| **Velocity Of Flue Gases** | : | 8.1 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 16929.88 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 12.5 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 12.1 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD HUMRAJ
Quality Manager



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ETS-LAB

ISO 45001

# TEST REPORT

TEST REPORT NO.: ETS/1905-16/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES
AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-17/11/2024 ULRNO.TC130092400190517F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-17 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP III HAG |
| **Capacity Of Stack** | : | -- |
| **Quantity Of Fuel Used** | : | --- |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 25.0 MTR. |
| **Stack Dia At The Top** | : | 500.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | $25.0^0$C |
| **Flue Gas Temperature** | : | $116.0^0$C |
| **Velocity Of Flue Gases** | : | 11.2 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 7912.8 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 14.5 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 10.1 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMAYU
Quality Manager



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ETS-LAB

# ENVIRO-TECH SERVICES

An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/1905-17/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-18/11/2024 ULRNO.TC130092400190518F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-18 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP III ZINC POT FURNACE |
| **Capacity Of Stack** | : | .... |
| **Quantity Of Fuel Used** | : | .... |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 25.0 MTR. |
| **Stack Dia At The Top** | : | 400.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | $25.0^0$C |
| **Flue Gas Temperature** | : | $140.0^0$C |
| **Velocity Of Flue Gases** | : | 10.4 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 4702.46 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 13.4 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 13.5 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | <0.05 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD / TECHNICAL MANAGER
Quality Manager



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ETS-LAB

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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/1905-18/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-19/11/2024 ULRNO.TC130092400190519F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 22.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-19 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP -1 (RTF) |
| **Capacity Of Stack** | : | .... |
| **Quantity Of Fuel Used** | : | .... |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 25.0 MTR. |
| **Stack Dia At The Top** | : | 700.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | $25.0^0$C |
| **Flue Gas Temperature** | : | $142.0^0$C |
| **Velocity Of Flue Gases** | : | 9.7 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 13431.9 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 12.3 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 11.3 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | 0.23 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMAD
Quality Manager



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ETS-LAB

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An Analytical Laboratory

ISO 45001

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## TEST REPORT

TEST REPORT NO.: ETS/1905-19/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-20/11/2024 ULRNO.TC130092400190520F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-20 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP -1 (HAG) |
| **Capacity Of Stack** | : | .... |
| **Quantity Of Fuel Used** | : | .... |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 5.0 MTR. |
| **Stack Dia At The Top** | : | 500.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0$^0$C |
| **Flue Gas Temperature** | : | 125.0$^0$C |
| **Velocity Of Flue Gases** | : | 11.2 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 7912.8 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 14.1 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 12.4 | IS: 13270: 2008 |
| 7 | Zinc,(Zn) | $mg/Nm^3$ | 0.31 | USEPA 6010D |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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ETS-LAB

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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-21/11/2024 ULRNO.TC130092400190521F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-21 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP -1 ZINC PORT FURNACE |
| **Capacity Of Stack** | : | .... |
| **Quantity Of Fuel Used** | : | .... |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 30.0 MTR. |
| **Stack Dia At The Top** | : | 600.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | $25.0^0$C |
| **Flue Gas Temperature** | : | $129.0^0$C |
| **Velocity Of Flue Gases** | : | 9.5 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 9664.92 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 10.2 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 14.1 | IS: 13270: 2008 |
| 7 | Zinc,(Zn) | $mg/Nm^3$ | 0.38 | USEPA 6010D |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HOMRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/1905-22/11/2024 ULRNO.TC130092400190522F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 23.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | 1905-22 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | GP -1 NON OX |
| **Capacity Of Stack** | : | .... |
| **Quantity Of Fuel Used** | : | .... |
| **Type Of Fuel Used** | : | L.N.G |
| **Stack Height Above Ground** | : | 25.0 MTR. |
| **Stack Dia At The Top** | : | 1000.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | $25.0^0$C |
| **Flue Gas Temperature** | : | $135.0^0$C |
| **Velocity Of Flue Gases** | : | 8.1 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 22890.6 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | $mg/Nm^3$ | 15.2 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | $mg/Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 10.7 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | $mg/Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | $mg/Nm^3$ | 0.32 | USEPA 6010D |

CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/1905-22/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/149/11/2024 ULRNO.TC130092400000148F DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date of Monitoring** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Monitoring** | : | 21.11.2024 To 22.11.2024 |
| **Time Of Monitoring** | : | 10.40 AM To 10.40 AM (24 Hrs.) |
| **Sample ID No** | : | E-149/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Location** | : | NEAR MAIN GATE OF FACTORY |
| **Sampling Method** | : | ETS/STP/AIR-01 |
| **Sampling Machine Placed At Height** | : | 1.5 METER FROM GROUND LEVEL |
| **Weather Condition** | : | CLOUDY **Ambient Temperature:** 25.0 $^{0}$C |
| **Wind Direction** | : | E To W |
| **Equipment Used** | : | Respirable Dust Sampler ($PM_{10}$) + Fine Particulate Sampler ($PM_{2.5}$) |

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Particulate Matters,($PM_{10}$) | $\mu g/m^3$ | 170.4 | For 24 Hrs.=100 | IS 5182 (Part-23) |
| 2 | Particulate Matters,($PM_{2.5}$) | $\mu g/m^3$ | 65.1 | For 24 Hrs.=60 | IS 5182 (Part-24) |
| 3 | Sulphur Dioxide, ($SO_2$) | $\mu g/m^3$ | 14.0 | For 24 Hrs.=80 | IS: 5182 (Part-2) |
| 4 | Nitrogen Dioxide,($NO_2$) | $\mu g/m^3$ | 28.1 | For 24 Hrs.=80 | IS: 5182 (Part-6) |
| 5 | Ammonia,($NH_3$) | $\mu g/m^3$ | <20.0 | For 24 Hrs.=400 | IS 5182 (Part-25) |
| 6 | Ozone,($O_3$) | $\mu g/m^3$ | 16.0 | For 1 Hrs.=180 | IS: 5182 (Part.-9) |
| 7 | Lead,(Pb) | $\mu g/m^3$ | <0.05 | For 24 Hrs.=1 | IS 5182 (Part-22) |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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ETS-LAB

# ENVIRO-TECH SERVICES

An Analytical Laboratory

ISO 45001

(A GOVERNMENT APPROVED LAB)

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

## TEST REPORT

TEST REPORT NO.: ETS/149/11/2024 DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 8 | Arsenic,(As) | $ng/m^3$ | <1.0 | For Annual=06 | CPCB,Vol.-1, Pg.-48 |
| 9 | Nickel,(Ni) | $ng/m^3$ | <1.0 | For Annual=20 | IS 5182 (Part-26) |
| 10 | Carbon Monoxide,(CO) | $mg/m^3$ | 0.54 | For 1 Hrs.=4 | IS 5182 : Part 10 |
| 11 | Benzo (a) Pyrine (BaP) | $ng/m^3$ | <0.05 | For Annual=01 | IS: 5182 (Part-12) |
| 12 | Benzene,($C_6H_6$) | $\mu g/m^3$ | <1.0 | For Annual =5 | IS 5182 (Part-11) |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/150/11/2024 ULRNO.TC130092400000149F DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Monitoring** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Duration Of Monitoring** : 21.11.2024 To 22.11.2024
**Time Of Monitoring** : 10.20 AM To 10.20 AM (24 Hrs.)
**Sample ID No** : E-150/11
**Sampling Done By** : ETS STAFF
**Sampling Location** : NEAR TRANSPORT AREA
**Sampling Method** : ETS/STP/AIR-01
**Sampling Machine Placed At Height** : 1.5 METER FROM GROUND LEVEL
**Weather Condition** : CLOUDY **Ambient Temperature:** 25.0 $^{0}$C
**Wind Direction** : E To W
**Equipment Used** : Respirable Dust Sampler ($PM_{10}$) + Fine Particulate Sampler ($PM_{2.5}$)

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | Particulate Matters,($PM_{10}$) | $\mu g/m^3$ | 182.5 | For 24 Hrs.=100 | IS 5182 (Part-23) |
| 2 | Particulate Matters,($PM_{2.5}$) | $\mu g/m^3$ | 67.1 | For 24 Hrs.=60 | IS 5182 (Part-24) |
| 3 | Sulphur Dioxide, ($SO_2$) | $\mu g/m^3$ | 16.4 | For 24 Hrs.=80 | IS: 5182 (Part-2) |
| 4 | Nitrogen Dioxide,($NO_2$) | $\mu g/m^3$ | 31.5 | For 24 Hrs.=80 | IS: 5182 (Part-6) |
| 5 | Ammonia,($NH_3$) | $\mu g/m^3$ | <20.0 | For 24 Hrs.=400 | IS 5182 (Part-25) |
| 6 | Ozone,($O_3$) | $\mu g/m^3$ | 17.0 | For 1 Hrs.=180 | IS: 5182 (Part.-9) |
| 7 | Lead,(Pb) | $\mu g/m^3$ | <0.05 | For 24 Hrs.=1 | IS 5182 (Part-22) |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HOMRAJ
Quality Manager

Format No ETS/LAB/TR-01, Issue No. 06, Date 01.05.2022, Amd. No. 05 Date 01.05.2022

**Note:-**

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ETS-LAB

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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/150/11/2024 DATE OF REPORT: 26.11.2024

## AMBIENT AIR QUALITY MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 8 | Arsenic,(As) | $ng/m^3$ | <1.0 | For Annual=06 | CPCB,Vol.-1, Pg.-48 |
| 9 | Nickel,(Ni) | $ng/m^3$ | <1.0 | For Annual=20 | IS 5182 (Part-26) |
| 10 | Carbon Monoxide,(CO) | $mg/m^3$ | 0.63 | For 1 Hrs.=4 | IS 5182 : Part 10 |
| 11 | Benzo (a) Pyrine (BaP) | $ng/m^3$ | <0.05 | For Annual=01 | IS: 5182 (Part-12) |
| 12 | Benzene,($C_6H_6$) | $\mu g/m^3$ | <1.0 | For Annual =5 | IS 5182 (Part-11) |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/151/11/2024 ULRNO.TC130092400000150F DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date Of Sampling** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Duration Of Sampling** | : | 30.0 MIN |
| **Sample ID No.** | : | E-151/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Method** | : | ETS/STP/STACK-01 |
| **Stack Attached To** | : | ECL-ALKALI FUMES EXHAUST |
| **Capacity Of Stack** | : | .... |
| **Quantity Of Fuel Used** | : | .... |
| **Type Of Fuel Used** | : | ELECTRICITY |
| **Stack Height Above Ground** | : | 22.0 MTR. |
| **Stack Dia At The Top** | : | 1000.0 MM |
| **Material Of Construction** | : | M.S |
| **Attached APCS** | : | .... |
| **Normal Operating Schedule** | : | 24.0 HOURS PER DAY |
| **Ambient Temperature** | : | 25.0$^0$C |
| **Flue Gas Temperature** | : | 65.0$^0$C |
| **Velocity Of Flue Gases** | : | 9.2 MTR./SEC. |
| **Quantity Of Emission Discharged** | : | 25999.2 $m^3$/hr |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | Particulate Matters,(PM) | mg/$Nm^3$ | 11.2 | IS-11255 (Part-1) |
| 2 | Sulphur Dioxide,($SO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-2) |
| 3 | Oxide of Nitrogen,(NOX as $NO_2$) | mg/$Nm^3$ | <5.0 | IS-11255 (Part-7) |
| 4 | Carbon Monoxide,(CO) | %v/v | <0.1 | IS: 13270: 2008 |
| 5 | Carbon Dioxide,($CO_2$) | %v/v | <1.0 | IS: 13270: 2008 |
| 6 | Oxygen,(O2) | %v/v | 13.8 | IS: 13270: 2008 |
| 7 | Lead,(Pb) | mg/$Nm^3$ | <0.05 | USEPA 6010D |
| 8 | Zinc,(Zn) | mg/$Nm^3$ | <0.05 | USEPA 6010D |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD RUMPAJ
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/151/11/2024 DATE OF REPORT: 26.11.2024

## STACK EMISSION MONITORING AND ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 9 | Acid Mist (HCL) | $mg/Nm^3$ | <0.02 | Volumetric Method |
| 10 | Alkali Fumes | $mg/Nm^3$ | 0.16 | NIOSH |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/162/11/2024 ULRNO.TC130092400000161F DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date of Sampling** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Sample ID No** | : | E-162/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sample Description** | : | E.T.P |
| **Sampling Location** | : | E.T.P. INLET |
| **Sampling Method** | : | ETS/STP/WATER-02 |
| **Sample Quantity** | : | 2.0 Ltr. |
| **Packing Condition** | : | SEALED |
| **Packed In** | : | P.V.C. CANE |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | pH | ... | 2.14 | APHA 4500-H+ |
| 2 | Total Suspended Solids,(TSS) | mg/L | 82.0 | APHA 2540-D |
| 3 | Total Dissolved Solids,(TDS) | mg/L | 1154.0 | APHA 2540-C |
| 4 | Oil & Grease, (O & G ) | mg/L | 9.2 | APHA 5520-B |
| 5 | Biological Oxygen Demand($BOD_{3d}27^{0}C$) | mg/L | 134.0 | IS: 3025 (Part-44) |
| 6 | Chemical Oxygen Demand,(COD) | mg/L | 1065.0 | APHA 5220-B |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager

Format No ETS/LAB/TR-10, Issue No. 05, Date 01.04.2019, Amd. No. 04 Date 01.04.2019

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## TEST REPORT

TEST REPORT NO.: ETS/162/11/2024 DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 7 | Iron,(Fe) | mg/L | 4.48 | APHA-3120B |
| 8 | Total Hardness,($CaCO_3$) | mg/L | 586.0 | APHA 2340-C |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MR.NAWRAJ
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/163/11/2024 ULRNO.TC130092400000162F DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date of Sampling** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Sample ID No** | : | E-163/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sample Description** | : | E.T.P |
| **Sampling Location** | : | E.T.P. OUTLET |
| **Sampling Method** | : | ETS/STP/WATER-02 |
| **Sample Quantity** | : | 2.0 Ltr. |
| **Packing Condition** | : | SEALED |
| **Packed In** | : | P.V.C. CANE |

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Inland Surface Water | Public Sewers | |
| 1 | pH | ... | 6.32 | 5.5 - 9.0 | 5.5 - 9.0 | APHA 4500-H+ |
| 2 | Total Suspended Solids,(TSS) | mg/L | 15.1 | 100 | 600 | APHA 2540-D |
| 3 | Total Dissolved Solids,(TDS) | mg/L | 885.0 | 2100 | Not Specified | APHA 2540-C |
| 4 | Oil & Grease, (O & G ) | mg/L | 3.2 | 10 | 20 | APHA 5520-B |
| 5 | Biological Oxygen Demand($BOD_{3d}27^{0}C$) | mg/L | 16.0 | 30 | 350 | IS: 3025 (Part-44) |
| 6 | Chemical Oxygen Demand,(COD) | mg/L | 112.0 | 250 | Not Specified | APHA 5220-B |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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ISO 45001

# TEST REPORT

TEST REPORT NO.: ETS/163/11/2024 DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Inland Surface Water | Public Sewers | |
| 7 | Iron,(Fe) | mg/L | 0.26 | 3 | 3 | APHA-3120B |
| 8 | Total Hardness,($CaCO_3$) | mg/L | 365.0 | Not Specified | Not Specified | APHA 2340-C |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES
AUTHORIZED SIGNATORY
MD HUMROJ
Quality Manager



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/164/11/2024 ULRNO.TC130092400000163F DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date of Sampling** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Sample ID No** | : | E-164/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sample Description** | : | S.T.P |
| **Sampling Location** | : | S.T.P. INLET |
| **Sampling Method** | : | ETS/STP/WATER-02 |
| **Sample Quantity** | : | 2.0 Ltr. |
| **Packing Condition** | : | SEALED |
| **Packed In** | : | P.V.C. CANE |

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 1 | pH | ... | 7.42 | APHA 4500-H+ |
| 2 | Total Suspended Solids,(TSS) | mg/L | 46.0 | APHA 2540-D |
| 3 | Total Dissolved Solids,(TDS) | mg/L | 825.0 | APHA 2540-C |
| 4 | Oil & Grease, (O & G ) | mg/L | 4.6 | APHA 5520-B |
| 5 | Biological Oxygen Demand($BOD_{3d}27^0C$) | mg/L | 53.0 | IS: 3025 (Part-44) |
| 6 | Chemical Oxygen Demand,(COD) | mg/L | 498.0 | APHA 5220-B |

*****End of Test Report*****

ENVIRO-TECH SERVICES ETS-LAB

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager

Format No ETS/LAB/TR-10, Issue No. 05, Date 01.04.2019, Amd. No. 04 Date 01.04.2019

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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/164/11/2024 DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Test Method |
|---|---|---|---|---|
| 7 | Sulphate,($SO_4$) | mg/L | 94.0 | APHA 4500:($SO_4$)-E |
| 8 | Chloride,(Cl) | mg/L | 163.0 | APHA 4500:(Cl- )-B |
| 9 | Total Hardness,($CaCO_3$) | mg/L | 578.0 | APHA 2340-C |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD HUNAIN
Quality Manager



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# ENVIRO-TECH SERVICES

An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/165/11/2024 ULRNO.TC130092400000164F DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date of Sampling** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Sample ID No** | : | E-165/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sample Description** | : | S.T.P |
| **Sampling Location** | : | S.T.P. OUTLET |
| **Sampling Method** | : | ETS/STP/WATER-02 |
| **Sample Quantity** | : | 2.0 Ltr. |
| **Packing Condition** | : | SEALED |
| **Packed In** | : | P.V.C. CANE |

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 1 | pH | ... | 7.12 | 6.5 - 9.0 | APHA 4500-H+ |
| 2 | Total Suspended Solids,(TSS) | mg/L | 8.5 | < 50 | APHA 2540-D |
| 3 | Total Dissolved Solids,(TDS) | mg/L | 312.0 | 2100 | APHA 2540-C |
| 4 | Oil & Grease, (O & G ) | mg/L | 2.0 | 10 | APHA 5520-B |
| 5 | Biological Oxygen Demand($BOD_{3d}27^0C$) | mg/L | 6.4 | 20 | IS: 3025 (Part-44) |
| 6 | Chemical Oxygen Demand,(COD) | mg/L | 30.0 | Not Specified | APHA 5220-B |

*****End of Test Report*****

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AUTHORIZED SIGNATORY
Quality Manager

Format No ETS/LAB/TR-10, Issue No. 05, Date 01.04.2019, Amd. No. 04 Date 01.04.2019

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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/165/11/2024 DATE OF REPORT: 26.11.2024

## WASTE WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per CPCB) | Test Method |
|---|---|---|---|---|---|
| 7 | Sulphate,($SO_4$) | mg/L | 11.4 | Not Specified | APHA 4500:($SO_4$)-E |
| 8 | Chloride,(Cl) | mg/L | 50.8 | Not Specified | APHA 4500:(Cl- )-B |
| 9 | Total Hardness,($CaCO_3$) | mg/L | 232.0 | Not Specified | Not Specified |

*****End of Test Report*****

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AUTHORIZED SIGNATORY
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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/153/11/2024 ULRNO.TC130092400000152F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-153/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR RFO YARD AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.35 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.18 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2154.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 68.1 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 589.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 122.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 814.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.08 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 168.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.27 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



For ENVIRO-TECH SERVICES

CHECKED BY
SHRADDHA GUPTA

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager

Format No ETS/LAB/TR-01, Issue No. 06, Date 01.05.2022, Amd. No. 05 Date 01.05.2022

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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/153/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/154/11/2024 ULRNO.TC130092400000153F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-154/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR PARK AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.21 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.17 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2145.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 63.3 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 534.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 108.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 812.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.37 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 158.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.23 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD
Quality Manager



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An Analytical Laboratory

ISO 45001

(A GOVERNMENT APPROVED LAB)

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## TEST REPORT

TEST REPORT NO.: ETS/154/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/155/11/2024 ULRNO.TC130092400000154F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-155/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR PARK MAGNUM AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.38 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.27 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2375.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 63.6 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 595.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 132.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 856.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 1.88 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 152.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Iron,(Fe) | mg/L | 0.19 | 1 | No Relaxation | APHA-3120B |
| 16 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 17 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HOMRAJ
Quality Manager

Format No ETS/LAB/TR-01, Issue No. 06, Date 01.05.2022, Amd. No. 05 Date 01.05.2022

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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/155/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

Quality Manager



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ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/158/11/2024 ULRNO.TC130092400000157F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-158/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR MANDIR AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.24 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.19 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2140.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 65.2 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 592.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 128.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 811.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.12 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 164.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.21 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD HUMRAJ
Quality Manager

Format No ETS/LAB/TR-01, Issue No. 06, Date 01.05.2022, Amd. No. 05 Date 01.05.2022

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email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/158/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



**Note:-**

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# ENVIRO-TECH SERVICES

An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

ETS-LAB

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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/156/11/2024 ULRNO.TC130092400000155F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-156/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR SERWANI WENDING SHOP AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.32 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.23 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2034.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 62.1 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 554.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 118.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 798.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 1.92 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 120.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.15 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/156/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
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For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/157/11/2024 ULRNO.TC130092400000156F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| | | |
|---|---|---|
| **Name And Address of Customer** | : | TATA STEEL LIMITED<br>23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD<br>GHAZIABAD U.P. |
| **Date of Sampling** | : | 21.11.2024 |
| **Analysis Start Date** | : | 23.11.2024 |
| **Analysis End Date** | : | 26.11.2024 |
| **Sample ID No** | : | E-157/11 |
| **Sampling Done By** | : | ETS STAFF |
| **Sampling Description** | : | GROUND WATER |
| **Sampling Location** | : | NEAR VAPORIZER AREA |
| **Sampling Method** | : | ETS/STP/WATER-02 |
| **Sample Quantity** | : | 2.0 + 0.5 Ltr |
| **Packing Condition** | : | SEALED |
| **Packed In** | : | P.V.C. AND GLASS BOTTLE |

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500;2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.38 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.25 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2176.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 90.0 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 805.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 172.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 814.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.45 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 158.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.18 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
MD HUMRAJ
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/157/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****



CHECKED BY
SHRADDHA GUPTA

For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/159/11/2024 ULRNO.TC130092400000158F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-159/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR MASZID AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.26 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.20 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2365.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 63.8 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 621.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 142.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 108.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.44 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 162.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.26 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



For ENVIRO-TECH SERVICES

CHECKED BY
SHRADDHA GUPTA

AUTHORIZED SIGNATORY
Quality Manager



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ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/159/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

ENVIRO-TECH SERVICES * ETS-LAB

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY
Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/160/11/2024 ULRNO.TC130092400000159F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-160/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR LPG YARD AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.35 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.26 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2031.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 60.3 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 569.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 127.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 912.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.43 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 144.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.24 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



For ENVIRO-TECH SERVICES

CHECKED BY
SHRADDHA GUPTA

AUTHORIZED SIGNATORY



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## TEST REPORT

TEST REPORT NO.: ETS/160/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

Quality Manager



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TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/161/11/2024 ULRNO.TC130092400000160F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-161/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : GROUND WATER
**Sampling Location** : NEAR TRANSPORT AREA ADMIN
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Disagreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.29 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | 0.22 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 2178.0 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.1 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 65.7 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 594.1 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 128.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 932.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | 2.74 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 219.0 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | 0.21 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



For ENVIRO-TECH SERVICES

CHECKED BY
SHRADDHA GUPTA

AUTHORIZED SIGNATORY

MD

Quality



**Note:-**

1. Test reports without ETS LAB HOLOGRAM are not issued by our laboratory.
2. The results indicated only refer to the tested samples and listed applicable parameters.
3. No complaint will be entertained if received after 7 days of issue of test report.
4. Our liability is limited to invoice value only.
5. The sample shall be destroyed after 15 days & Biological / Perishable sample shall be destroyed immediately after issue of test report.
6. This test report shall not be used in any advertising media or as evidence in the court of Law without prior written permission of the laboratory.

ETS-LAB

# ENVIRO-TECH SERVICES

An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

ISO 45001

## TEST REPORT

TEST REPORT NO.: ETS/161/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

Quality Manager



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email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

ETS-LAB

TC-13009


## TEST REPORT

TEST REPORT NO.: ETS/152/11/2024 ULRNO.TC130092400000151F DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

**Name And Address of Customer** : TATA STEEL LIMITED
23/4,SITE-IV,SAHIBABAD INDUSTRIAL AREA,SAHIBABAD
GHAZIABAD U.P.

**Date of Sampling** : 21.11.2024
**Analysis Start Date** : 23.11.2024
**Analysis End Date** : 26.11.2024
**Sample ID No** : E-152/11
**Sampling Done By** : ETS STAFF
**Sampling Description** : DRINKING WATER
**Sampling Location** : NEAR NERRO CANTEEN AREA
**Sampling Method** : ETS/STP/WATER-02
**Sample Quantity** : 2.0 + 0.5 Ltr
**Packing Condition** : SEALED
**Packed In** : P.V.C. AND GLASS BOTTLE

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| **PHYSICAL & CHEMICAL PARAMETERS;** | | | | | | |
| 1 | Colour | Hazen | < 5.0 | 5 | 15 | APHA 2120-B |
| 2 | Odour | ... | Agreeable | Agreeable | Agreeable | APHA 2150-B |
| 3 | Taste | ... | Agreeable | Agreeable | Agreeable | APHA 2160-C |
| 4 | pH | ... | 7.12 | 6.5 - 8.5 | No Relaxation | APHA 4500-H+ |
| 5 | Turbidity | NTU | <1.0 | 1 | 5 | APHA 2130-B |
| 6 | Fluoride,(F) | mg/L | <0.01 | 1 | 1.5 | APHA 4500:(F-)-D |
| 7 | Total Dissolved Solids,(TDS) | mg/L | 106.1 | 500 | 2000 | APHA 2540-C |
| 8 | Chlorine (Residual) | mg/L | <0.02 | 0.2 | 1 | APHA 4500:(Cl)-B |
| 9 | Magnesium,(Mg) | mg/L | 5.6 | 30 | 100 | APHA 3500:(Mg)-B |
| 10 | Total Hardness,($CaCO_3$) | mg/L | 56.0 | 200 | 600 | APHA 2340-C |
| 11 | Calcium,(Ca) | mg/L | 13.0 | 75 | 200 | APHA 3500:(Ca)-B |
| 12 | Chloride,(Cl) | mg/L | 20.0 | 250 | 1000 | APHA 4500:(Cl- )-B |
| 13 | Nitrate,($NO_3$ ) | mg/L | <0.1 | 45 | No Relaxation | APHA 4500:($NO_3$-)-B |
| 14 | Sulphate,($SO_4$) | mg/L | 5.4 | 200 | 400 | APHA 4500:($SO_4$)-E |
| **HEAVY METALS;-** | | | | | | |
| 15 | Copper,(Cu) | mg/L | <0.01 | 0.05 | 1.5 | APHA 3120B |
| 16 | Manganese,(Mn) | mg/L | <0.01 | 0.1 | 0.3 | APHA-3120B |
| 17 | Iron,(Fe) | mg/L | <0.05 | 1 | No Relaxation | APHA-3120B |

*****End of Test Report*****



For ENVIRO-TECH SERVICES

CHECKED BY
SHRADDHA GUPTA

AUTHORIZED SIGNATORY
MD HOMRAJ
Quality Manager



**Note:-**

1. Test reports without ETS LAB HOLOGRAM are not issued by our laboratory.
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4. Our liability is limited to invoice value only.
5. The sample shall be destroyed after 15 days & Biological / Perishable sample shall be destroyed immediately after issue of test report.
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ETS-LAB

# ENVIRO-TECH SERVICES

An Analytical Laboratory

(A GOVERNMENT APPROVED LAB)

ISO 45001

Plot No. 1/32, S.S. of G.T. Road Industrial Area, Ghaziabad (U.P.) - 201001

email : etslab2012@gmail.com | Website : www.etslab.in | Ph.: 9911516076, 9811736063

## TEST REPORT

TEST REPORT NO.: ETS/152/11/2024 DATE OF REPORT: 26.11.2024

## WATER SAMPLE ANALYSIS REPORT

| S. No. | Test Parameter | Unit | Result | Specification/Limit (As per IS:10500: 2012 ) | | Test Method |
|---|---|---|---|---|---|---|
| | | | | Desirable | Permissible | |
| MICROBIOLOGICAL PARAMETER; | | | | | | |
| 18 | Fecal Coliform (FC) | Per 100mL | Absent | Shall Not Be Detectable | | IS 15186 |
| 19 | Escherichia coli | Per 100mL | Absent | Shall Not Be Detectable | | IS 15185 |

*****End of Test Report*****

CHECKED BY
SHRADDHA GUPTA



For ENVIRO-TECH SERVICES

AUTHORIZED SIGNATORY

MD HOME
Quality Manager

Format No ETS/LAB/TR-01, Issue No. 06, Date 01.05.2022, Amd. No. 05 Date 01.05.2022

**Note:-**

1. Test reports without ETS LAB HOLOGRAM are not issued by our laboratory.
2. The results indicated only refer to the tested samples and listed applicable parameters.
3. No complaint will be entertained if received after 7 days of issue of test report.
4. Our liability is limited to invoice value only.
5. The sample shall be destroyed after 15 days & Biological / Perishable sample shall be destroyed immediately after issue of test report.
6. This test report shall not be used in any advertising media or as evidence in the court of Law without prior written permission of the laboratory.

# 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: REG035902

## VALID FROM 08/06/2023 TO 07/06/2028

| **Serial No.: 202406000814** | | | |
|---|---|---|---|
| **Name of the Owner** | THACHAT VISWANATH NARENDRAN | | |
| **Address of the Applicant** | Plot No-23, Sahibabad Industrial Area Site-4, Ghaziabad. | **Application No.** | GZBD0624RIN0900 |
| **Date of Submission** | 14/06/2024 | **Specimen Signature** | |
| **Company Name** | TATA STEEL LIMITED | **Company Address** | Plot No-23, Sahibabad Industrial Area Site-4,Ghazi |
| **Location Particulars** | | | |
| **District** | Ghaziabad | **Block** | Municipal Corporation/Nagar Nigam, Ghaziabad |
| **Plot No./Khasra No.** | 23, M-1,M-1 addi,M-14,M-24, & Other | **Municipality/Corporation** | N/A |
| **Ward No./Holding No.** | | | N/A |
| **Particular of the Existing Well and Pumping Device** | | | |
| **Date of Construction/Sinking of the Well** | 31/12/1992 | | |
| **Type of Well** | Tube Well/Boring | **Depth of the Well (In meter)** | 75.00 |
| **Purpose of well** | Industrial | **Assembly Size(For Tube Well)** | |
| **Strainer Position (For Tube Well)** | | | |
| **Type of Pump Used** | Submersible | **H.P. of the Pump** | 17.50 |
| **Operational Device** | Electric Motor | **Rate of Withdrawal ($m^3$/hr.)** | 51.00 |
| **Date of Energization (In Case of Electric Pump)** | | 31/12/1992 | |
| **Maximum Allowable Rate of Withdrawal ($m^3$/hr.):** | 51.00 | **Maximum Allowable Running Hours Per Day:** | 6.00 |
| **Maximum Allowable Annual Extraction of Ground Water:** | 110160.00 | **Recharge Required** | 0.00 |
| **Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण** | non availability of other source of water | | |

| | |
|---|---|
| **Against Case** | |

- This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours 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 0.00 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 meters(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 extraction of ground water from the well as shown in item 3(k) 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 SI. (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) n case, any of the particulars I 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 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 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 | Monitiring Mechanism | |
|---|---|---|---|---|
| | | | Manual | DWLR with Telemetry |
| 1 | < 10 | 0 | 0 | 0 |
| 2 | 11 - 50 | 1 | 1 | 0 |
| 3 | 50- 500 | 1 | 0 | 1 |
| 4 | > 500 | 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 taped and assembly lowered 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 analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to 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 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 I 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 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 $m^3$/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 Bharati 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/ proposing to draw more than 10 $m^3$/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, dyes, pigments, paints, 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 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 new projects, where ground water requirement is more than 20 $m^3$ /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**04/11/2024**

Place:**Ghaziabad**

## This certificate is electronically generated and does not require digital signature

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: REG011452

## VALID FROM 08/06/2023 TO 07/06/2028

| **Serial No.: 202406000820** | | | |
|---|---|---|---|
| **Name of the Owner** | THACHAT VISWANATH NARENDRAN | | |
| **Address of the Applicant** | Plot No-23, Sahibabad Industrial Area Site-4, Ghaziabad. | **Application No.** | GZBD0624RIN0902 |
| **Date of Submission** | 14/06/2024 | **Specimen Signature** | |
| **Company Name** | TATA STEEL LIMITED | **Company Address** | Plot No-23, Sahibabad Industrial Area Site-4,Ghazi |
| **Location Particulars** | | | |
| **District** | Ghaziabad | **Block** | Municipal Corporation/Nagar Nigam, Ghaziabad |
| **Plot No./Khasra No.** | 23, M-1,M-1 addi,M-14,M-24, & Other | **Municipality/Corporation** | N/A |
| **Ward No./Holding No.** | | | N/A |
| **Particular of the Existing Well and Pumping Device** | | | |
| **Date of Construction/Sinking of the Well** | 31/12/1992 | | |
| **Type of Well** | Tube Well/Boring | **Depth of the Well (In meter)** | 75.00 |
| **Purpose of well** | Industrial | **Assembly Size(For Tube Well)** | |
| **Strainer Position (For Tube Well)** | | | |
| **Type of Pump Used** | Submersible | **H.P. of the Pump** | 17.50 |
| **Operational Device** | Electric Motor | **Rate of Withdrawal ($m^3$/hr.)** | 51.00 |
| **Date of Energization (In Case of Electric Pump)** | | 31/12/1992 | |
| **Maximum Allowable Rate of Withdrawal ($m^3$/hr.):** | 51.00 | **Maximum Allowable Running Hours Per Day:** | 6.00 |
| **Maximum Allowable Annual Extraction of Ground Water:** | 110160.00 | **Recharge Required** | 0.00 |
| **Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण** | Non Availability of alternate source of water | | |

| | |
|---|---|
| **Against Case** | |

- This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours 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 0.00 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 meters(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 extraction of ground water from the well as shown in item 3(k) 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 SI. (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) n case, any of the particulars I 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.
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- (10) Guidelines for Installation of Piezometers and their Monitoring
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- • 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 | Monitiring Mechanism | |
|---|---|---|---|---|
| | | | Manual | DWLR with Telemetry |
| 1 | < 10 | 0 | 0 | 0 |
| 2 | 11 - 50 | 1 | 1 | 0 |
| 3 | 50- 500 | 1 | 0 | 1 |
| 4 | > 500 | 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 taped and assembly lowered 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 analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to 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 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 I 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 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 $m^3$/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 Bharati 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/ proposing to draw more than 10 $m^3$/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, dyes, pigments, paints, 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 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 new projects, where ground water requirement is more than 20 $m^3$ /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**04/11/2024**

Place:**Ghaziabad**

## This certificate is electronically generated and does not require digital signature

# 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: REG025906

## VALID FROM 08/06/2023 TO 07/06/2028

| **Serial No.: 202406000817** | | | |
|---|---|---|---|
| **Name of the Owner** | THACHAT VISWANATH NARENDRAN | | |
| **Address of the Applicant** | Plot No-23, Sahibabad Industrial Area Site-4, Ghaziabad. | **Application No.** | GZBD0624RIN0901 |
| **Date of Submission** | 14/06/2024 | **Specimen Signature** | |
| **Company Name** | TATA STEEL LIMITED | **Company Address** | Plot No-23, Sahibabad Industrial Area Site-4,Ghazi |
| **Location Particulars** | | | |
| **District** | Ghaziabad | **Block** | Municipal Corporation/Nagar Nigam, Ghaziabad |
| **Plot No./Khasra No.** | 23, M-1,M-1 addi,M-14,M-24, & Other | **Municipality/Corporation** | N/A |
| **Ward No./Holding No.** | | | N/A |
| **Particular of the Existing Well and Pumping Device** | | | |
| **Date of Construction/Sinking of the Well** | 31/12/1994 | | |
| **Type of Well** | Tube Well/Boring | **Depth of the Well (In meter)** | 75.00 |
| **Purpose of well** | Industrial | **Assembly Size(For Tube Well)** | |
| **Strainer Position (For Tube Well)** | | | |
| **Type of Pump Used** | Submersible | **H.P. of the Pump** | 17.50 |
| **Operational Device** | Electric Motor | **Rate of Withdrawal ($m^3$/hr.)** | 51.00 |
| **Date of Energization (In Case of Electric Pump)** | | 31/12/1994 | |
| **Maximum Allowable Rate of Withdrawal ($m^3$/hr.):** | 51.00 | **Maximum Allowable Running Hours Per Day:** | 6.00 |
| **Maximum Allowable Annual Extraction of Ground Water:** | 110160.00 | **Recharge Required** | 0.00 |
| **Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण** | Non Availability of alternate source of water | | |

| | |
|---|---|
| **Against Case** | |

- This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours 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 0.00 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 meters(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 extraction of ground water from the well as shown in item 3(k) 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 SI. (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) n case, any of the particulars I 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 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 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 | Monitiring Mechanism | |
|---|---|---|---|---|
| | | | Manual | DWLR with Telemetry |
| 1 | < 10 | 0 | 0 | 0 |
| 2 | 11 - 50 | 1 | 1 | 0 |
| 3 | 50- 500 | 1 | 0 | 1 |
| 4 | > 500 | 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 taped and assembly lowered 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 analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to 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 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 I 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 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 $m^3$/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 Bharati 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/ proposing to draw more than 10 $m^3$/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, dyes, pigments, paints, 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 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 new projects, where ground water requirement is more than 20 $m^3$ /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**04/11/2024**

Place:**Ghaziabad**

## This certificate is electronically generated and does not require digital signature

# 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: REG030186

## VALID FROM 08/06/2023 TO 07/06/2028

| **Serial No.: 202406000821** | | | |
|---|---|---|---|
| **Name of the Owner** | THACHAT VISWANATH NARENDRAN | | |
| **Address of the Applicant** | Plot No-23, Sahibabad Industrial Area Site-4, Ghaziabad. | **Application No.** | GZBD0624RIN0903 |
| **Date of Submission** | 14/06/2024 | **Specimen Signature** | |
| **Company Name** | TATA STEEL LIMITED | **Company Address** | Plot No-23, Sahibabad Industrial Area Site-4,Ghazi |
| **Location Particulars** | | | |
| **District** | Ghaziabad | **Block** | Municipal Corporation/Nagar Nigam, Ghaziabad |
| **Plot No./Khasra No.** | 23, M-1,M-1 addi,M-14,M-24, & Other | **Municipality/Corporation** | N/A |
| **Ward No./Holding No.** | | | N/A |
| **Particular of the Existing Well and Pumping Device** | | | |
| **Date of Construction/Sinking of the Well** | 31/12/1992 | | |
| **Type of Well** | Tube Well/Boring | **Depth of the Well (In meter)** | 75.00 |
| **Purpose of well** | Industrial | **Assembly Size(For Tube Well)** | |
| **Strainer Position (For Tube Well)** | | | |
| **Type of Pump Used** | Submersible | **H.P. of the Pump** | 17.50 |
| **Operational Device** | Electric Motor | **Rate of Withdrawal ($m^3$/hr.)** | 51.00 |
| **Date of Energization (In Case of Electric Pump)** | | 31/12/1992 | |
| **Maximum Allowable Rate of Withdrawal ($m^3$/hr.):** | 51.00 | **Maximum Allowable Running Hours Per Day:** | 6.00 |
| **Maximum Allowable Annual Extraction of Ground Water:** | 110160.00 | **Recharge Required** | 0.00 |
| **Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण** | Non Availability of alternate source of water | | |

| | |
|---|---|
| **Against Case** | |

- This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours 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 0.00 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 meters(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 extraction of ground water from the well as shown in item 3(k) 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 SI. (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) n case, any of the particulars I 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 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 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 | Monitiring Mechanism | |
|---|---|---|---|---|
| | | | Manual | DWLR with Telemetry |
| 1 | < 10 | 0 | 0 | 0 |
| 2 | 11 - 50 | 1 | 1 | 0 |
| 3 | 50- 500 | 1 | 0 | 1 |
| 4 | > 500 | 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 taped and assembly lowered 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 analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to 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 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 I 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 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 $m^3$/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 Bharati 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/ proposing to draw more than 10 $m^3$/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, dyes, pigments, paints, 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 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 new projects, where ground water requirement is more than 20 $m^3$ /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**05/11/2024**

Place:**Ghaziabad**

## This certificate is electronically generated and does not require digital signature

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: REG013938

## VALID FROM 08/06/2023 TO 07/06/2028

| **Serial No.: 202406000824** | | | |
|---|---|---|---|
| **Name of the Owner** | THACHAT VISWANATH NARENDRAN | | |
| **Address of the Applicant** | Plot No-23, Sahibabad Industrial Area Site-4, Ghaziabad. | **Application No.** | GZBD0624RIN0904 |
| **Date of Submission** | 14/06/2024 | **Specimen Signature** | |
| **Company Name** | TATA STEEL LIMITED | **Company Address** | Plot No-23, Sahibabad Industrial Area Site-4,Ghazi |
| **Location Particulars** | | | |
| **District** | Ghaziabad | **Block** | Municipal Corporation/Nagar Nigam, Ghaziabad |
| **Plot No./Khasra No.** | 23, M-1,M-1 addi,M-14,M-24, & Other | **Municipality/Corporation** | N/A |
| **Ward No./Holding No.** | | | N/A |
| **Particular of the Existing Well and Pumping Device** | | | |
| **Date of Construction/Sinking of the Well** | 31/12/1997 | | |
| **Type of Well** | Tube Well/Boring | **Depth of the Well (In meter)** | 75.00 |
| **Purpose of well** | Industrial | **Assembly Size(For Tube Well)** | |
| **Strainer Position (For Tube Well)** | | | |
| **Type of Pump Used** | Submersible | **H.P. of the Pump** | 17.50 |
| **Operational Device** | Electric Motor | **Rate of Withdrawal ($m^3$/hr.)** | 51.00 |
| **Date of Energization (In Case of Electric Pump)** | | 31/12/1997 | |
| **Maximum Allowable Rate of Withdrawal ($m^3$/hr.):** | 51.00 | **Maximum Allowable Running Hours Per Day:** | 6.00 |
| **Maximum Allowable Annual Extraction of Ground Water:** | 110160.00 | **Recharge Required** | 0.00 |
| **Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण** | Non Availability of alternate source of water | | |

| | |
|---|---|
| **Against Case** | |

- This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours 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 0.00 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 meters(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 extraction of ground water from the well as shown in item 3(k) 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 SI. (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) n case, any of the particulars I 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:
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- • 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 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 | Monitiring Mechanism | |
|---|---|---|---|---|
| | | | Manual | DWLR with Telemetry |
| 1 | < 10 | 0 | 0 | 0 |
| 2 | 11 - 50 | 1 | 1 | 0 |
| 3 | 50- 500 | 1 | 0 | 1 |
| 4 | > 500 | 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 taped and assembly lowered 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 analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to 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 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 I 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 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 $m^3$/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 Bharati 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/ proposing to draw more than 10 $m^3$/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, dyes, pigments, paints, 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 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 new projects, where ground water requirement is more than 20 $m^3$ /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**05/11/2024**

Place:**Ghaziabad**

## This certificate is electronically generated and does not require digital signature

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Government of Uttar Pradesh

e-Stamp

IN-UP82571413438747W

Acc Name-Mohit Aggarwal, Licence No.-408
Acc Code - UP14076104, Ghaziabad, (U.P.)
Mobile No-9811779165, Sign.....

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| Certificate No. | : | IN-UP82571413438747W |
| Certificate Issued Date | : | 12-Sep-2024 03:02 PM |
| Account Reference | : | NEWIMPACC (SV)/ up14076104/ GHAZIABAD SADAR/ UP-GZB |
| Unique Doc. Reference | : | SUBIN-UPUP14076104619506909917 40W |
| Purchased by | : | TATA STEEL LTD |
| Description of Document | : | Article 4 Affidavit |
| Property Description | : | Not Applicable |
| Consideration Price (Rs.) | : | |
| First Party | : | TATA STEEL LTD |
| Second Party | : | Not Applicable |
| Stamp Duty Paid By | : | TATA STEEL LTD |
| Stamp Duty Amount(Rs.) | : | 100 (One Hundred only) |

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# AGREEMENT FOR THE SUPPLY OF RECYCLED SEWAGE WATER FOR INDUSTRIAL USE BY THE UNITS / INDUSTRIES IN THE AREA UNDER SAHIBABAD INDUSTRIAL AREA, GHAZIABAD

This Agreement is drawn on the 08th day of Oct., 2024 between:

(i) **GHAZIABAD NAGAR NIGAM**, established under the Uttar Pradesh Municipal Corporation Act, 1959, having its office at Ghaziabad Nagar Nigam, Navyug Market, Opp. Old Bus Stand, Ghaziabad - 201001 (U.P.) (hereinafter referred to as "**GNN/Seller**", which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successors-in-office and permitted assigns) of the **FIRST PART**;

**GHAZIABAD WATER SOLUTIONS PRIVATE LIMITED (hereinafter referred to as "GWSPL")**, a Special Purpose Vehicle (SPV) incorporated, registered and existing under the Companies Act, 2013 having CIN U41000TN2020PTC135253, and

For Tata Steel Ltd.
Mohit Das
Chief, Corporate Services, TSM

महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

having its registered office at "WABAG House" No. 1 7, 200 Feet Thoraipakkam - Pallavaram Main Road, Sunnambu Kolathur, Chennai 600117 (hereinafter referred to as the Concessionaire, which expression shall, unless it be repugnant to the context or meaning thereof, include its successors and permitted assigns) of the **SECOND PART**:

**GNN and GWSPL (100% subsidiary of M/s VA Tech Wabag Ltd., the concessionaire) are hereinafter collectively referred to as First Parties.**

**AND**

(iii) **M/s TATA STEEL LIMITED**, having its registered office at **Bombay House, 24, Homi Mody Street, Mumbai 400 001** and one of its plant site at plot no 23, site 4, Sahibabad, Ghaziabad, Utter Pradesh (hereinafter referred to as **"User"** which expression shall unless repugnant to the context, mean and include its permitted assignees) of the **THIRD PART**;

Each of GNN, GWSPL and User hereinafter to be referred individually as the "**Party**" and collectively as the "**Parties**".

WHERE AS

A. GNN intends to develop a "Public Private Partnership (PPP)-Hybrid Annuity Model (HAM) to set up a Tertiary Treatment plant to treat secondary treated water from Indirapuram Sewage treatment plant (hereinafter referred to as "**TSTP**") to supply Industrial Grade Water to industrial units situated under the jurisdiction area of Sahibabad Industrial Area, Ghaziabad from Ghaziabad Nagar Nigam (the "Project").

B. GWSPL will implement, operate and maintain the Project Facility and supply the Recycled Water to the User on behalf of GNN.

C. The Parties now agree to the following understanding in relation to the supply of Recycled Water ("Product") by the First Parties to the User as per this Agreement.

Now, THEREFORE, the Parties hereto agree as follows:

1. **Project Facility**

Project Facility means collectively the following:

(a) Waste Water Treatment Plant including ultra-filtration and reverse osmosis (UF&RO) plant being constructed in STP premises at Indirapuram [collectively referred to as "**Tertiary Treatment and Reverse Osmosis plant (TTRO)**"],
(b) Pumping station(s) for product supply,
(c) Conveyance pipeline from Indirapuram TTRO premises to user's premises on exclusive basis, for supply of the treated water, and
(d) Includes any other infrastructure that forms or may form part of the Project Facility at a future date.

For Tata Steel Ltd.
Mohit Das
Chief, Corporate Services, TSM

महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

The Project Facility is being developed by GNN along with the Concessionaire. The commercial operations date (hereinafter referred to as "COD") of 40 million Liters per Day (MLD) supply of the Product by the First Parties to User would be presumably in the Month of September in year 2024.

2. **Contracted Quantity**

(a) The contracted quantity (hereinafter referred to as "**Contracted Quantity**") is 1250 kilo liter Per Day (KLD) for the CRM Plant situated at plot no. 23, Site-IV, Sahibabad Industrial Area, Ghaziabad. The Date of Commencement will be presumably September, 2024. In case of delay the First Parties shall inform the User in writing.

(b) The First Parties assures the User that supply of Contracted Quantity of the Product shall be undertaken as per the terms and conditions provided in this Agreement.

(c) The supply obligations on the part of the GNN and payment obligations on the part of the User shall commence from the actual Date of Commencement. The User shall off take the Contracted Quantity of the Product for the Supply Period from the GNN, from the Date of Commencement onwards. The Date of Commencement shall be the date on which Product are supplied to the User.

(d) "Supply Period" would mean the period on daily basis i.e., calendar day.

(e) The actual supply may vary for about +/- 5% of the Contracted Quantity. The User will be billed and shall pay for the actual quantity delivered to the User from the Date of Commencement.

(f) The Contracted Quantity of the Product shall be supplied equally in a period spread of 24 hours.

3. **Delivery of Water**

(a) Water shall be delivered from Indirapuram TTRO to User at the junction of approach road for the unit/works and public road. First Parties shall have to make all arrangements to deliver the water from source and other allied infrastructure and comprehensive networks, and the same shall be maintained by the First Parties. All capital and maintenance costs shall be borne by the First Party, and the User is therefore obligated to draw water for a minimum period of three (03) years, which may be renewed for a subsequent period of three (03) years upon the expiry of the Agreement, with consensual approach of the Parties. (i.e. Contract Period).

User shall make all proper and adequate arrangement as per rules & regulations of Ghaziabad Nagar Nigam and Applicable Laws for drawing water from the junction point of unit/factory/works approach road and public road at its own risk and cost. If any defect in inlet/connection arrangements or water using equipment's arise the same shall be rectified by the First Parties. First Parties shall have an option to stop supply of water without any notice as soon as any defect or unsafe operation is notified in the User inlet/connection arrangement or metering equipment, the decision with respect to which shall be of the First Parties and the same shall be absolute and binding upon the User. Inlet/connection arrangement means the installation of pipeline from the junction point of factory/ unit / works-approach road and public road to its unit, water meter, sluice valve, non-return valve etc. The said arrangement shall be

For Tata Steel Ltd.
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Chief, Corporate Services, TSML



महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

made available by First Parties. User shall not have the right to adjust, clean, handle, replace, maintain, tinker, remove or modify in any manner all such above state inlet/connection arrangement at any time during the tenure of the Agreement.

(b) User under no circumstances shall sublet/ lease/ sell/ create a change over on part or whole with the water related property at any given time, without the written consent of the First Parties.

(c) Any production losses or any kind of losses whatsoever attributable to the functioning of the aforesaid equipment/installations for any reason whatsoever shall, in no way be the First Parties' responsibility and accordingly the First Parties shall not be held responsible for any such losses or damages in any circumstances.

(d) Notwithstanding anything contained in any of the clauses of this Agreement, in case it is found that the User have tampered with the water metering equipment, the water supply to the User will be discontinued after giving prior notice to the User by the First Parties The decision of the First Parties in this connection shall be final and binding upon Second Party. In such a case User shall pay the penalty and losses occurring to First Parties before resumption of the supply. If the amount is not paid by the User within 7 (seven) days from the receipt of Debit Note from GNN, this Agreement shall be liable to be terminated by the First Parties and the equivalent amount as per the Contract Demand at least for three years shall be recovered and the deposit paid by User shall be forfeited.

(e) Water distribution equipment installed for supply of water like internal pipeline water meter, sluice valve, non-return valve from the junction point of approach road of factory/unit/works and public road to the factory/unit/works of the User is supposed to be property of GNN. First Parties or its authorised representative, at the risk and cost of User shall have rights of entry at all hours to the water metering station, route of pipeline up to all consumption points and water consuming facilities situated inside or outside the premises to the User.
It shall be the sole responsibility of User to safeguard the assets, such as pipeline, water meter, sluice valve, non-return valve etc. created under water distribution system inside or outside the premises up to the terminal point junction chamber which are within the User premises and are in possession of the User against theft or pilferage etc. First Parties will restore and rehabilitate the damaged distribution system at the risk and cost of the User in the event where theft or pilferage etc. happens to the assets.

**4. Supply Price for the Product**

(a) Initial Supply price of Rs. 45.90 per kilo liter (KL) shall be payable by the User to the GNN, for the supply of the Product, for the 1st year.

(b) An escalation of 5% shall be applicable every year, on the previous year's applicable price.

**5. Quantity of Water**

(a) The User shall declare to the First Parties about the current requirements on daily basis with future requirement (if any).

(b) The First Parties shall install water meter at the premises of the User, the installed water meter shall be used for the assessment of the quantity of water consumption by the User.

For Tata Steel Ltd.
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महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

(c) User can consume more water than the Contracted Quantity as per Agreement. First Parties shall charge Rs. 45.90/- per KL, or otherwise as per the revised rate as applicable at the time of the excess supply. Further it is agreed by both the Parties, that during the billing cycle, if User has consumed less than 80% of the Contracted Quantity, then First Parties will raise the bill for 80% of the Contracted Quantity.

(d) The First Parties shall treat the connection illegal on the following conditions:

i. If the water connection is taken without the prior permission of theFirst Parties;

ii. If the water meter installed in the premises of User is "by-passed";

iii. If at any time First Parties comes to the knowledge that any mischief/adjustment to the meter is carried out or found out or traces of tempering the meter is spotted;

iv. If at any time First Parties comes to the knowledge that the motor/pump or any other pumping device is attached or found for direct pumping from the water connection of the First Parties;

(e) First Parties shall impose the penalty for the illegal connection as stated above.

(f) User shall provide an underground storage tank(s) at their own at their working place.

(g) First Parties shall not allow any motoring/pumping directly from the connection of First Parties.

**6. Measurement and Calibration**

a. The volume of water supplied under the Agreement shall be measured in standard cubic meter/kilolitre as per the reading of the water meter. The water meter shall be supplied, installed and maintained by First Parties.

b. If User has any doubt on the proper working of the meter, it can request First Parties for the calibration of metering system along with an advance payment of Rs. 5,000/- (Rupees five thousand only) towards the calibration charges. First Parties shall undertake such checks / calibration of water meter system after the receipt of intimation from the User in writing. Over and above calibration charges, the repairing / replacement of any part of the metering system after the warranty has expired will be charged on actual to the User, pending the final result of such calibration / recalibration, User shall not withhold the payment to the First Parties under the Agreement on this account. However, User may lodge its calibration / recalibration within a period of fourteen (14) days of such calibration / recalibration. Any such claim, if found correct by the First Parties shall be adjusted against subsequent invoice(s) of supply water. No interest shall accrue to such refunds by the First Parties to the User.

**7. Shutdown and Stoppage of Supply**

(a) The scheduled shut down of water supply on the one side from First Parties' end and on the other side of the User's end shall be limited in each case to fifteen (15) days in two periods of time in a year with each period being not shorter than five (5)

For Tata Steel Ltd.

Mohit Das
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महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

days. The Party shall have to intimate the other Party at least fifteen (15) days prior to the proposed date of shut down.

(b) The First Parties shall in case of a scheduled shutdown make alternative arrangement for piped supply of Contracted Quantity from other plants. If the piped supply is stopped by the First Parties, the First Parties shall supply the Contracted Quantity through tankers. In such an event, the User shall also be entitled to make alternative arrangement for supply of water to continue its plant operations and this shall not be considered in any manner a violation of this Agreement. . However, any alternative arrangements made by the user must not involve groundwater extraction through illegal borewells or any other methods deemed illegal by the First Parties

(c) The User shall inform First Parties immediately about any defects in the water inlet/connection arrangement of the User calling for the complete or partial stoppage of the supply of water. Provided that in all such cases, the provisions relating to the payment of minimum guaranteed consumption (i.e., 80% of the agreed demand) shall be applicable.

(d) First Parties shall, likewise inform the User immediately about any defects in water installations and/or water pipeline of the First Parties calling for discontinuation or complete or partial stoppage of supply of water. First Parties shall not be liable for failure to perform or for delay in performing any provision(s) of the Agreement by User in such conditions and shall be held responsible for any losses or damages to User due to partial or complete stoppage of water supply. The provisions related to the payment of minimum guaranteed consumption (i.e., 80% of the agreed demand) shall not be applicable.

(e) Subject to clause 7 (a), if the User requires additional shut down, it shall have to give prior notice of 7 days to the First Parties for shutting down for a period of a week (or less than that) and for shutting down the system the User shall have to pay Rs. 5,000/- (Rupees five thousand only) for more than 25mm connection in case of industry, along with outstanding and due water charges and Rs. 1,000/- (Rupees one thousand only) for 25mm and less than 25mm connection in case of industry along with outstanding and due water charges. In case of shutdown the connection for more than a week, User shall have to produce appropriate documentary evidence for the shutdown / non-production of the factory for the period.

(f) Subject to clause (i), in case of shutting down the connection without any sufficient cause by the First Parties, First Parties will charge as per the consumption by the User.

(g) In case the First Parties fails to supply the water due to force majeure condition or other situation like repairs / maintenance / electricity failure, outage etc. it shall be treated as unavoidable circumstances due to proactive actions/ preventive measures being taken to pre-empt such unwanted incident but in vain and therefore, User shall not be liable for any compensation / claim. the First Parties shall provide the Contracted Quantity via tankers. The User may also make alternative arrangements to ensure the continued operation of its plant, and this will not be considered a breach of this Agreement. However, any alternative arrangements made by the user must not involve groundwater extraction through illegal borewells or any other methods deemed illegal by the First Parties

(h) In accordance with sub clause (e) above the User shall have to pay Rs. 10,000/- (Rupees ten thousand only) per connection for restarting the system to the First Parties.

(i) Notwithstanding anything contained herein, in case of shutdown or stoppage of supply of water for any reason whatsoever by the First Parties, the First Parties shall provide the Contracted Quantity via tankers. The User may also make alternative arrangements to ensure the continued operation of its plant, and this will not be considered a breach of this Agreement. However, any alternative arrangements

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महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

made by the user must not involve groundwater extraction through illegal borewells or any other methods deemed illegal by the First Parties.

8. **Failure of Supply**

(a) If First Parties are not able to supply the Contracted Quantity of the Product during the Supply Period, either due to water quality not meeting the specified standard or for any reason, then the User the Supply Price shall be payable for the actual off-take quantity.

(b) However, considering unexpected contingencies, the User is required to make alternate arrangements in case of failure to supply the Product by the First Parties to the User. The First Parties are to put all efforts to resume the supply of the Product to the User in the shortest possible time after the unexpected contingencies.

9. **Conveyance Pipeline**

(a) The right of way for laying of the Conveyance Pipeline in the User premises up to the point where First Supplies network ends and the User' off-take network starts (hereinafter referred to as "**Delivery Point**"), would be provided free of cost by the User to the First Parties.

(b) The User, at its premises, shall always facilitate the First Parties during the construction and operation & maintenance period by providing requisite permission etc. for carrying out the various works.

(c) The First Parties shall be responsible for the safety and O&M of the Conveyance Pipeline up to Delivery Point.

10. **Metering**

(a) Continuous Online Metering for determining the exact quantities of the Product supplied shall be done at the Delivery Point in the User premises. First Parties shall install a meter with a standby at the Delivery Point.

(b) Necessary instrumentation for real time online monitoring of water quality shall be installed & maintained by the First Parties at the Delivery Point.

(c) Periodical calibration of the water meters and water quality instruments shall be carried out by the First Parties along with the User.

(d) The User shall provide adequate space or as per requirement for installation of the water meters.

(e) Power requirement for the metering station shall be provided by the User.

11. **Water Quality**

a. The Product to be supplied by the First Parties to the User shall be as per the standards specified in Annexure-I.

b. In case the water quality is not as per the standards specified, then the User may stop the receipt of Product with immediate intimation to the First Parties. Prior to usage of such Product, the User shall carry out the requisite quality tests of the Product to confirm the quality standards/requirements for its further

For Tata Steel Ltd.
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Chief, Corporate Services, TSM



महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

intended use.

d. The First Parties shall not be responsible for the quality of Product beyond the Delivery Point.

**12. Security for Payment**

(a) Advance consumption charges (security deposit) shall be submitted by the User to the GNN in the form of Bank Guarantee (BG)/ Fixed Deposit in favour of Municipal Commissioner, Ghaziabad Nagar Nigam for the Contracted Quantity of the Product in the manner as specified therein above in Clause 3 i.e., Contracted Quantity in KL x 30 days x Supply Price. The advance consumption charges (security deposit) of one (1) Month charges in form of Bank Guarantee is fixed considering the current financial position of User. However, GNN reserves the right to increase the advance consumption charges in future in case there is a change in Contracted Quantity.

(b) The advance consumption charges shall be deposited (fifteen)15 days prior to the Date of Commencement.

(c) The User has to submit the Bank Guarantee for (thirty) 30 days advance consumption charges (security deposit) taking into consideration the yearly escalation in Supply Price of the Product. The differential amount shall also be submitted in the form of Bank Guarantee. Bank Guarantee shall be initially valid for one year and the same shall be extended every year before expiry date, with the escalated price.

**13. Payment Mechanism for Monthly Consumption Charges**

a. The bill for the Product consumed will be served once in a month.

b. GNN & GWSPL will ensure that the bill reaches to the User by 10th day of every month. In any case if the bill is not received by 10th day, the User has to inform the same to the GNN on the 11th day and obtain the duplicate bill.

c. The User has to pay the bill within (15) fifteen days from the date of email of the scan copy of the bill by the First Parties to the User, in the Bank Account as specified by the GNN, failing which the release of the Product will be stopped with seven (7) days prior intimation in writing to User.

**14. Disconnection**

(a) If the monthly consumption charges for the Product are not paid within the due date and subsequent notice for payment of the dues within seven (7) days, the Product supply to the User will be stopped and the connection shall be disconnected after giving a notice of fifteen (15) days and penalty of Rs.10,000/- will be levied on the User for reconnection, after clearing the bill.

(b) Further, if the connection is disconnected, the User shall be charged an interest @1% per month from the due date to the date of actual payment over the outstanding due amount, in addition to the penalty of Rs.10,000/- for reconnection after clearing the bill.

For Tata Steel Ltd.
Mohit Das
Chief, Corporate Services, TSM

महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

## 15. Dispute Resolution, Governing Law and Jurisdiction

(a) In case of any dispute pertaining to the bills raised by the First Parties, the User shall bring to the notice of the concerned Parties within 7 (seven) days from the receipt of the bill, otherwise no objections will be admitted after 7 (seven) days.

(b) Even if any bill raised by the First Parties is disputed, the User should pay the full amount of such disputed bill, pending settlement of the dispute through mutual understanding and excess payment, if any, will be adjusted in subsequent bills. In case of failure to arrive at a settlement through mutual understanding, the Parties are free to resort to civil proceedings.

(c) Dispute Resolution Mechanism:

(i) All disputes and differences, whatsoever, arising between the parties outof or relating to or in connection with the meaning, scope, operation or effect of this Agreement or breach thereof shall be settled between the First Parties and the User amicably. In the event of any dispute, the parties shall endeavour to resolve such dispute by discussion in good faith in the first instance within 30 (thirty) days of notice of such dispute.

(ii) If, however, the parties are not able to resolve their disputes and differences amicably as aforesaid, such disputes and differences whatsoever arising between the parties out of or relating to or in connection with the meaning, operation or effect of this Agreement or the breach shall be settled at competent jurisdiction by civil proceedings.

(iii) Notwithstanding the existence of any dispute and differences or Court Case in terms hereof or otherwise, work under the contract shall continue and be bound to continue to perform their respective obligations according to be contract, and the parties shall remain liable and bound in all respects under the Contract.

(iv) The Civil Courts at Ghaziabad, India with the exclusion of all other courts shall alone have jurisdiction over all matters relating to this contract and the disputes and differences arising from the same. Governing law shall be Laws of India.

## 16. Force Majeure

"**Force Majeure**" shall mean any event or circumstance or combination thereof which prevents the Party claiming Force Majeure (the '**Affected Party**') from performing its obligations under this Agreement and which event or circumstance:

(i) is beyond the reasonable control and not arising out of the default of the affected Party;

(ii) the Affected Party has been unable to overcome such circumstance or eventby the exercise of due diligence and reasonable efforts, skill and care; and

(iii) has a material adverse effect on the subsistence of this Agreement.

For Tata Steel Ltd.
Mohit Das
Chief, Corporate Services, TSM



महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

Such events or circumstances shall include, without limitation, the effect of any natural element or other acts of State or God, including but not limited to, fire, flood, earthquake, lightning, cyclone, landslides or other natural disasters, strikes or otherindustrial disturbances, war, riots, civil commotion, terrorist attacks, embargoes, blockades, governmental restriction, intervention of defense authorities or any change in laws applicable to any Party hereto

(a) A Party shall not be liable to the other Party for any loss, injury, delay, damages or other casualty suffered or incurred by the latter due to Force Majeure, and any failure or delay by any Party in performance of its obligations under this Agreement due to Force Majeure shall not be considered as a breach of this Agreement.

(b) The Party suffering Force Majeure shall notify the other Parties in writing promptly after the occurrence of such Force Majeure event. Such Party shall, to the extent reasonable and lawful, use its best efforts to remove or remedy such cause. Upon the occurrence of a Force Majeure event, the Party claiming Force Majeure shall use all reasonable methods to continue to perform its obligations under this Agreement and to minimize the adverse effects of such circumstances. Such a Party shall notify the other Parties of the steps it proposes to take including any reasonable alternative means for performance. In the event any obligation cannot be performed due to continuance of a Force Majeure event for a period of 7 days or more, the Parties agree that the time period for the performance of such obligation shall stand extended for an equivalent period after such time as the Force Majeure event ceases to exist.

(c) If, as a result of a Force Majeure event, the Agreement has been rendered unviable or un-bankable or the Force Majeure event is not likely to be cured within a reasonable foreseeable period, the Parties may decide to terminate this Agreement in which case the Parties shall be entitled to receive payments accrued and due to them, before the occurrence of the Force Majeure event.

**17. Validity, Effectiveness and Operation of this Agreement**

This Agreement:

(a) shall come into effect from the date of the Agreement is signed between the First Parties and the User for utility and supply of the Product. It will be binding upon both the Parties for a period of 03 (Three) years from the Date of Commencement ("**Validity Period**"). The Agreement may be extended to further period of time with consensual approach of the Parties.

(b) will remain in place until such time as one or all Parties determine otherwise,

(c) shall be executed in English in three originals, one for each Party, and

(d) can be amended at any time by a written agreement between the Parties

For Tata Steel Ltd.
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Chief, Corporate Services, TSM

महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

or may be mutually extended by the Parties in writing.

(e) This Agreement may be extendable for a mutually agreeable period as per mutual consent between the Parties on the existing terms and conditions.

Further, the Parties agree that:

(a) First Parties will take all measures to ensure smooth and regular supply of the Product to the User but First Parties shall not be responsible for loss of property or life or what so ever it may be due to shortage in supply due to accidental or unforeseen circumstances or matters beyond the control of the First Parties.

(b) The First Parties will inform 48 hours in advance to the User about the stoppage of the Product for maintenance of various water supply installations. The First Parties shall in such case make alternative arrangement for piped supply of Contracted Quantity from other plants. If the piped supply is stopped by the First Parties, the First Parties shall supply the Contracted Quantity through tankers. In such an event, the User shall also be entitled to make alternative arrangement for supply of water for continue its plant operations. Which shall not be considered in any manner a violation of this Agreement. However, any alternative arrangements made by the user must not involve groundwater extraction through illegal borewells or any other methods deemed illegal by the First Parties

(c) The User should approach the GNN well in advance before the expiry date, for renewal of this Agreement.

**18. Termination**

a. Any Party may terminate this Agreement prior to expiry of its Validity Period, by 3 months' written notice to the other Parties.

b. This Agreement is terminable upon the occurrence of a Material Breach (as defined below) which has a Material Adverse Effect. This Agreement will also terminate automatically upon the bankruptcy of any Party hereto.

c. For the purpose of this clause:

"Material Breach" means a breach of the obligations, terms and conditions of this Agreement or covenants by a Party, which materially and substantially affects the performance of the transactions contemplated by this Agreement and results in a Material Adverse Effect.

"Material Adverse Effect" means circumstances which may or do (i) render any right vested in a Party by the terms of this Agreement ineffective; or (ii) adversely affect or restrict or frustrate the ability of any Party to observe and perform in a timely manner its obligations under this Agreement; or (iii) adversely affects the legality, validity, binding nature or enforceability of this Agreement.

d. The termination of this Agreement shall not affect the rights of the Parties accrued

For Tata Steel Ltd.
Mohit Das
Chief, Corporate Services, TSM



महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

prior to such termination.

**19. Review**

(a) The Parties will review the Agreement to consider consistency with the operating arrangements and requirements and such other matters agreed between the Parties, during the course of the Agreement.

(b) A Review Committee comprising of members from the respective Parties may be set up.

The Parties confirm that they have carefully gone through the contents of this Agreement and agree to abide by the terms and conditions as laid down herein.

| Signed for and on behalf of **GNN** by: | Signed for and on behalf of **Tata Steel Limited.** by: |
|---|---|
| महाप्रबन्धक (जल)<br>नगर निगम गाजियाबाद<br>Name:<br>Designation: Date of signing: | For Tata Steel Ltd.<br>Mohit Das<br>Chief, Corporate Services,TSM<br>Name:<br>Designation: Date of signing: |
| Signed for and on behalf of **GWSPL** by: | |
| Private Limited * Ghaziabad Water Solutions<br>Name:<br>Designation: Date of signing: | |

**Witness:**

| First Parties | Third Party |
|---|---|
| 1. | 1. |
| 2. | 2. |

## Annexure-1

## Product (Recycled Water) Quality and Specifications

| Tertiary Treated Effluent Parameters | | | |
|---|---|---|---|
| Sr. No. | Parameter | Unit | Tertiary Treated – Industrial Grade Water |
| 1 | 2 | 3 | 4 |
| 1 | Turbidity | NTU | < 5 |
| 2 | pH | - | 6.0 – 7.5 |
| 3 | Total Hardness as CaCO3 | mg/l | < 300 |
| 4 | Iron as Fe | mg/l | < 0.25 |
| 5 | TDS | mg/l | < 500 |
| 6 | BOD5 | mg/l | < 2 |
| 7 | COD | mg/l | < 50 |
| 8 | Total Suspended Solids | mg/l | < 2 |
| 9 | Total Nitrogen as N | mg/l | < 10 |
| 10 | Total Phosphorus | mg/l | 1 |
| 11 | Apparent Color | Hazen Units | < 50 |
| 12 | Alkalinity | mg/l | < 50 |

For Tata Steel Ltd.

Mohit Das
Chief, Corporate Services, TSM

महाप्रबन्धक (जल)
नगर निगम गाजियाबाद

**Plan and Status of the Plantation for Tata Steel Limited, Sahibabad**

Plantation is being done in and around the existing plant as per the patches of land as allotted by Ghaziabad Nagar Nigam. Efforts are being put to plant more no. of saplings to go beyond the compliance requirement of 40% of the total existing plant area of 7.18 ha

| **Legend no. as shown on the map** | **Location as allotted by Ghaziabad Nagar Nigam** | **Distance from Plant boundary (km)** | **Allotted Area (ha)** | **% of Plant area (17.8 ha)** | **Actual Plantation (nos.)** | **Remarks** |
|---|---|---|---|---|---|---|
| 1 | Inside existing plant | 0 | 0.63 | 3.54 | 1974 | Completed and being maintained |
| 2 | In front of main gate (Madan Mohan Malviya Marg) | 0.01 | 0.20 | 1.12 | 845 | Completed and being maintained |
| 3 | UP Gate to Traffic Light Triangular, Mohan Malviya Marg | 0.3 | 1.83 | 10.28 | 9736 | Completed and being maintained |
| 4 | Part of Indirapuram waste dump yard, Indirapuram | 9 | 2.43 | 13.65 | 6200 | Being developed through external agency including maintenance and sustenance |
| 5 | Village Artha | 10 | 2.86 | 16.1 | A=41000<br>B= 55000 | |
| | **Grand Total** | | **7.95** | **44.7** | **104755** | |

Note –
A – Plantation Completed.
B - Proposed plantation in coming two monsoons.

# Plantation Photograph

# Location - Arthala



**Indira Puram Land Fill Site** **UP Gate** **Plant Premises**

# Compliance Report: CSR initiative in Sahibabad location

# FY 2024-2025: April 2024-September 2024

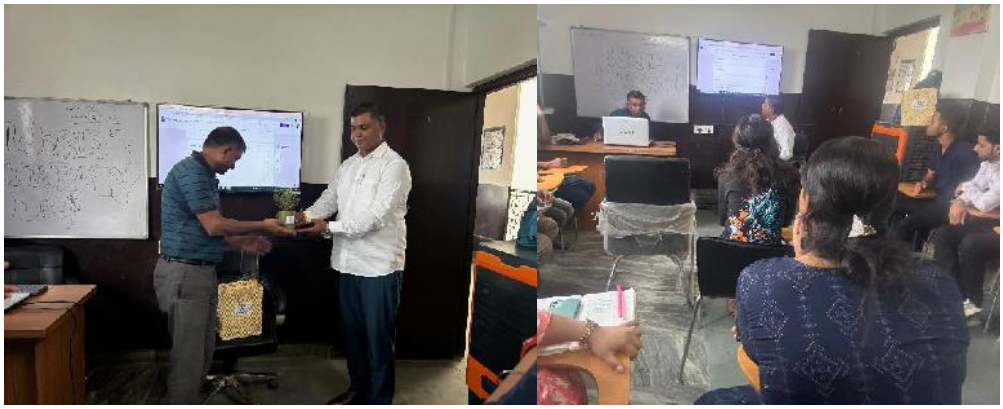
| SN | Areas of Intervention in FY 24-25 | Expenditure incurred (in lakhs) |
|---|---|---|
| 1 | **Improving quality of education**<br>(i) Soft Skill Development of youth by providing courses on Basic IT, Advance IT and English Learning in collaboration with NIIT Foundation<br>(ii) The Green School Project<br>(iii) Bridge Course for irregular and drop out children | **14.89** |
| 2 | **Healthcare Infrastructure**<br>(i) Construction of Anganwadi Centre Infrastructure | **18.33** |

## A. Improving Quality Education

### (i) Soft Skill Development of youth by providing courses on Basic IT, Advance IT and English Learning in collaboration with NIIT Foundation

In collaboration with NIIT Foundation, English learning, courses in Basic IT and Advance IT has been offered to youths of proximate village to upgrade soft skill development. This will empower the youth and will enhance the employability and personal growth of young individuals preparing them for further education and competitive job contributing effectively in the community. Around 100 children have been benefitted through soft skill development in Sahibabad in FY 24-25 till September 2024.

One centre is in operation in Kadkad Model area of Sahibabad in Ghaziabad district to enhance the soft skill of local youths.



### (ii) The Green School

The Green School is being implemented in collaboration with TERI, The Energy Resource Institute. Be Ecomatic Workshop including activities like includes quizzes, Matka composting, Bio-Enzymes, paper recycling has been conducted in 08 Govt school in Ghaziabad District along with baseline assessment on waste and biodiversity. Along with matka composting and dustbins for segregating waste, promoting eco-friendly practices within their school additionally the students developed bio-enzymes, showcasing their commitment to environmental responsibility.

Through these hands-on activities, they gained valuable skills in organic waste recycling and contributed to a cleaner, greener school environment. Other activities includes:-

**Transforming Trash into Treasure:-** Students of Maharajpur and NIIT Foundation participated in an activity where they creatively transformed trash into useful items and sends a powerful message to the society about the importance of recycling, creativity and Sustainability.

**Poster Making Competition:-** At the NIIT Foundation, students made creative posters with slogans aimed at protecting the Earth and raised awareness about environment issues and effectively communicate the urgent need to protect the environment through their posters.

**Awareness Session:-** Educational session was conducted on the occasion of World Environment Day to empower the children with knowledge about the environment and encourage them to become restorers of the Earth.

**Plantation Drive at Composite School Karkar:-** Students participated in plantation drive at Karkar School, for promoting greenery and pledged to water the plant in the community as there is little space for plantation.

Compost, Bio Enzyme and Dustbin making activity in school

Poster making competition to instill the importance of Environment

Youth engaged to convert trach available at home to treasure

**Awareness Session on Environment and Actions for 3 R's.**

**Plantation Drive**

**(i) Non residential Bridge Course in Maharajpur**

A survey was conducted in Maharajpur(a gramin abadi in Sahibabad with floating population in majority) to understand the status of out of school children. Survey report highlighted the significant impact of migration on school enrollment, revealing that a large portion of the population is transient.

Out of 2697 children surveyed 83.2% were identified as migrants and only 16.8%are local as per the survey report. The instability caused by frequent migration contributes to children being left out from the formal education system. The survey also revealed disparities in school enrollment between boys and girls, as well as significant gaps in educational access: There are 559 boys and 497 girls who are enrolled in the school and 519 boys and 456 girls who are out of school children who are not enrolled in school with many having dropped out due to socio-economic pressures.

To address this issue, we propose the establishment of 12 Non-Residential Bridge Course (NRBC), each centre will cater 30 children. The Out-of-School Children Survey in Maharajpur has provided critical insights into the educational barriers faced by children in the community. The survey's findings, combined with strategic interventions such as Non-Residential Bridge Course centers, community engagement, and focused outreach, offer a path forward to significantly improve educational access.

**Healthcare Infrastructure**

(i) **Construction of Anganwadi Centre Infrastructure**

To address the issue of healthcare infrastructure to ensure that children between age group of 3-6 years receives complete care and education Anganwadi Infrastructure is in progress. 05 AWC will be constructed in FY 24-25 in Ghaziabad district.

# GROUND WATER RECHARGE
# through
# RAIN WATER HARVESTING PROJECT

| Unit | Extraction limit as per NOC | Ground water extraction - Actual | Recharge Qty. as per NOC |
|---|---|---|---|
| 23/4 | 1500 $M^3$/day | 1200 - 1500 $M^3$/day | 432045 $M^3$/year |

- Recharge through adoption of ponds in nearby villages in Ghaziabad dist.

## RAIN WATER HARVESTING PROJECT – Inside PLANT
## 23/4 Unit

**RAINMAXX TECHNOLOGY**

**RAINMAXX MODULE ASSEMBLY**

**GEOTEXTILE COVERING**

**DOWNTAKE PIPES CONNECTION**

**GREEN CARPET LAYING**

PIT EXCAVATION

RAINMAXX MODULE ASSEMBLY

BACK FILLED AFTER INSTALLATION

# RAIN WATER HARVESTING PROJECT - OUTSIDE ADOPTION of 8 PONDS in NEARBY VILLAGES

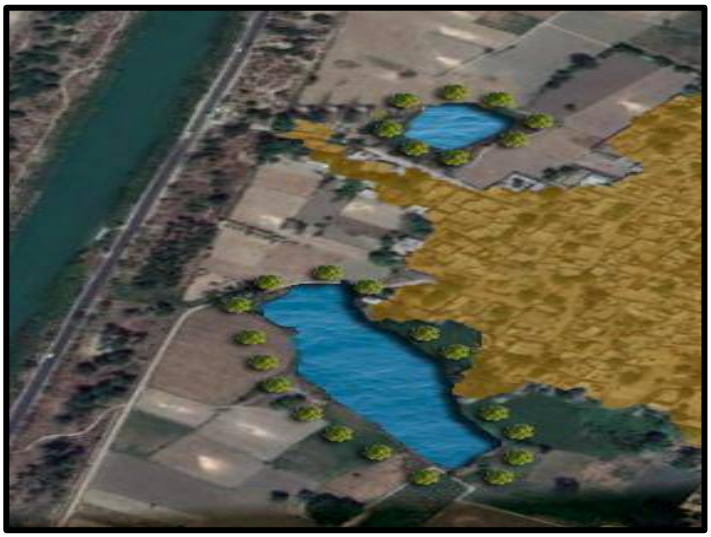
**Pond 1: MAHAMAYA DASNA**
**Recharge Capacity: - 62478 m³**


Location - Dasna
Latitude – 28.679024
Longitude – 77.528512
Area – 10680 $m^2$

**BEFORE**

**AFTER**


**Pond 2 - PAINGA 1**
**Recharge Capacity : 34726 m³**



Location -- Painga
Latitude – 28.858655
Longitude – 77.523363
Area – 5894 $m^2$

**BEFORE**


**AFTER**


**Pond 3 - PAINGA 2**
**Recharge Capacity :90968 m³**

| | |
|---|---|
|  | Location -- Painga<br>Latitude – 28.855762<br>Longitude – 77.523166<br>Area – 15550 $m^2$ |

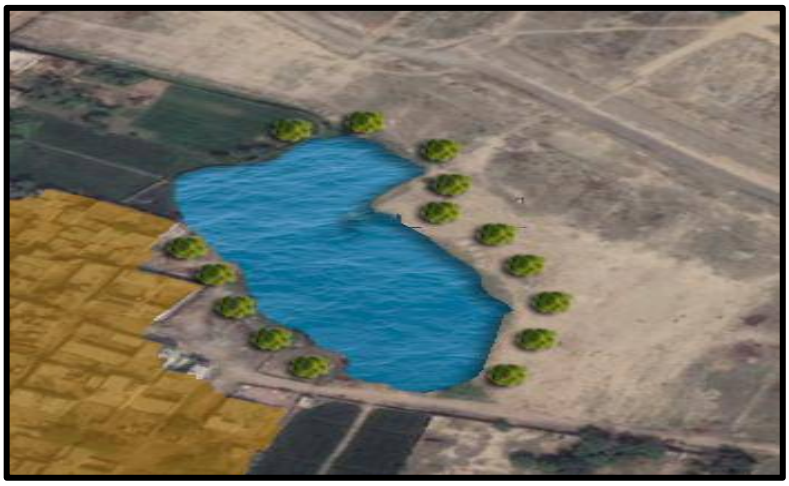
**BEFORE**

| | |
|---|---|
|  |  |

**AFTER**

| | |
|---|---|
|  |  |


**Pond 4 - NAIPHAL**
**Recharge Capacity : 42179 m³**



Location - Dasna
Latitude – 28.652991
Longitude – 77.511815
Area – 7210 $m^2$

**BEFORE**

**AFTER**


**Pond 5 - KAKRA**

**Recharge Capacity: - 51773 m³**

**BEFORE**

**AFTER**

**Pond 6 - SADARPUR**
**Recharge Capacity: - 67474 m³**
**BEFORE**

**AFTER**


**Pond 7 - PATLA**
**Recharge Capacity: - 48263 m³**
**20 % COMPLETED**

**Pond 8 – MISBAPUR**

**Recharge Capacity: - 39195 m³**

**BEFORE**

**AFTER**

# ENERGY AUDIT AT TATA STEEL LIMITED, 23, SITE-IV,SAHIBABAD IND. AREA,DIST., SAHIBABAD, GHAZIABAD PIN 201010, UTTAR PRADESH

**Audit Conducted By:**

**ENERGY CONSULTANCY SERVICES**
**(An Accredited & Certified Energy Auditing Organization)**
**Bhubaneswar.**

**PERIOD OF AUDIT**
**SEP-2024**

**AUDIT REF. NO.**
**15/ECSODISHA/2024-25**

TATA STEEL
WeAlsoMakeTomorrow

**ENERGY AUDIT AT TATA STEEL LIMITED, 23,SITE-IV,SAHIBABAD IND. AREA,DIST., SAHIBABAD, GHAZIABAD PIN 201010, UTTAR PRADESH**

## ACKNOWLEDGEMENT

ECS is thankful to Shri Goutam Kumar Parida, Electrical Head for giving us the opportunity to carry out Energy audit of Tata Steel Limited, 23, Site-IV, Sahibabad Ind. Area, Dist. Sahibabad, Ghaziabad, Pin-201010, Uttar Pradesh without whose keen interest, this audit would not have been possible.

ECS team is also thankful to Shri Suni Kumar, Sr. Manager and all other supporting Officers / Staffs of Tata Steel Limited, 23, Site-IV, Sahibabad Ind. Area, Dist. Sahibabad, Ghaziabad, Pin-201010, Uttar Pradesh for their wholehearted support, hospitality and the courtesy extended to the Audit team during the course of the study.

The Following officers from ECS under the guidance of Sri A.K. Mohini, BEE Accredited & Certified Energy Auditor, have carried out the Energy Audit.

| Name | Qualifications | BEE Accreditation / Certification Nos |
|---|---|---|
| Shri A.K. Mohini | BEE Accredited & Certificated Energy Auditor, | AEA- 002 |
| Shri Jitender Kumar | Certified Energy Auditor | EA-18199 |
| Shri Upendra Patra | Asst. Manager (Electrical) | - |
| Shri Biswajit Behera | Electrical Engineer | - |
| Shri Manas Parida | Electrical Technician | - |

**Shri A. K. Mohini, Director**
**Energy Consultancy Services**
**Bhubaneswar**

## Contents

# 1. INTRODUCTION

Tata Steel's Sahibabad unit, (an unit of erstwhile Bhushan Steel Limited) is located in the Sahibabad Industrial area near to Anand Vihar ISBT, under Ghaziabad district of Uttar Pradesh. Tata Steel is among the top global steel companies with an annual crude steel capacity of 34 million tonnes per annum. It is one of the world's most geographically diversified steel producers, with operations and commercial presence across the world. The group recorded a consolidated turnover of US $32,836 million in the financial year ending March 31, 2022.

As one of the largest integrated steel players in India, Tata Steel Limited is a source for vivid variety of products such as Hot Rolled Coil, CRCA, CRFH, Galvanized Coil and Sheet, Galume Coil and Sheet, Color Coated Coils, Color Coated Tiles, High Tensile Steel Strips, Hardened & Tempered Steel Strips, Precision Tubes, HFW/ERW Pipe (API Grade), 3LP Coated Pipes, Billets and Sponge Iron etc. Tata Steel Sahibabad have a great advantage by being geographically close to key customers such as MSIL, HMCL, LGEIL, Samsung etc.

Bhushan Steel Limited ("Company") underwent a corporate insolvency resolution process ("CIRP") as per the provisions of the insolvency and bankruptcy code, 2016 ("IBC)" and under the aegis of the Adjudicating Authority, National Company Law Tribunal Principal Bench, New Delhi (Adjudicating Authority"). The CIRP of the Company was complete upon approval of the resolution plan, as submitted by Tata Steel limited ('TSL"), by the Adjudicating Authority vide its order dated May 15, 2018.

Upon approval of the Resolution Plan by the Adjudicating Authority, Tata Steel through its wholly owned subsidiary namely Bamnipal Steel Limited took over the control and management of the company w.e.f. May 18, 2018. Because of the takeover, the name of the company was changed from Bhushan Steel Limited to Tata Steel BSL Limited w.e.f. November 27, 2018. Further Tata Steel BSL Limited has merged with Tata Steel Limited on dated November 11, 2021.

## 1.1 Objective

Being a designated Consumer TATA STEEL Ltd. Sahibabad need to have mandatory energy audit of their plant once in three years as per BEE notification No 02/11(6)/05-BEE dated 28th April 2010 and MOP notification no S.O.1378€ dated 27th May 2014.

The Mandatory Energy Audit at TATA STEEL Sahibabad is conducted with the following Objectives:

Verification of the information submitted by DC to the SDA/BEE about status of energy consumption for the previous two year.

Access the past performance of the plant Detailed studies of the intended energy consuming equipment's including historical and present energy performance trends, and specific energy consumption.

Quantification of Energy Losses, and Energy Saving Potential.

The present installed capacity and stage of capacity addition is shown in following table:

**Table 6 TATA STEEL Details**

| Product | installed Capacity in MT/Year |
|---|---|
| Cold Rolled Steel | 850000 |
| Cold Rolled and closed Annealed | 397200 |
| Galvanised and Galume Steel | 360000 |
| Color Coated Product | 100000 |
| CR H & T Steel | 10800 |
| **Total** | **1718000** |

## 1.2 Brief Summary of Parameters studied

All equipment's which consume electrical energy were studied. All electrical parameters like Voltage, Power factor, Kw, THD etc. were measured. In case of pump and fan flow of water and air measured. At some place where data measurement by portable meter was not possible online reading of plant instrument taken. Specific energy consumption of major utilities studied.

## 1.3 Major Energy Use Area

Major energy input to the plant and their utilization area are shown as under:

- Primary energy
  - HSD : Used for DG set power back up and Transportation
  - RLNG : Used as a fuel for Furnaces and Boiler
- Secondary Energy
  - Purchase Power : Used to supply electrical energy to the entire plant

### 1.9.1 Scope of Work for detailed energy audit

- Review of Electricity Bills
- Study of Transformer and electrical distribution system
- Checking of Capacitors
- Furnace evaluation
- Motors Evaluation
- Pump Evaluation
- Fan Evaluation
- Boilers and steam distribution

- Compressed Air System Evaluation
- Cooling towers
- HVAC system Evaluation
- Study of illumination system
- Utility System

| | GENERAL INFORMATION | |
|---|---|---|
| 1 | Name and address of the Industry | **TATA STEEL LIMITED SAHIBABAD** |
| | | TATA STEEL LIMITED, 23,SITE-IV,SAHIBABAD IND. AREA,DIST., SAHIBABAD, GHAZIABAD PIN 201010, UTTAR PRADESH |
| 2 | Name & Phone no. of Alternate Contact Officer | Shri Goutam Kumar Parida, Shared Service Head |
| | | E-mail : goutam.parida@tatasteel.com |
| 3 | Name & Phone no. of Alternate Contact Officer | Shri Sunil Kumar, Sr. Manager |
| | | Mob- 9811270597 |
| | | E-mail : sunil.kumar50@tatasteel.com> |
| 4 | Contact Info. of Auditor | Shri A.K.Mohini |
| | | Cell : 9937555999 |
| | | E-mail : mohiniak@gmail.com |
| 5 | Period of Audit | Sep-24 |
| 6 | Type of Operation | Rolling Steel Plant |
| 7 | Audit Ref. No. | 15/ECSODISHA/2024-25 |
| 8 | Total No. of Employees incl. contract labors | 2780 (approx.) |
| 9 | Total Contract Demand, KVA | 27084 |
| 10 | Minimum Demand,KVA | 20313 |
| 11 | Total Electrical Unit Consumed/Year, KWH | 145464000 |
| 12 | Total Electrical Unit Consumed/Year, KVAH | 146754500 |
| 13 | Total Electricity Cost | **Rs. 1,03,30,93,654** |
| 14 | Average Electricity Cost | Rs. 8,60,91,137.79 |
| 15 | Average unit cost | Rs. 7.10 |
| 16 | Total Saving Potential,kwh | 175769 |

## 2. SUMMARY OF SAVING POTENTIAL

| | Executive summary of | TATA STEEL LIMITED SAHIBABAD | | | | | |
|---|---|---|---|---|---|---|---|
| | Electrical Savings | | | | | | |
| | Recommendations(Short / Medium Term) | NOS | Energy Savings | | | Estd. Investment | Simple Payback period |
| | | | kWh | TOE | Rs Lacs | Rs Lacs | Year |
| 1 | Savings due to replacement of 30 HP Motor with IE 3 Motor | 15 | 126367 | 10.87 | 8.97 | 21.45 | 2.39 |
| | *Refer Page No 88* | | | | | | |
| 2 | Savings due to replacement of HPSV 250 watt with 120 watt LED | 10 | 4550 | 0.39 | 0.32 | 0.40 | 1.24 |
| | *Refer Page No 89* | | | | | | |
| | Total | | 130917 | 11.26 | 9.30 | 21.85 | 2.35 |
| | Annual Energy Consumption (kWh) | | 14,54,64,000 | | | | |
| | Annual Energy Saving (kWh) | | 1,30,917 | | | | |
| | Percentage Saving in Energy | | 0.09% | | | | |

| | Form-2 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Details of Energy Conservation measures / Recommendations of Accredited Energy Auditor for Improving Energy Efficiency | | | | | | |
| | [See rule 3(1) (c)] | | | | | | |
| Energy Saving measures | | Anticipated Investment (In Lakhs) | Anticipated Annual Savings (In Lakhs) | Simple Pay Back Period in Year | Anticipated Annual Energy Savings | | |
| SL | TATA STEEL LIMITED SAHIBABAD | | | | Electricity in kWh | Other (Rs in Lakh) | Equivalent Energy in TOE |
| 1 | Savings due to replacement of 30 HP Motor with IE 3 Motor | 21.45 | 8.97 | 2.39 | 126367 | | 10.68 |
| 2 | Savings due to replacement of HPSV 250 watt with 120 watt LED | 0.40 | 0.32 | 1.24 | 4550 | | 0.38 |
| | TOTAL | 21.85 | 9.30 | 2.35 | 130917 | | 11.07 |

Signature

Name of the energy manager

Name of the company
Full address
Contact Person
Email address
Telephone/ fax numbers
Plant address

Signature

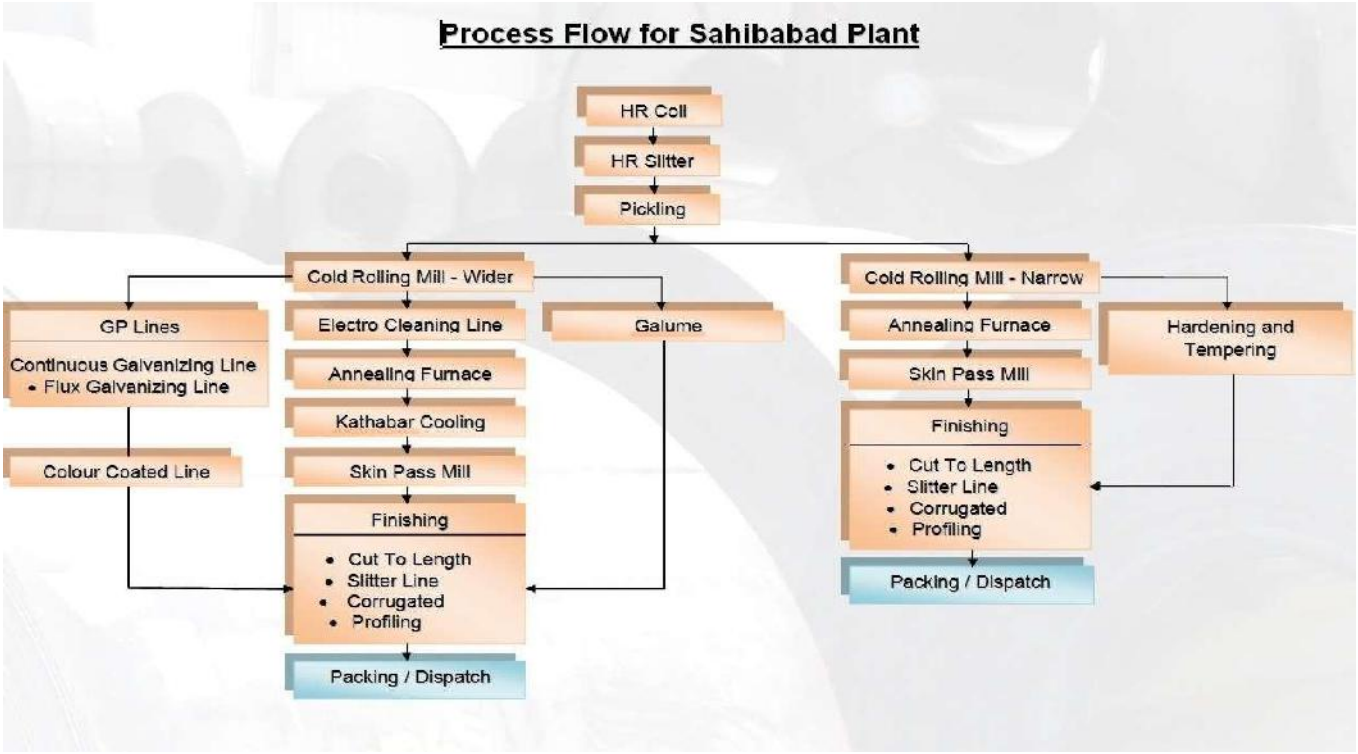
Name of the Accredited Energy Auditor: A. K. Mohini

Accredition details AEA-002

Seal

# 2 Process flow diagram and energy and material balance

HR coil used as a raw material to this plant and it was passed through different




mechanical process like slitter section, Pickling section, Cold rolling section , ECL, annealing, Galvanizing, colouring etc. as per requirement of final product.

Plant is having following major section:

- Slitter section
- Pickling section
- Cold rolled section
- ECL section
- Annealing Section
- Galvanizing Section
- Colouring section

- Heating and tempering section
- Utility Section
- Power Generation and distribution Section

### 2.2.1 Slitting section

- This is the first stage where raw material in the form of hot rolled coil comes and output of this section goes to pickling section. This section serves three purposes:
  - HR coils are available in widths which are wider than the required for Cold Rolling. The trimming / slitting is done with the HR Slitter.
  - The HR coils available may have width variation of the order of up to 20 mm, so to get the uniform width these coils are slitted.
  - The edges of HR coils may get damaged during transportation because of poor packaging and/or improper handling. In order to remove these damaged edges the HR coils are trimmed /slitted.

### 2.2.2 Pickling section

- Output of slitter section is used as a raw material to this section. Pickling section is having technology collaboration with PRO ECO, Canada. This section is having two line.
- Pickling is a metal surface treatment used to remove impurities, such as stains, inorganic contaminants, rust or scale from ferrous metals, copper, precious metals and aluminum alloys.
  - (i) Thickness Range : 1.6 to 6mm
  - (ii) Width Range : 700 – 1700 mm

### 2.2.3 Cold Rolling Section

The output of pickling section is input to this section. The details of this section is as under.

- COLD ROLLING MILL (HITACHI, JAPAN / CMI, INDIA)
  - (i) 6 Hi Mill – 3 No's
  - (ii) 4 Hi Mill – 2 No's
- Width Range – 200 – 1700 mm
- The primary function of Cold Rolling is to reduce the thickness of Hot Rolled Pickled strip at room temperature. During the operation overall max reduction of up to 90 % in thickness of the HR Coil can be achieved. Cold rolling occurs with the metal below its recrystallization temperature (usually at room temperature), which increases the strength via strain hardening up to 20%. It also improves the surface finish and holds tighter tolerances.

### 2.2.4 Electrolytic Cleaning Line

Technology provider is CMI-FPI, India. Details of plant is as under:

- Thickness – Up to 3 mm
- Width – Up to 1700 mm
- Electrolytic Cleaning Line is responsible for the electrolyte cleaning of the rolled sheet surface in order to have its surface contaminations and greases removed in two dipping tanks containing alkaline solution and electrolyte cleaning.

### 2.2.5 Kathabar

- Technology From IMTECH DRYGENIC, USA
- Total No. of Bases – 42
- TATA STEEL is having KATHABAR cooling system from IMTECH DRYGENIC, USA. By this system TATA STEEL can supply dehumidify air to annealed coil for cooling of coils for best result. In this system the liquid desiccant can remove contaminants in the air like oil & grease & filter them out.

### 2.2.6 Annealing Furnace

- Technology Provider :EBNER
- Total No. of Bases – 49
- Annealing Furnaces are H2 furnaces with higher convection are from EBNER, AUSTRIA & ALLIED, and MUMBAI. Complete automation in the line ensures Clean & flawless surfaces. Annealing is a process in which metals, glass and other materials are treated to render them less brittle and more workable. In the steel industry, the steel is heated and profile controlled, with times and temperatures set according to the properties desired to reach an increased ductility and relieve strains that lead to failures in service.

### 2.2.7 Non-Ox Galvanizing/Galume Line

- CMI FPE with the technological collaboration with HYPERTHERM, EMG, GFG & AJAX TOCCO
- Galvanizing Line – 3 No's
- Galume Line – 1 No.
- The purpose of the Continuous Galvanizing line is to apply a coat of zinc onto the surface of steel sheets in an effort to increase their corrosion resistance. There is a wide range of control of zinc coat thickness, and the galvanized steel sheets are used

for a board range of purposes, including construction materials, automobiles and electrical appliances.

- GALUME is the trade name for a sheet steel product with a highly corrosion resistant coating containing nominally 55% aluminum and 43% zinc by weight, the balance primarily silicon is used to effect excellent adhesion to the steel substrate. This metallic coating which is applied using a continuous hot-dip coating process combines the galvanic corrosion protection of zinc with the barrier protection of aluminum.

### 2.2.8 Color Coating Line

- SMS-ESMECH with the technology collaboration with EMG, COMENCO & GFG
- TATA STEEL is having Color coating line with hot laminator supplied by SMS-ESMECH with the technology collaboration with EMG, COMENCO & GFG. Embossing (NAWOO, KOREA), Profiling (AL-KONG, KOREA) & Tension Leveler (SMS, ESMECH) are also installed. TATA STEEL used RMP, SMP & PVDF type of paint which makes them unique for appliances & high end products.

### 2.2.9 H & T LINE

- Technology Provider SECO WARWICK ALLIED LTD
- Thickness – Up to 4.0 mm
- Width – Up to 550 mm

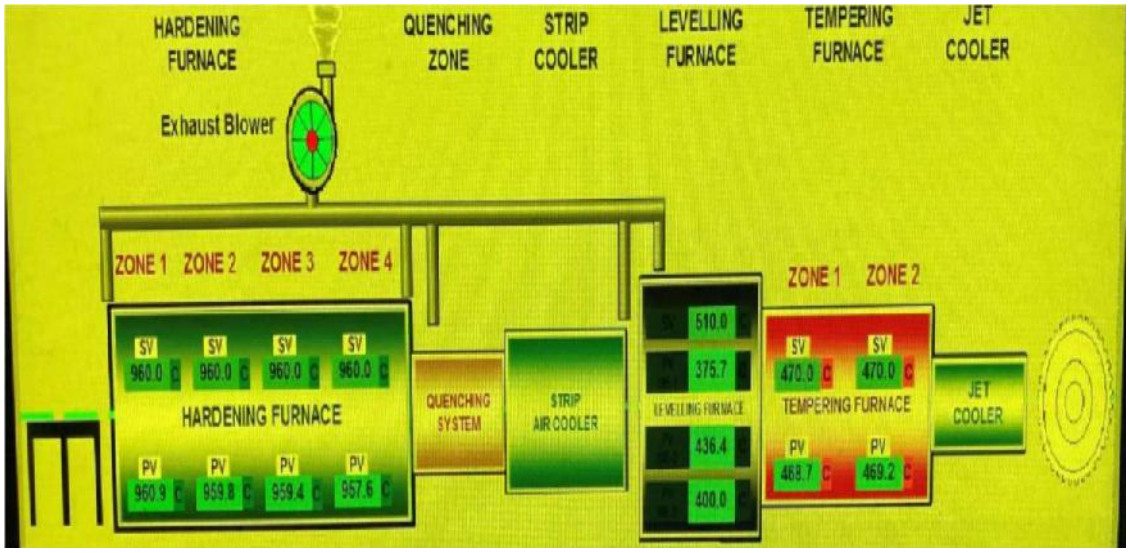



**Figure 10 H&T Furace**

### 2.2.10 Strip Grinding & Polishing Line

- The strip grinding & polishing line is to achieve the desired surface finish are from BREUER, Germany.

### 2.2.11 Finishing Section

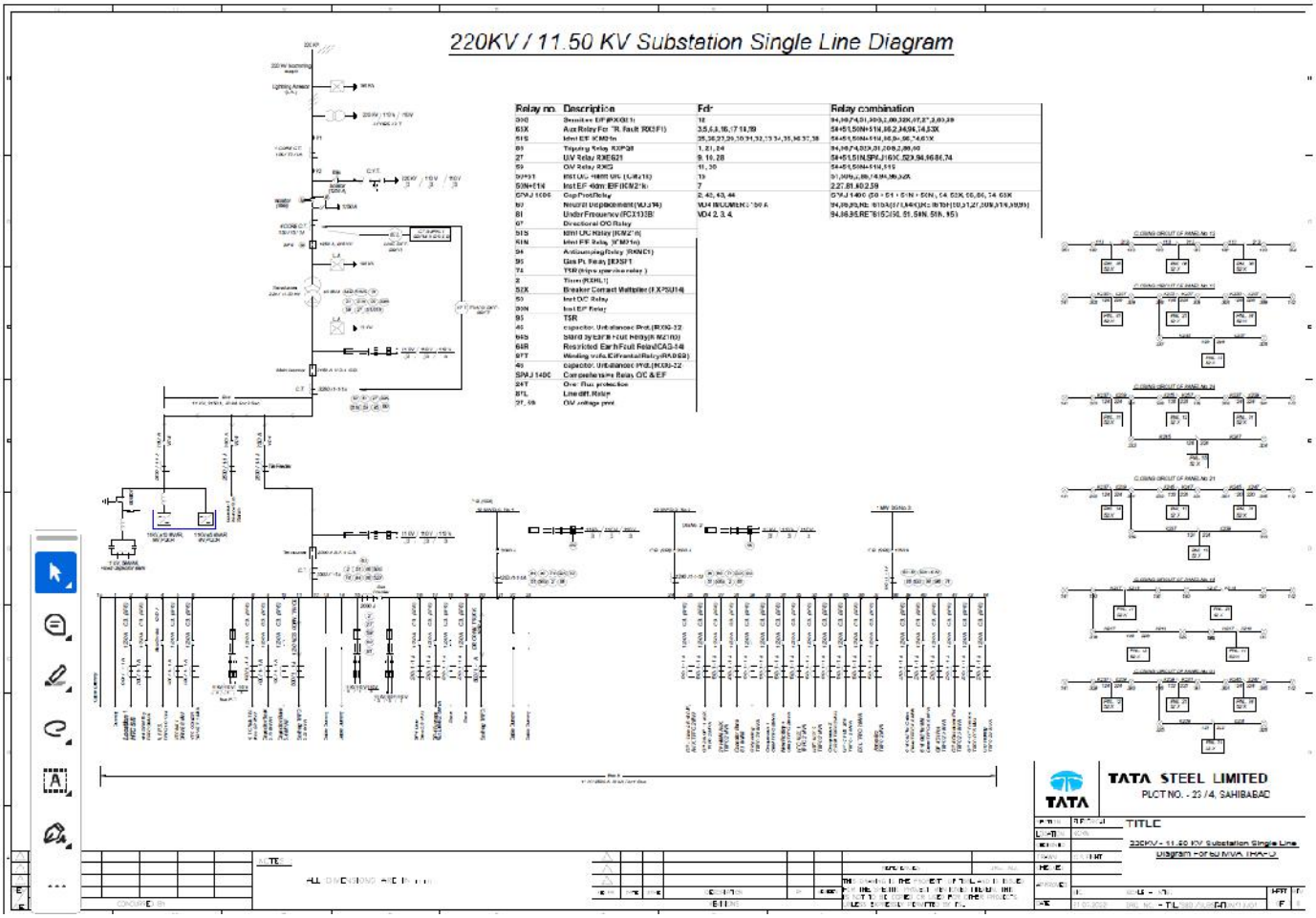
- Corrugation Machine – 13 No's. (ESMECH & REGAL IRON)
- Cut to Length Line - 26 No's. (IDH, FIMMI, DAEHWA, GEORGE)
- Slitting Line – 14 No's. (IDH, FIMMI, DAEHWA)
- Slitting Line for cold rolled steel strip coils cut in longitudinally direction to get the strip in required width as per customer requirement.

## 2.2.12 List of Major equipment's &utilities

Major utilities at TATA STEEL Sahibabad is as under:

- **DG set:** Two number of 12 MW each to fulfill electrical power requirement of Plant. Now not in used .
- **WHR Boiler:** Two number of 4.8 TPH where heat recovered from waste heat generated by DG set for steam generation. Now not in used.
- **Boiler:** Two number of 10 TPH capacity.
- **Cooling Tower:** Nine number of different capacities used for cooling of hot water generated in Plant.
- **Air compressor:** Six number of different capacities used to fulfill compressed air requirement of the plant.
- **CT fan:** It is used for cooling purpose in the cooling tower.
- **Submersible pump:** Nine number used for pumping of ground water.
- **Water Pump:** used for handling of raw water, process water and DM water**.**
- **HVAC System:** Used for air conditioning of control room and offices.

# 3. REVIEW OF MONTHLY ELECTRICAL BILLS




### 3.3.1 Self-generated

- Plant is having two number 12 MW DG set to generate power for the use of plant. At present its not in used

### 3.3.2 Trend of Electrical Energy Consumption

- Total amount of self-generated electricity from Solar PV System in the year 2023-24 is 109.4MWh.
- Power purchased from State Electricity board in the year 2023-24 is 145.464MWh.
- The trend for Purchase electrical energy is shown in following table & graph.

There are 1 no's of incomer @ 220 KV /11.5 KV capacity 60 MVA for Tata Steel Sahibabad operation. Power supply is supplied from Pashchimanchal Vidyut Vitran Nigam Ltd.

| 2023-24 | | | | | | |
|---|---|---|---|---|---|---|
| **Type of Input** | **UOM** | **Quantity** | **UOM** | **GCV** | **Energy (In Gcal)** | **%Share of Energy** |
| **Primary Energy** | | | | | | |
| LSHS | MT | 0 | kcal/Kg | 10400 | 0 | 0.00% |
| HSD | MT | 12.51 | kcal/Kg | 11840 | 148.1184 | 0.04% |
| RLNG | M SCM | 22.57 | kcal/SCM | 9381 | 211743.72 | 62.83% |
| **Secondary Energy** | | | | | | |
| Purchase Electricity | MWh | 145464 | kcal/KWh | 860 | 125099.04 | 37.12% |
| **Renewable Energy** | | | | | | |
| Solar PV System | MWh | 109.4 | kcal/KWh | 0 | 0 | 0.00% |
| **Total** | | | **Gcal** | | **336990.8829** | **100.00%** |

**ELECTRICITY BILL DETAILS FROM APRIL- 2023 TO MARCH-2024:**

Total Units (MWH) for twelve months = 145464 MWH
Total Units (KVAH) for twelve months = 146755 KVAH
Total Amount for twelve months = Rs. 103/- Crores
Average Cost of Energy = Rs. 7.10 /- per kWh

**ELECTRICITY BILL DETAILS FROM APRIL- 2022 TO MARCH-2023:**

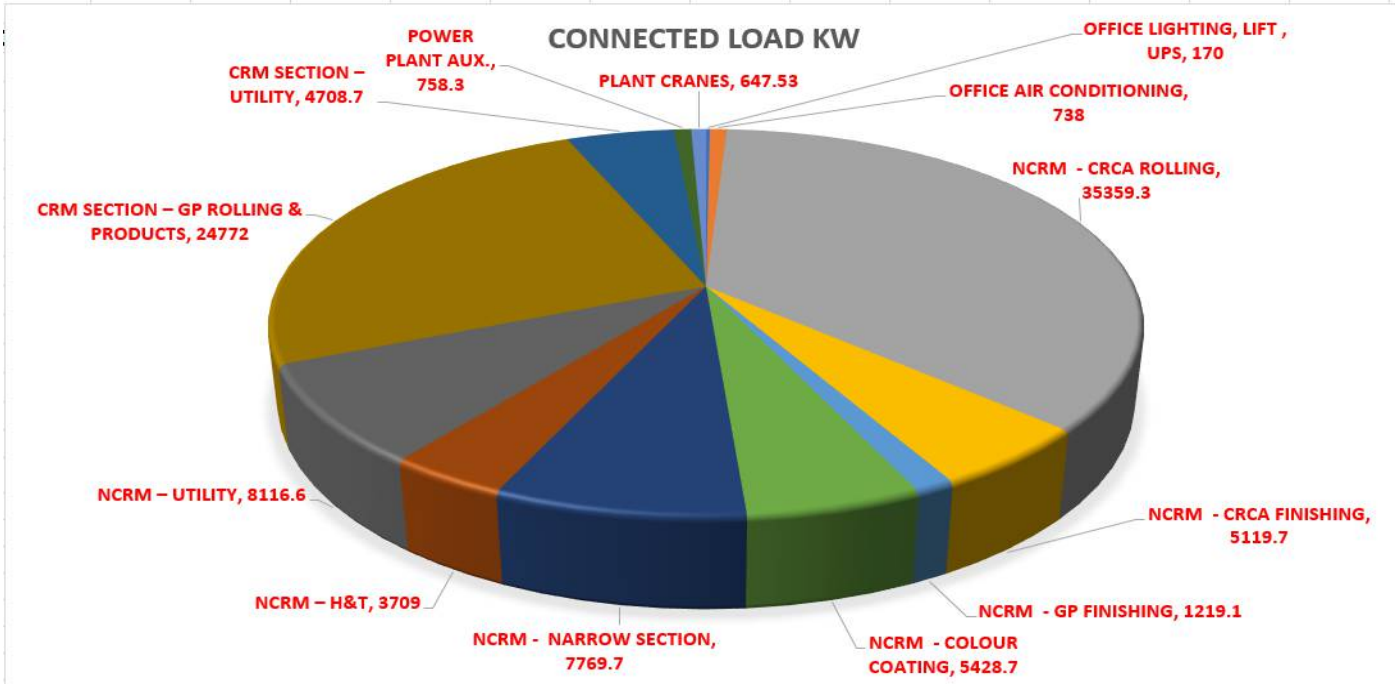
Total Units (MWH) for twelve months = 145540 MWH
Total Units (KVAH) for twelve months = 269208 KVAH
Total Amount for twelve months = Rs. 103.31/- Crores
Average Cost of Energy = Rs. 7.10 /- per kWh

**TARIFF STRUCTURE:**

Supply Authority : Pashchimanchal Vidyut Vitran Nigam Ltd
Voltage : HT supply (220 KV)
Contract Demand : 27084 KVA

## PLANT'S CONNECTED LOAD DETAILS

| S. NO | DESCRIPTION | CONNECTED |
|---|---|---|
| 1 | OFFICE LIGHTING, LIFT , UPS | 170 |
| 2 | OFFICE AIR CONDITIONING | 738 |
| 3 | **NCRM - CRCA ROLLING** | **35359.3** |
| 4 | **NCRM - CRCA FINISHING** | **5119.7** |
| 5 | **NCRM - GP FINISHING** | **1219.1** |
| 6 | **NCRM - COLOUR COATING** | **5428.7** |
| 7 | **NCRM - NARROW SECTION** | **7769.7** |
| 8 | **NCRM – H&T** | **3709** |
| 9 | **NCRM – UTILITY** | **8116.6** |
| 10 | **CRM SECTION – GP ROLLING & PRODUCTS** | **24772** |
| 11 | **CRM SECTION –UTILITY** | **4708.7** |
| 12 | **POWER PLANT AUX.** | **758.3** |
| 13 | PLANT CRANES | 647.53 |
| | **GRAND TOTAL – KW** | **98517** |




| S. NO | DESCRIPTION | CONNECTED LOAD | RUNNING LOAD | STANDBY LOAD |
|---|---|---|---|---|
| 1 | OFFICE LIGHTING | **908.0** | **908.0** | **0.0** |
| 2 | **NCRM - CRCA ROLLING** | **35359.3** | **24795.2** | **10564.1** |
| 3 | **NCRM - CRCA FINISHING** | **5119.7** | **3860.7** | **1259.0** |
| 4 | **NCRM - GP FINISHING** | **1219.1** | **1088.8** | **130.3** |
| 5 | **NCRM - COLOUR COATING** | **5428.7** | **4676.9** | **751.8** |
| 6 | **NCRM - NARROW SECTION** | **7769.7** | **5185.8** | **2584.7** |
| 7 | **NCRM – H&T** | **3709.0** | **3323.5** | **385.5** |
| 8 | **NCRM – UTILITY** | **8116.6** | **3388.3** | **4728.3** |
| 9 | **CRM SECTION – GP ROLLING & PRODUCTS** | **24772.0** | **20560.0** | **4212.1** |
| 10 | **CRM SECTION –UTILITY** | **4708.7** | **4069.0** | **639.7** |
| 11 | **POWER PLANT AUX.** | | | |
| 12 | DG SET, BOILER AND SUBSTATION | **758.3** | **311.0** | **447.0** |
| 13 | PLANT CRANES | 647.53 | 647.53 | 0.0 |
| | | | | |
| **GRAND TOTAL – KW** | | **98516.7** | **72814.8** | **25702.5** |

## 3.1 Water balance at TATA STEEL Ltd.

| Water Balance | Water Source | Share | Water Consumption | Share |
|---|---|---|---|---|
| | M3 | % | M3 | % |
| Total Treated Water Produced | 383313.1 | 100.00% | | |
| Boiler & DM Plant | | | 58100 | 15.16% |
| Pickling | | | 14895 | 3.89% |
| ARP & H&T | | | 12604 | 3.29% |
| Narrow Mill | | | 12310 | 3.21% |
| 6HI & 4HI SKP | | | 102299 | 26.69% |
| ECL | | | 12335.1 | 3.21% |
| GP Line | | | 20258 | 5.28% |
| CCL | | | 7112 | 1.86% |
| NCRM Tower Make Up | | | 103692 | 27.05% |
| Hydrogen plant | | | 1162 | 0.30% |
| Drinking Water | | | 38546 | 10.06% |
| **Total** | | | **383313.1** | **100.00%** |

## 3.2 Share of Energy Consumption

- The share of different type of energy used in plant for the year 2023-24 is shown in followingtable.

**Table 13 Share of Primary Energy FY 2023-24**

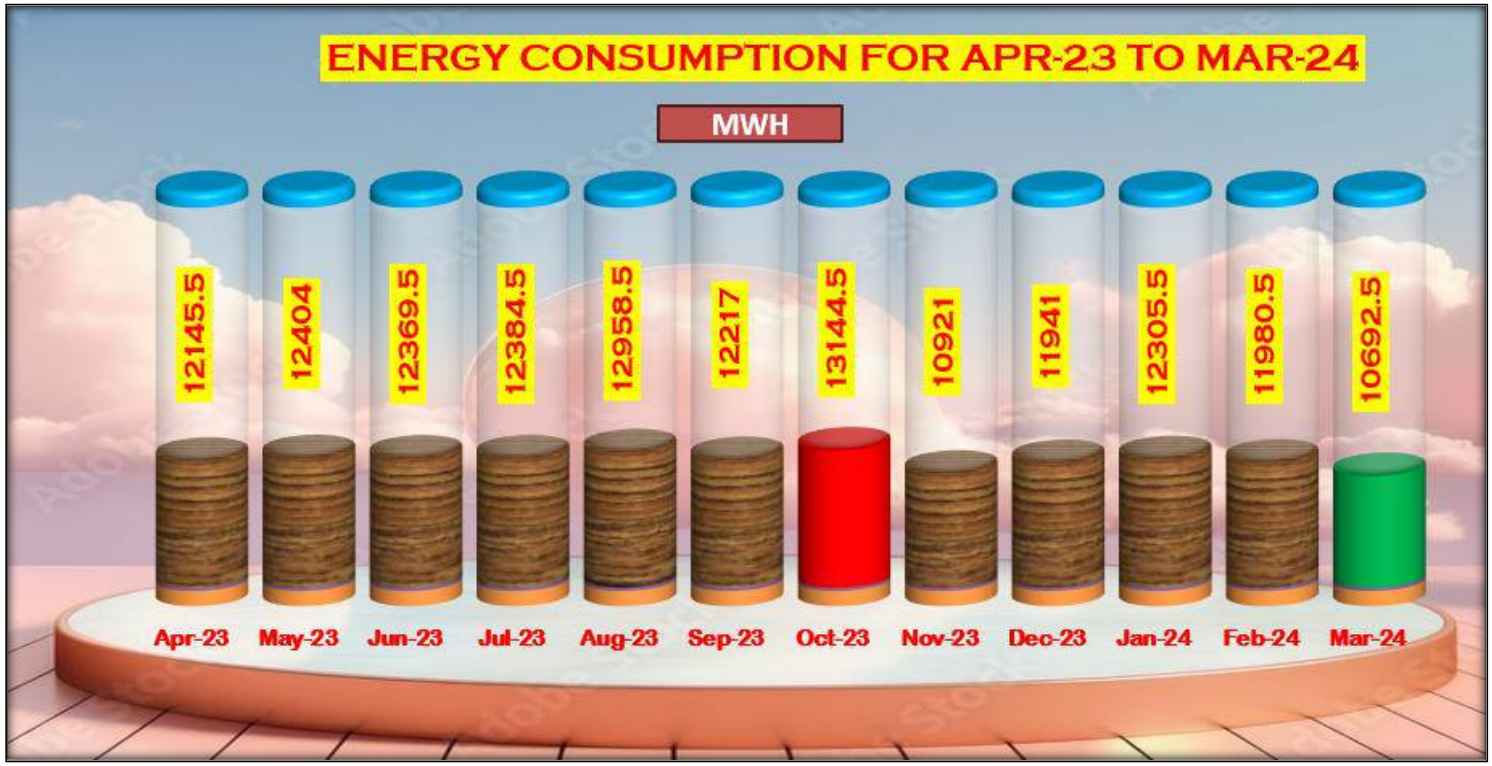
| 2023-24 | | | | | | |
|---|---|---|---|---|---|---|
| **Type of Input** | **UOM** | **Quantity** | **UOM** | **GCV** | **Energy (In Gcal)** | **%Share of Energy** |
| **Primary Energy** | | | | | | |
| LSHS | MT | 0 | kcal/Kg | 10400 | 0 | 0.00% |
| HSD | MT | 12.51 | kcal/Kg | 11840 | 148.1184 | 0.04% |
| RLNG | M SCM | 22.57 | kcal/SCM | 9381 | 211743.72 | 62.83% |
| **Secondary Energy** | | | | | | |
| Purchase Electricity | MWh | 145464 | kcal/KWh | 860 | 125099.04 | 37.12% |
| **Renewable Energy** | | | | | | |
| Solar PV System | MWh | 109.4 | kcal/KWh | 0 | 0 | 0.00% |
| **Total** | | | **Gcal** | | **336990.8829** | **100.00%** |

## ELECTRICITY BILL OF FY- 2023-24 :

| CONTRACT DEMAND | 27084 | ELECTRICITY BILL OF TATA STEEL LIMITED SAHIBABAD | | | | | | | Consumer A/c | 5922986000 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month of billing | Consumption In KWh | Consumption In KVAH | Max. Demand (KVA) | Demand charges | Electric charges | Total Electricity charges | Additional Charges | Electricity Duty charges 7.5% | FC/Instalment Credit | Last payment Surcharge | TOTAL AMOUNT |
| Apr-23 | 12145500 | 12263000 | 22620 | 6107400 | 74759465.00 | 80866865.00 | 81932.00 | 6065014.88 | 824236.00 | 0.00 | 86189579 |
| May-23 | 12404000 | 12503000 | 23680 | 6393600 | 76223465.00 | 82617065.00 | 83813.34 | 6196279.88 | 808668.65 | 0.00 | 88088489.57 |
| Jun-23 | 12369500 | 12470500 | 22980 | 6204600 | 76037567.50 | 82242167.50 | 88410.33 | 6168162.56 | 826171.00 | 0.00 | 87672569.39 |
| Jul-23 | 12384500 | 12489000 | 23400 | 6318000 | 76151332.50 | 82469332.50 | 88654.53 | 6185199.94 | 822421.68 | 0.00 | 87920765.29 |
| Aug-23 | 12958500 | 13100500 | 24480 | 6609600 | 79771682.50 | 86381282.50 | 173005.42 | 6478596.19 | 824693.33 | 0.00 | 92208190.78 |
| Sep-23 | 12217000 | 12346500 | 23560 | 6361200 | 75212603.48 | 81573803.48 | 87691.87 | 6118035.26 | 863812.83 | 32.50 | 86915750.28 |
| Oct-23 | 13144500 | 13252500 | 23340 | 6301800 | 80802735.00 | 87104535.00 | 93637.38 | 6532840.13 | 815738.03 | 0.00 | 92915274.48 |
| Nov-23 | 10921000 | 11048500 | 21780 | 5880600 | 67379837.50 | 73260437.50 | 78754.97 | 5494532.81 | 871045.35 | 0.00 | 77962679.93 |
| Dec-23 | 11941000 | 12043500 | 23360 | 6307200 | 73448422.50 | 79755622.50 | 85737.29 | 5981671.69 | 732604.38 | 0.00 | 85090427.10 |
| Jan-24 | 12305500 | 12414500 | 23160 | 6253200 | 75610415.00 | 81863615.00 | 88003.39 | 6139771.13 | 797556.23 | 0.00 | 87293833.29 |
| Feb-24 | 11980500 | 12084000 | 23220 | 6269400 | 73627305.00 | 79896705.00 | 85888.96 | 5992252.88 | 818636.15 | 0.00 | 85156210.69 |
| Mar-24 | 10692500 | 10739000 | 20760 | 5605200 | 65471491.85 | 71076691.85 | 71407.44 | 5330751.89 | 798967.05 | 0.00 | 75679884.13 |
| Total | **145464000** | **146754500** | **276340** | **74611800** | **894496322.8** | **969108122.8** | **1106936.92** | **72683109** | **9804550.68** | **32.5** | **1033093654** |
| Average/ Month | 12122000 | 12229542 | 23028 | 6217650 | 74541360 | 80759010 | 92245 | 6056926 | 817046 | 3 | 86091138 |

| DESCRIPTION | APR | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Power Purchase -As Per Invoice** | 12145500 | 12404000 | 12369500 | 12384500 | 12958500 | 12217000 | 13144500 | 10921000 | 11941000 | 12305500 | 11980500 | 10692500 | **145464000** |
| **Power Purchase - As per TSL Meter Reading** | 12159500 | 12426000 | 12416000 | 12395500 | 13001000 | 12239500 | 13179500 | 10917000 | 11992000 | 12326500 | 12007000 | 10716000 | **145775500** |
| **Difference** | 14000 | 22000 | 46500 | 11000 | 42500 | 22500 | 35000 | -4000 | 51000 | 21000 | 26500 | 23500 | 311500 |
| **DG POWER GENERATION** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **SOLAR POWER GENERATION** | 12305 | 11685 | 9949 | 8037 | 10393 | 10462 | 10656 | 5945 | 5782 | 3613 | 8852 | 11770 | **109449** |
| **POWER EXPORT TO GRID** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **TOTAL POWER CONSUMPTION** | 12171805 | 12437685 | 12425949 | 12403537 | 13011393 | 12249962 | 13190156 | 10922945 | 11997782 | 12330113 | 12015852 | 10727770 | **145884949** |

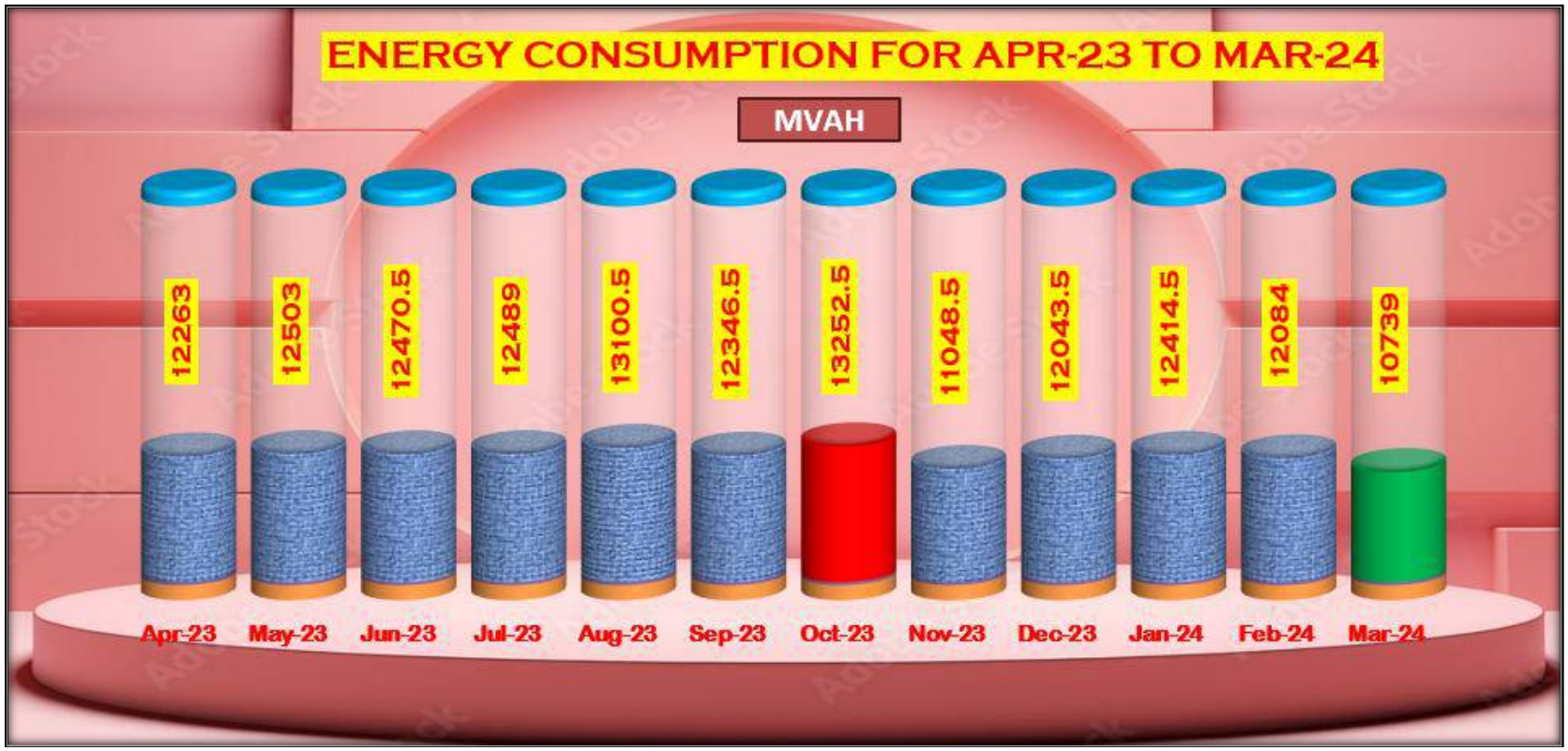
**ENERGY CONSUMPTION IN KWH FOR APR-23 TO MAR-24 :**




**Observation:**

The total power consumption (MWH) is 145464 MWH for the period from Apr-23 to Mar-24. The power consumption (KWH) is highest in the month of October 2023 i.e., 13144.5 MWH and lowest in the month of March 2024 i.e., 10692.5 MWH.

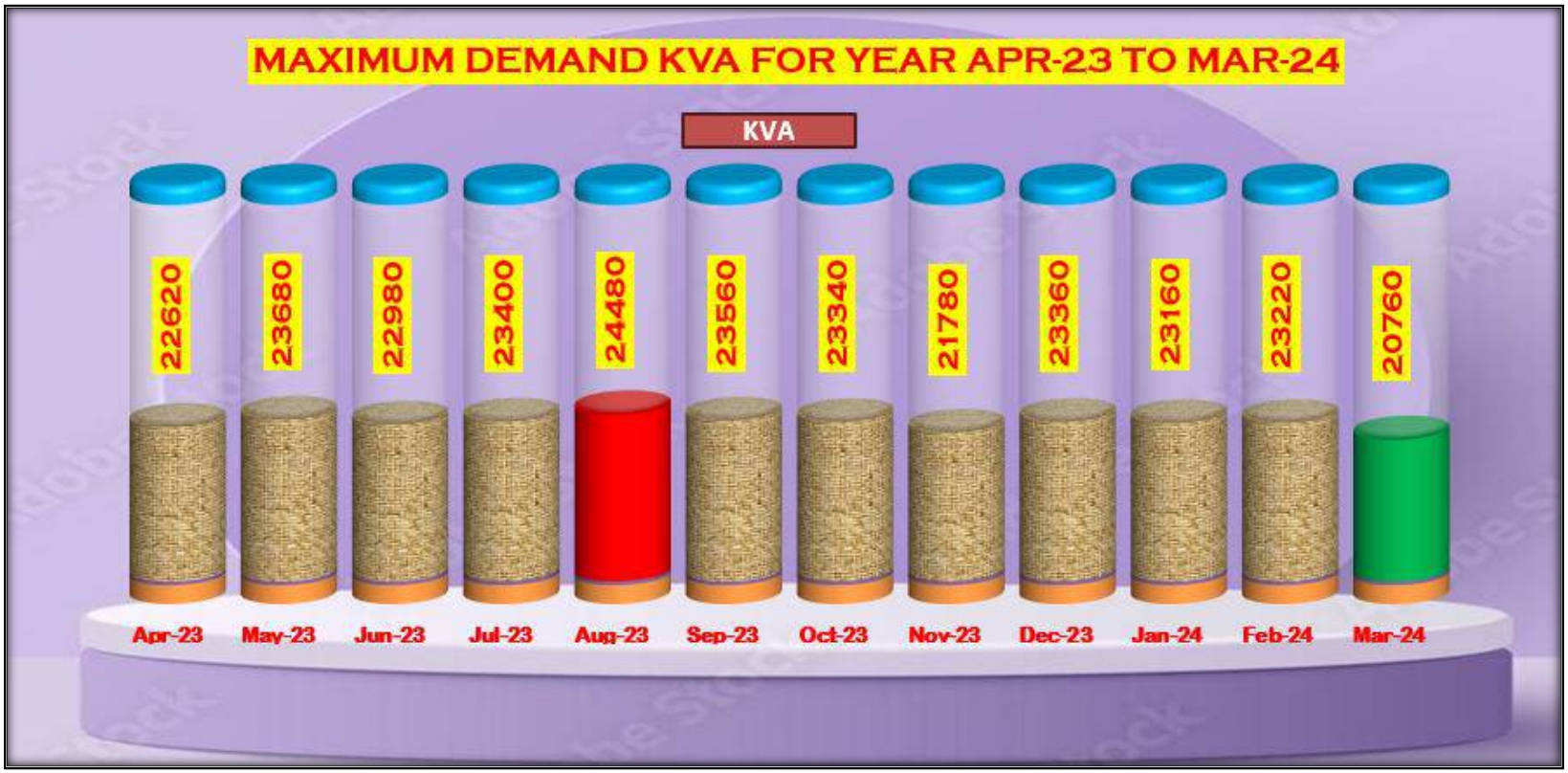
**ENERGY CONSUMPTION IN KVAH FOR APR-23 TO MAR-24 :**




**Observation:**

The total power consumption (MVAH) is 146754.5 MVAH for the period from Apr-23 to Mar-24. The power consumption (MVAH) is highest in the month of October 2023 i.e., 13252.5 MVAH and lowest in the month of March 2024 i.e., 10739 MVAH.

**MAXIMUM DEMAND IN KVA FOR APR-23 TO MAR-24 :**




**Observation:**

The total average maximum demand (KVA) is 23028 KVA for the period from Apr-23 to Mar-24. The maximum demand (KVA) is highest in the month of August 2023 i.e., 24480 KVA and lowest in the month of March 2024 i.e., 20760 KVA.

**ELECTRICITY COST FOR IN CRORES FOR APR-23 TO MAR-24 :**

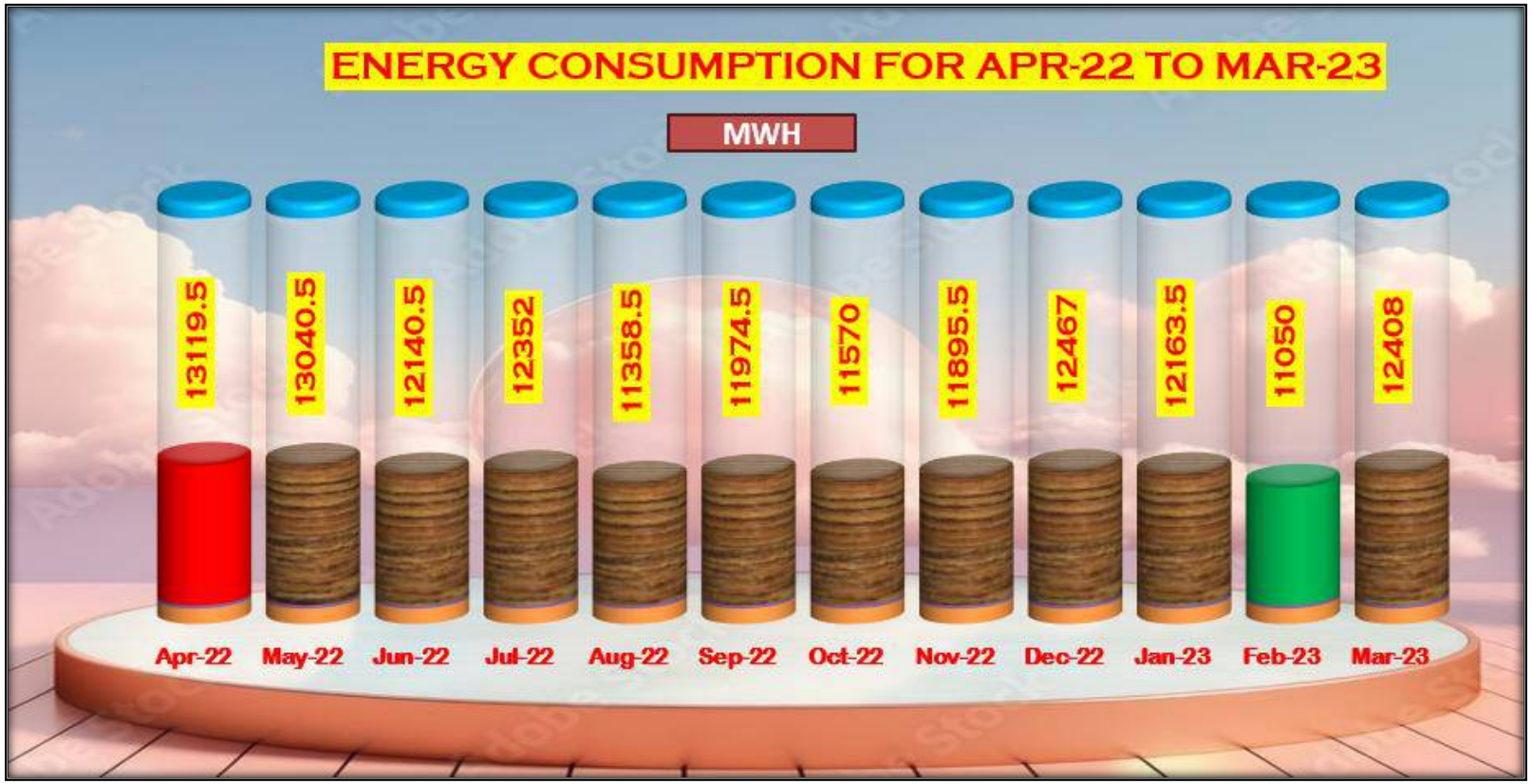

**Observation:**

The total power consumption cost is Rs. 103 Crores for the period from Apr-23 to Mar-24. The energy cost is highest in the month of October 2023 i.e., Rs. 9.29 Crores and lowest in the month of March 2024 i.e., Rs 7.57 Croes.

## ELECTRICITY BILL OF FY- 2022-23 :

| CONTRACT DEMAND | 27084 | ELECTRICITY BILL OF TATA STEEL LIMITED SAHIBABAD | | | | | | | Consumer A/c | 5922986000 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month of billing | Consumption In KWh | Consumption In KVAH | Max. Demand (KVA) | Demand charges | Electric charges | Total Electricity charges | Additional Charges | Electricity Duty charges 8% | FC/Installment Credit | Last payment Surcharge | TOTAL AMOUNT |
| Apr-22 | 13119500 | 13142500 | 24840 | 6706800 | 80127617.50 | 86834417.50 | 88347.00 | 6512581.31 | 864329.97 | 0.00 | 92571015.84 |
| May-22 | 13040500 | 13126000 | 23980 | 6474600 | 80003635.00 | 86478235.00 | 87964.10 | 6485867.63 | 868344.18 | 0.00 | 92183722.55 |
| Jun-22 | 12140500 | 12180000 | 23840 | 6436800 | 74226172.50 | 80662972.50 | 88142.56 | 6049722.94 | 0.00 | 1429864.08 | 88230702.08 |
| Jul-22 | 12352000 | 111721500 | 23720 | 6404400 | 75597452.50 | 82001852.50 | 168298.18 | 6150138.94 | 0.00 | 650.75 | 88320940.37 |
| Aug-22 | 11358500 | 34456500 | 21820 | 5891400 | 69932077.50 | 75823477.50 | 81510.24 | 5686760.82 | 820018.53 | 0.00 | 80771730.03 |
| Sep-22 | 11974500 | 12108500 | 22640 | 6112800 | 73776354.70 | 79889154.70 | 85880.84 | 5991686.60 | 758234.78 | 0.00 | 85208487.36 |
| Oct-22 | 11570000 | 11881500 | 23260 | 6280200 | 72369180.00 | 78649380.00 | 84548.08 | 5898703.50 | 799146.67 | 0.00 | 83833484.91 |
| Nov-22 | 11895500 | 12025000 | 22780 | 6150600 | 73215250.00 | 79365850.00 | 85318.29 | 5952438.75 | 786493.80 | 0.00 | 84617113.24 |
| Dec-22 | 12467000 | 12599000 | 23320 | 6296400 | 76751877.50 | 83048277.50 | 89276.90 | 6228620.81 | 793658.50 | 0.00 | 88572516.71 |
| Jan-23 | 12163500 | 12275000 | 22200 | 5994000 | 74787830.00 | 80781830.00 | 86840.47 | 6058637.25 | 830482.78 | 0.00 | 86096824.94 |
| Feb-23 | 11050000 | 11150000 | 21920 | 5918400 | 67913435.00 | 73831835.00 | 79369.22 | 5537387.63 | 807818.30 | 0.00 | 78640773.55 |
| Mar-23 | 12408000 | 12542500 | 22380 | 6042600 | 76380958.15 | 82423558.15 | 83605.33 | 6181766.86 | 738318.35 | 0.00 | 87950611.99 |
| Total | **145539500** | **269208000** | **276700** | **7.5E+07** | **895081840.4** | **969790840.4** | **1109101.21** | **72734313** | **8066845.86** | **1430514.83** | **1036997924** |
| Average/ Month | 12128292 | 22434000 | 23058 | 6225750 | 74590153 | 80815903 | 92425 | 6061193 | 672237 | 119210 | 86416494 |

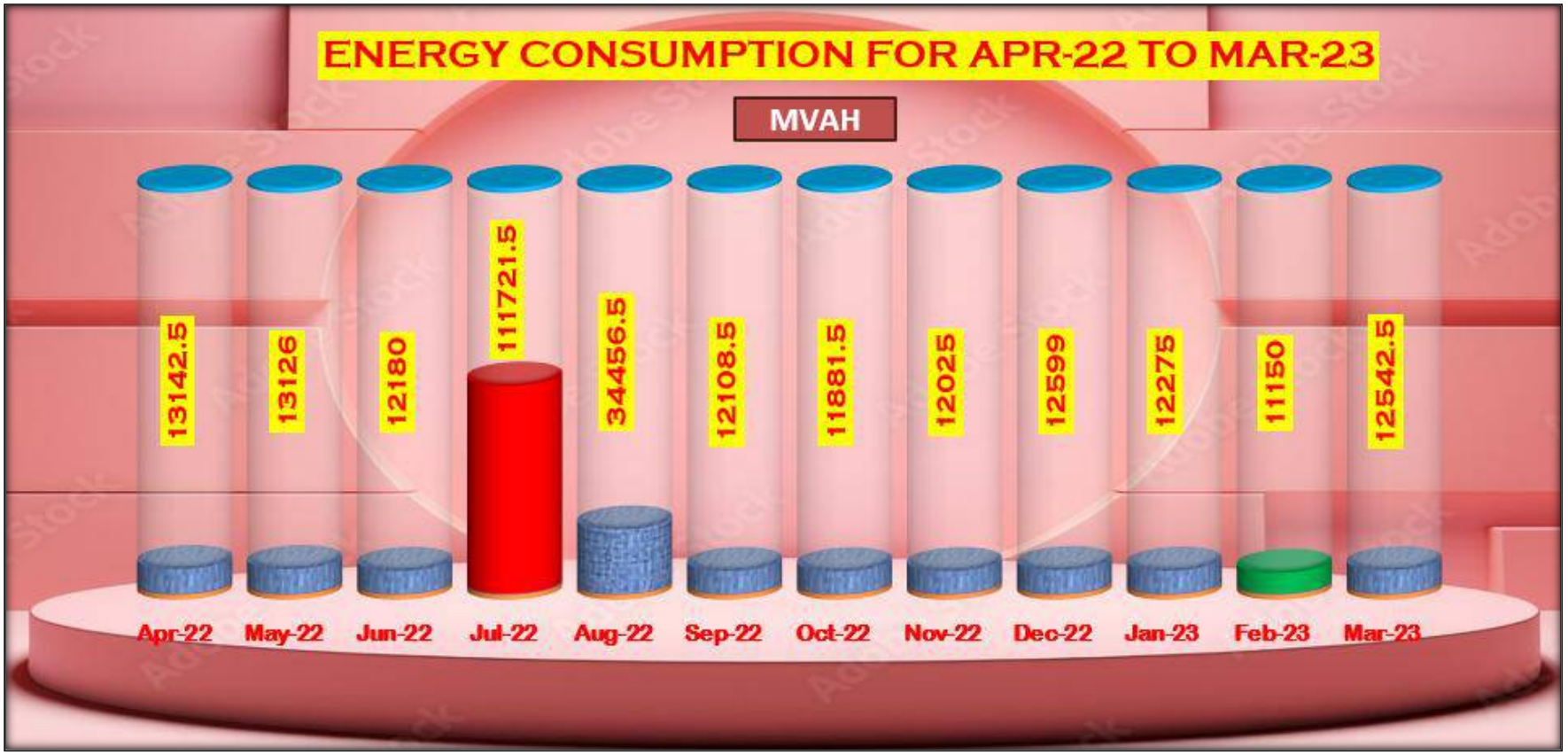
**ENERGY CONSUMPTION IN KWH FOR APR-22 TO MAR-23 :**




**Observation:**

The total power consumption (MWH) is 145539.5 MWH for the period from Apr-22 to Mar-23. The power consumption (KWH) is highest in the month of April 2022 i.e., 13119.5 MWH and lowest in the month of February 2023 i.e., 11050 MWH.

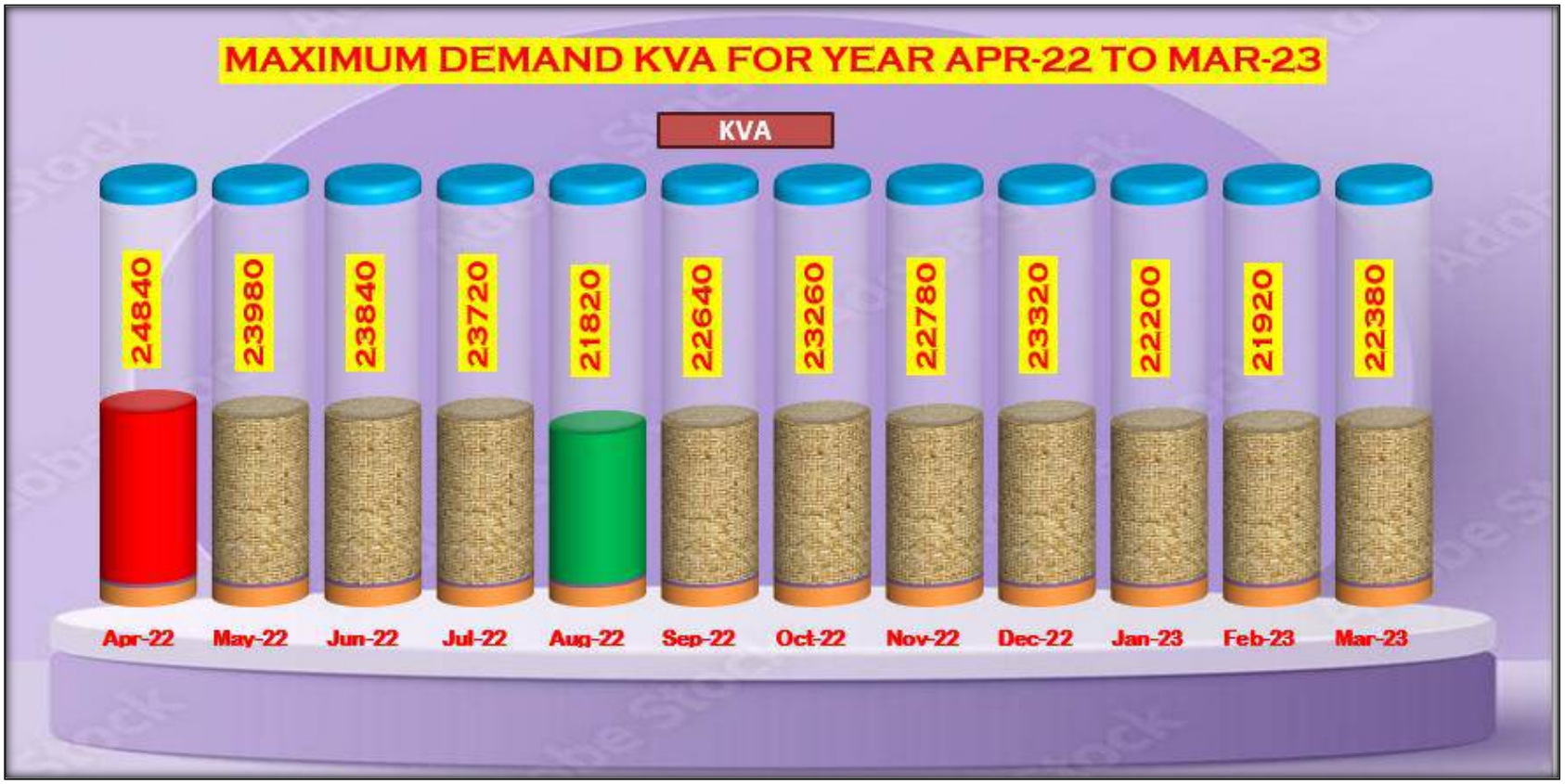
**ENERGY CONSUMPTION IN KVAH FOR APR-22 TO MAR-23 :**




**Observation:**

The total power consumption (MVAH) is 269208 MVAH for the period from Apr-22 to Mar-23. The power consumption (MVAH) is highest in the month of July 2022 i.e., 111721.5 MVAH and lowest in the month of February 2023 i.e., 11150 MVAH.

**MAXIMUM DEMAND IN KVA FOR APR-22 TO MAR-23 :**




**Observation:**

The total average maximum demand (KVA) is 23058 KVA for the period from Apr-22 to Mar-23. The maximum demand (KVA) is highest in the month of April 2022 i.e., 24840 KVA and lowest in the month of August 2022 i.e., 21820 KVA.

**ELECTRICITY COST FOR IN CRORES FOR APR-22 TO MAR-23 :**


**Observation:**

The total power consumption cost is Rs. 104 Crores for the period from Apr-22 to Mar-23. The energy cost is highest in the month of April 2022 i.e., Rs. 9.26 Crores and lowest in the month of February 2023 i.e., Rs 7.86 Croes.

**Observation & Recommendation:**

There are 1 no's of incomer @ 220 KV /11.5 KV capacity 60 MVA for Tata Steel Sahibabad operation. Power supply is supplied from Pashchimanchal Vidyut Vitran Nigam Ltd.

0**Some tips on Electrical power quality**

1. The possible reason for low power factor is that the capacitors present in the APFC panel may not be functioning properly. It is advised to check the current drawn from the individual capacitors at least once in a month to keep a tracking of their working. This can be done by keeping the APFC panel in manual mode & switching ON the individual capacitor
2. The capacity of the capacitors will be according to the following table.
3. It should be noted that the rating of the capacitor should not be greater than the no-load magnetizing kVAr of the motor. If this condition exists, damaging over voltage or transient torques can occur. This is why most motor manufacturers specify maximum capacitor ratings to be applied to specific motors.
4. From energy efficiency point of view, capacitor location at receiving substation only helps the utility in loss reduction. Locating capacitors at tail end will help to reduce loss reduction within the plants distribution network as well and directly benefit the user by reduced consumption. Reduction in the distribution loss % in kWh when tail end power factor is raised from PF1 to a new power factor PF2, will be proportional to

$$\left[1 - \left(PF_1 / PF_2\right)^2\right] x100$$

The maximum Rating of capacitor that is to be connected to the motor terminal is shown below.

| Capacitor Ratings for Power Factor Correction by Direct Connection to Induction Motors | | | | | | |
|---|---|---|---|---|---|---|
| Motor Rating (HP) | Capacitor rating (kVAr) for Motor Speed | | | | | |
| | 3000 | 1500 | 1000 | 750 | 600 | 500 |
| 5 | 2 | 2 | 2 | 3 | 3 | 3 |
| 7.5 | 2 | 2 | 3 | 3 | 4 | 4 |
| 10 | 3 | 3 | 4 | 5 | 5 | 6 |
| 15 | 3 | 4 | 5 | 7 | 7 | 7 |
| 20 | 5 | 6 | 7 | 8 | 9 | 10 |
| 25 | 6 | 7 | 8 | 9 | 9 | 12 |
| 30 | 7 | 8 | 9 | 10 | 10 | 15 |
| 40 | 9 | 10 | 12 | 15 | 16 | 20 |
| 50 | 10 | 12 | 15 | 18 | 20 | 22 |
| 60 | 12 | 14 | 15 | 20 | 22 | 25 |
| 75 | 15 | 16 | 20 | 22 | 25 | 30 |
| 100 | 20 | 22 | 25 | 26 | 32 | 35 |
| 125 | 25 | 26 | 30 | 32 | 35 | 40 |
| 150 | 30 | 32 | 35 | 40 | 45 | 50 |
| 200 | 40 | 45 | 45 | 50 | 55 | 60 |
| 250 | 45 | 50 | 50 | 60 | 65 | 70 |

# 4. MOTOR LOAD SURVEY

The major LT motors, which were running at the time of Audit, were studied randomly.

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| OLD PICKLING LINE | | | | | | | | | | |
| 1 | FLATNER-1 DRIVE MOTOR | 110 | 420.8 | 95 | 0.88 | 60.93 | 69.24 | 55.39% | 2.2% | 3.9% |
| 2 | LINE HYDRAULIC MOTOR-1 | 22 | 421.3 | 27 | 0.89 | 17.53 | 19.70 | 79.70% | 2.3% | 1.9% |
| 3 | ENTRY HYDRAULIC MAIN MOTOR | 37 | 423.3 | 46.3 | 0.91 | 30.89 | 33.95 | 83.49% | 2.6% | 2.8% |
| 4 | SCRUBBER BLOWER MAIN MOTOR | 55 | 421.3 | 62.3 | 0.89 | 40.46 | 45.46 | 73.56% | 2.3% | 5.2% |
| 5 | HOT AIR DRIER MOTOR | 30 | 421 | 41 | 0.78 | 23.32 | 29.90 | 77.73% | 2.3% | 3.2% |
| 6 | EXIT HYDRAULIC POWER PACKMOTOR | 30 | 421.3 | 39 | 0.82 | 23.34 | 28.46 | 77.79% | 2.2% | 2.9% |
| 7 | RECOILER DRIVE MOTOR | 315 | 420 | 302 | 0.68 | 149.39 | 219.69 | 47.42% | 2.6% | 3.8% |
| NEW PICKLING LINE | | | | | | | | | | |
| 1 | SCRUBBER BLOWER MAIN MOTOR | 45 | 420.8 | 42.6 | 0.89 | 27.63 | 31.05 | 61.41% | 2.3% | 2.5% |
| 2 | SCRUBBER BLOWER STANDBY MOTOR | 30 | 421.3 | 43.2 | 0.78 | 24.59 | 31.52 | 81.96% | 2.2% | 3.9% |
| 3 | HOT AIR DRIER MOTOR | 37 | 423.3 | 3.3 | 0.88 | 2.13 | 2.42 | 5.75% | 2.6% | 2.8% |
| 4 | HYDRAULIC POWER PACK MOTOR 1 | 22 | 421.3 | 22.1 | 0.89 | 14.35 | 16.13 | 65.24% | 2.0% | 3.0% |
| 5 | HYDRAULIC POWER PACK MOTOR 2 | 22 | 420.8 | 26.2 | 0.84 | 16.04 | 19.10 | 72.91% | 2.2% | 4.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 6 | HYDRAULIC POWER PACK MOTOR 3 | 22 | 421.3 | 20.6 | 0.88 | 13.23 | 15.03 | 60.13% | 2.3% | 5.2% |
| 7 | HYDRAULIC POWER PACK MOTOR 4 | 22 | 421.2 | 21.3 | 0.86 | 13.36 | 15.54 | 60.74% | 2.3% | 2.5% |
| 8 | RECOILER DRIVE MOTOR | 127 | 420 | 62.65 | 0.84 | 38.28 | 45.57 | 30.14% | 2.2% | 4.2% |
| PROCESS LINE : 6 HI HITACHI | | | | | | | | | | |
| 1 | AUX. HYD. MOTOR-1 | 45 | 421.3 | 49.6 | 0.88 | 31.85 | 36.19 | 70.78% | 2.2% | 4.2% |
| 2 | AUX. HYD. MOTOR-2 | 45 | 420.8 | 48.2 | 0.89 | 31.27 | 35.13 | 69.48% | 2.3% | 5.2% |
| 3 | AUX. HYD. MOTOR-3 | 45 | 421.3 | 49.2 | 0.89 | 31.95 | 35.90 | 71.00% | 2.3% | 2.5% |
| 4 | MAIN HYD MOTOR-1 | 37 | 421.2 | 38.9 | 0.89 | 25.26 | 28.38 | 68.26% | 1.9% | 4.1% |
| 5 | MAIN HYD MOTOR-2 | 37 | 421.3 | 40.2 | 0.78 | 22.88 | 29.33 | 61.84% | 2.3% | 3.2% |
| 6 | ROLL COLLANT MOTOR-1 | 132 | 423.3 | 136.5 | 0.88 | 88.07 | 100.08 | 66.72% | 2.2% | 2.9% |
| 7 | ROLL COLLANT MOTOR-2 | 132 | 421.3 | 125.2 | 0.89 | 81.31 | 91.36 | 61.60% | 2.6% | 3.8% |
| 8 | 3 ROLL FEEDER MOTOR | 18.5 | 423.3 | 21.2 | 0.84 | 13.06 | 15.54 | 70.57% | 2.3% | 2.5% |
| 9 | FUME EXHAUST FAN MOTOR | 200 | 421.3 | 261.3 | 0.88 | 167.79 | 190.67 | 83.89% | 2.2% | 3.9% |
| 10 | ELCT. ROOM VENT. FAN MOTOR | 45 | 420.8 | 47.52 | 0.86 | 29.79 | 34.63 | 66.19% | 2.1% | 1.2% |
| 11 | OIL CELLER VENT. FAN MOTOR | 30 | 421.3 | 38.3 | 0.84 | 23.48 | 27.95 | 78.25% | 2.3% | 1.9% |
| 12 | LTR MOTOR 2*1250 | 2500 | 421.2 | 626.2 | 0.89 | 406.57 | 456.82 | 16.26% | 2.6% | 2.8% |
| 13 | MILL MOTOR (MASTER) | 2500 | 421.3 | 692.3 | 0.82 | 414.24 | 505.17 | 16.57% | 2.0% | 3.0% |
| 14 | MILL MOTOR (SLAVE) | 2500 | 423.3 | 656.8 | 0.79 | 380.41 | 481.54 | 15.22% | 2.2% | 4.2% |
| 15 | RTR MOTOR 2*1250 | 2500 | 421.3 | 654.2 | 0.87 | 415.31 | 477.36 | 16.61% | 2.2% | 2.9% |
| 16 | POR MOTOR | 600 | 423.3 | 521.3 | 0.89 | 340.15 | 382.19 | 56.69% | 2.6% | 3.8% |
| 17 | RTB MOTOR | 450 | 421.3 | 413.2 | 0.82 | 247.24 | 301.51 | 54.94% | 2.2% | 4.2% |
| 18 | RBB MOTOR | 300 | 420.8 | 311.2 | 0.79 | 179.18 | 226.81 | 59.73% | 2.3% | 5.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 19 | LTB MOTOR | 450 | 421.2 | 356.9 | 0.87 | 226.52 | 260.37 | 50.34% | 2.2% | 3.9% |
| 20 | LBB MOTOR | 300 | 421.3 | 312.2 | 0.79 | 179.97 | 227.81 | 59.99% | 2.1% | 1.2% |
| 21 | UPDRAFT FAN MOTOR-1 | 200 | 421.3 | 217.2 | 0.88 | 139.47 | 158.49 | 69.74% | 2.6% | 2.8% |
| 22 | UPDRAFT FAN MOTOR-2 | 200 | 420.8 | 214.6 | 0.89 | 139.20 | 156.41 | 69.60% | 2.6% | 3.8% |
| 23 | UPDRAFT FAN MOTOR-3 | 200 | 421.3 | 23.13 | 0.82 | 13.84 | 16.88 | 6.92% | 2.2% | 4.2% |
| 24 | COMPRESSOR (RECIPROCATING)-2 | 180 | 421.2 | 195.5 | 0.79 | 112.67 | 142.62 | 62.59% | 2.3% | 5.2% |
| 25 | HOT WATER RETURN PUMP MOTOR | 18.5 | 421.3 | 21.2 | 0.87 | 13.46 | 15.47 | 72.75% | 2.3% | 2.5% |
| 26 | HOT WATER RETURN PUMP MOTOR | 18.5 | 423.3 | 23.1 | 0.89 | 15.07 | 16.94 | 81.48% | 2.2% | 3.9% |
| 27 | HOT WATER RETURN PUMP MOTOR | 18.5 | 421.3 | 22.3 | 0.89 | 14.48 | 16.27 | 78.28% | 2.1% | 1.2% |
| NEW 6- HI MILL FLAT MOTOR DETAILS | | | | | | | | | | |
| 1 | ETR BLOWER MOTOR-1 | 30 | 421.3 | 32.3 | 0.89 | 20.98 | 23.57 | 69.92% | 2.3% | 2.5% |
| 2 | ETR BLOWER MOTOR-2 | 30 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 66.92% | 2.2% | 3.9% |
| 3 | MILL-1 BLOWER MOTOR-1 | 30 | 421.3 | 32.6 | 0.84 | 19.98 | 23.79 | 66.61% | 2.6% | 2.8% |
| 4 | MILL-1 BLOWER MOTOR-2 | 30 | 421.2 | 33.2 | 0.89 | 21.56 | 24.22 | 71.85% | 2.0% | 3.0% |
| 5 | MILL-2 BLOWER MOTOR-1 | 30 | 421.3 | 31.2 | 0.82 | 18.67 | 22.77 | 62.23% | 2.2% | 4.2% |
| 6 | MILL-2 BLOWER MOTOR-2 | 30 | 423.3 | 33.6 | 0.79 | 19.46 | 24.63 | 64.87% | 2.3% | 5.2% |
| 7 | DTR BLOWER MOTOR-1 | 30 | 420.8 | 36.2 | 0.86 | 22.69 | 26.38 | 75.63% | 2.3% | 2.5% |
| 8 | DTR BLOWER MOTOR-2 | 30 | 421.3 | 36.2 | 0.88 | 23.25 | 26.41 | 77.48% | 1.9% | 4.1% |
| 9 | L.P MOTOR-1 | 45 | 420.8 | 49.5 | 0.89 | 32.11 | 36.08 | 71.35% | 2.3% | 3.2% |
| 10 | L.P MOTOR-2 | 45 | 421.3 | 52.2 | 0.89 | 33.90 | 38.09 | 75.33% | 2.2% | 2.9% |
| 11 | L.P MOTOR-3 | 45 | 421.2 | 45.9 | 0.89 | 29.80 | 33.48 | 66.23% | 2.6% | 3.8% |
| 12 | H.P MOTOR-1(LOADING) | 75 | 421.3 | 86.2 | 0.78 | 49.06 | 62.90 | 65.42% | 2.2% | 4.2% |
| 13 | H.P MOTOR-2(LOADING) | 75 | 423.3 | 86.1 | 0.88 | 55.55 | 63.12 | 74.07% | 2.3% | 5.2% |
| 14 | H.P MOTOR-3(BENDING) | 75 | 421.3 | 87.6 | 0.89 | 56.89 | 63.92 | 75.85% | 2.3% | 2.5% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 15 | H.P MOTOR-4(BENDING) | 75 | 421.2 | 88.1 | 0.88 | 56.56 | 64.27 | 75.41% | 2.3% | 5.2% |
| 16 | ROLL COOLANT MOTOR-1 | 160 | 421.3 | 198.2 | 0.89 | 128.72 | 144.62 | 80.45% | 2.3% | 2.5% |
| 17 | ROLL COOLANT MOTOR-2 | 160 | 423.3 | 188.2 | 0.84 | 115.90 | 137.98 | 72.44% | 1.9% | 4.1% |
| 18 | CENTRE GUIDE SYSTEM MOTOR | 22 | 420.8 | 26.2 | 0.86 | 16.42 | 19.10 | 74.64% | 2.2% | 2.9% |
| 19 | CELLAR VENTILATION BLOWER MOTOR | 45 | 421.3 | 49.5 | 0.84 | 30.34 | 36.12 | 67.42% | 2.6% | 3.8% |
| TOTAL LOAD AT 6HI FLAT | | | | | | | | | | |
| 1 | MILL MOTOR BLOWER (MASTER) | 37 | 421.3 | 36.2 | 0.88 | 23.25 | 26.41 | 62.82% | 1.9% | 4.1% |
| 2 | MILL MOTOR BLOWER (SLAVE) | 37 | 421.3 | 35.6 | 0.87 | 22.60 | 25.98 | 61.08% | 2.2% | 2.9% |
| 3 | ETR MOTOR BLOWER | 37 | 423.3 | 39.2 | 0.89 | 25.58 | 28.74 | 69.13% | 2.6% | 3.8% |
| 4 | DTR MOTOR BLOWER | 37 | 421.3 | 35.6 | 0.82 | 21.30 | 25.98 | 57.57% | 2.2% | 4.2% |
| 5 | COOLANT MOTOR 1 | 150 | 420.8 | 126.6 | 0.79 | 72.89 | 92.27 | 48.60% | 2.3% | 5.2% |
| 6 | COOLANT MOTOR 2 | 150 | 421.3 | 124.2 | 0.82 | 74.31 | 90.63 | 49.54% | 2.3% | 2.5% |
| 7 | FUME EXHAUST MOTOR | 90 | 421.2 | 95.6 | 0.87 | 60.68 | 69.74 | 67.42% | 2.2% | 3.9% |
| 8 | HP LOADING MOTOR 1 | 75 | 421.3 | 72.6 | 0.79 | 41.85 | 52.98 | 55.80% | 2.1% | 1.2% |
| 9 | HP LOADING MOTOR 2 | 75 | 423.3 | 75.9 | 0.9 | 50.08 | 55.65 | 66.78% | 2.3% | 1.9% |
| 10 | HP BENDING MOTOR 1 | 37 | 421.3 | 39.2 | 0.88 | 25.17 | 28.60 | 68.03% | 2.6% | 2.8% |
| 11 | HP BENDING MOTOR 2 | 37 | 420.8 | 40.2 | 0.89 | 26.08 | 29.30 | 70.48% | 2.6% | 3.8% |
| 12 | LP MOTOR 1 | 37 | 421.3 | 40.6 | 0.82 | 24.29 | 29.63 | 65.66% | 2.2% | 4.2% |
| 13 | LP MOTOR 2 | 37 | 421.2 | 46.2 | 0.89 | 30.00 | 33.70 | 81.07% | 2.0% | 3.0% |
| 14 | LP MOTOR 3 | 37 | 421.3 | 46.2 | 0.82 | 27.64 | 33.71 | 74.71% | 2.2% | 4.2% |
| PROCESS LINE :4 HI MILL | | | | | | | | | | |
| 1 | P.O.R MOTOR | 110 | 421.3 | 142 | 0.88 | 91.18 | 103.62 | 82.89% | 2.2% | 3.9% |
| 2 | E.T.R MOTOR | 500 | 420.8 | 512.2 | 0.86 | 321.04 | 373.30 | 64.21% | 2.1% | 1.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 3 | MILL MOTOR | 750 | 421.3 | 723.1 | 0.84 | 443.22 | 527.64 | 59.10% | 2.3% | 1.9% |
| 4 | D.T.R MOTOR | 500 | 421.2 | 515.3 | 0.89 | 334.57 | 375.92 | 66.91% | 2.6% | 2.8% |
| 5 | L.P HYDRAULIC MOTOR-1 | 30 | 423.3 | 35.6 | 0.89 | 23.23 | 26.10 | 77.43% | 2.6% | 3.8% |
| 6 | L.P HYDRAULIC MOTOR-2 | 30 | 421.3 | 35.4 | 0.82 | 21.18 | 25.83 | 70.60% | 2.2% | 4.2% |
| 7 | H.P SYSTEM ROLL LOADING MOTOR-1 | 22 | 420.8 | 22.69 | 0.79 | 13.06 | 16.54 | 59.38% | 2.3% | 5.2% |
| 8 | H.P SYSTEM ROLL LOADING MOTOR-2 | 22 | 421.3 | 25.1 | 0.82 | 15.02 | 18.32 | 68.27% | 2.3% | 2.5% |
| 9 | H.P SYSTEM ROLL BENDING MOTOR-1 | 22 | 421.2 | 26.3 | 0.87 | 16.69 | 19.19 | 75.87% | 2.2% | 3.9% |
| 10 | H.P SYSTEM ROLL BENDING MOTOR-2 | 22 | 421.3 | 24.6 | 0.79 | 14.18 | 17.95 | 64.46% | 2.1% | 1.2% |
| 11 | COOLANT MOTOR-1 | 30 | 423.3 | 35.2 | 0.9 | 23.23 | 25.81 | 77.42% | 2.3% | 1.9% |
| 12 | COOLANT MOTOR-2 | 30 | 421.3 | 36.6 | 0.88 | 23.50 | 26.71 | 78.34% | 2.6% | 2.8% |
| | NEW 4HI MILL | | | | | | | | | |
| 1 | HP MOTOR LOADING 1 | 45 | 420.8 | 48.2 | 0.79 | 27.75 | 35.13 | 61.67% | 2.3% | 5.2% |
| 2 | HP MOTOR LOADING 2 | 45 | 421.3 | 49.2 | 0.82 | 29.44 | 35.90 | 65.42% | 2.3% | 2.5% |
| 3 | FUME EXHAUST BLOWER MOTOR | 45 | 421.2 | 48.2 | 0.87 | 30.59 | 35.16 | 67.98% | 2.2% | 3.9% |
| 4 | LP MOTOR 1 | 37 | 421.3 | 35.6 | 0.79 | 20.52 | 25.98 | 55.46% | 2.1% | 1.2% |
| 5 | LP MOTOR 2 | 37 | 423.3 | 39.2 | 0.9 | 25.87 | 28.74 | 69.91% | 2.3% | 1.9% |
| 6 | ROLL COOLANT MOTOR 1 | 37 | 421.3 | 35.2 | 0.88 | 22.60 | 25.69 | 61.09% | 2.6% | 2.8% |
| 7 | ROLL COOLANT MOTOR 2 | 37 | 420.8 | 35.9 | 0.89 | 23.29 | 26.16 | 62.94% | 2.6% | 3.8% |
| | PROCESS LINE : ECL | | | | | | | | | |
| 1 | HOT AIR DRYER | 45 | 421.3 | 52 | 0.65 | 24.66 | 37.94 | 54.81% | 1.3% | 3.5% |
| 2 | FUME EXHAUST BLOWER | 90 | 423.1 | 104 | 0.73 | 55.63 | 76.21 | 61.82% | 1.9% | 2.4% |
| 3 | POR 2 MOTOR | 120 | 421.3 | 150 | 0.81 | 88.66 | 109.45 | 73.88% | 1.6% | 3.9% |
| 4 | RECOILER MOTOR | 250 | 421.3 | 195.6 | 0.88 | 125.60 | 142.73 | 50.24% | 1.6% | 4.9% |
| 5 | BRIDDLE MOTOR 1 | 55 | 421.3 | 67 | 0.82 | 40.09 | 48.89 | 72.89% | 1.2% | 3.9% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 6 | BRIDDLE MOTOR 2 | 55 | 419.2 | 67 | 0.83 | 40.38 | 48.65 | 73.41% | 1.6% | 4.0% |
| 7 | ENTRY HYD. MOTOR (M) | 55 | 421.2 | 67 | 0.83 | 40.57 | 48.88 | 73.76% | 1.9% | 2.9% |
| 8 | EXIT HYD. MOTOR (M) | 55 | 421.3 | 68 | 0.84 | 41.68 | 49.62 | 75.78% | 1.6% | 4.2% |
| | PROCESS LINE : ANNEALING | | | | | | | | | |
| 1 | BASE FAN-1 | 30 | 420.8 | 37.5 | 0.84 | 22.96 | 27.33 | 76.53% | 1.2% | 2.2% |
| 2 | BASE FAN-2 | 30 | 421.2 | 38.2 | 0.86 | 23.97 | 27.87 | 79.89% | 1.2% | 2.1% |
| 3 | BASE FAN-3 | 30 | 421.3 | 39.3 | 0.84 | 24.09 | 28.68 | 80.30% | 1.4% | 2.4% |
| 4 | BASE FAN-4 | 30 | 423.3 | 40.1 | 0.88 | 25.87 | 29.40 | 86.24% | 1.1% | 2.6% |
| 5 | BASE FAN-5 | 30 | 421.3 | 35.6 | 0.89 | 23.12 | 25.98 | 77.07% | 1.1% | 2.1% |
| 6 | BASE FAN-6 | 30 | 420.8 | 36.7 | 0.84 | 22.47 | 26.75 | 74.89% | 1.6% | 2.2% |
| 7 | BASE FAN-7 | 30 | 421.3 | 37.9 | 0.88 | 24.34 | 27.66 | 81.12% | 1.6% | 2.0% |
| 8 | BASE FAN-8 | 30 | 421.2 | 38.1 | 0.86 | 23.90 | 27.79 | 79.68% | 1.2% | 2.6% |
| 9 | BASE FAN-9 | 30 | 420 | 38.9 | 0.84 | 23.77 | 28.30 | 79.23% | 1.4% | 2.4% |
| 10 | BASE FAN-10 | 30 | 421 | 37.9 | 0.83 | 22.94 | 27.64 | 76.46% | 1.5% | 2.4% |
| 11 | BASE FAN-11 | 30 | 421.3 | 38.1 | 0.83 | 23.08 | 27.80 | 76.92% | 1.6% | 2.1% |
| 12 | BASE FAN-12 | 30 | 420 | 39.1 | 0.81 | 23.04 | 28.44 | 76.80% | 1.5% | 2.1% |
| PROCESS LINE : 4-HI SKIN PASS MILL | | | | | | | | | | |
| 1 | TEMPER MILL UPPER | 228 | 421.3 | 285.6 | 0.88 | 183.39 | 208.40 | 80.44% | 2.2% | 3.9% |
| 2 | TEMPER MILL LOWER | 228 | 420.8 | 274.2 | 0.86 | 171.87 | 199.84 | 75.38% | 2.1% | 1.2% |
| 3 | MAIN DRIVE | 288 | 421.3 | 241.2 | 0.84 | 147.84 | 176.00 | 51.33% | 2.3% | 1.9% |
| 4 | UNCOILER | 296 | 421.2 | 291.2 | 0.89 | 189.07 | 212.44 | 63.87% | 2.6% | 2.8% |
| 5 | RECOILER | 685 | 421.3 | 626.3 | 0.82 | 374.74 | 457.01 | 54.71% | 2.0% | 3.0% |
| 6 | TEMPER MILL ELONG. | 98.5 | 423.3 | 92.6 | 0.79 | 53.63 | 67.89 | 54.45% | 2.2% | 4.2% |
| 7 | EXIT BRIDDLE MOTOR-1 | 48.5 | 421.3 | 49.3 | 0.87 | 31.30 | 35.97 | 64.53% | 2.2% | 2.9% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 8 | HIGH PRESSURE PUMP-1 | 75 | 423.3 | 78.9 | 0.89 | 51.48 | 57.85 | 68.64% | 2.6% | 3.8% |
| 9 | HIGH PRESSURE PUMP-2 | 75 | 421.3 | 76.6 | 0.82 | 45.83 | 55.89 | 61.11% | 2.2% | 4.2% |
| 10 | MEDIUM PRESSURE PUMP -1 | 55 | 421.3 | 59.2 | 0.88 | 38.01 | 43.20 | 69.12% | 2.2% | 3.9% |
| 11 | MEDIUM PRESSURE PUMP-2 | 55 | 420.8 | 58.2 | 0.86 | 36.48 | 42.42 | 66.33% | 2.1% | 1.2% |
| 12 | MEDIUM PRESSURE PUMP-3 | 55 | 421.3 | 54.6 | 0.84 | 33.47 | 39.84 | 60.85% | 2.3% | 1.9% |
| 13 | HOT AIR DRIER | 110 | 421.3 | 124.2 | 0.87 | 78.85 | 90.63 | 71.68% | 2.2% | 2.9% |
| 14 | HOT AIR DRIER | 110 | 423.3 | 126.3 | 0.89 | 82.41 | 92.60 | 74.92% | 2.6% | 3.8% |
| 15 | VACCUM DRIVE | 18.5 | 421.3 | 25.1 | 0.82 | 15.02 | 18.32 | 81.18% | 2.3% | 2.5% |
| PROCESS LINE :2 HI MILL | | | | | | | | | | |
| 1 | P.O.R MOTOR | 40 | 423.3 | 46.5 | 0.79 | 26.93 | 34.09 | 67.33% | 2.2% | 4.2% |
| 2 | MILL MOTOR | 75 | 421.3 | 79.6 | 0.87 | 50.53 | 58.08 | 67.38% | 2.2% | 2.9% |
| 3 | D.T.R MOTOR | 110 | 423.3 | 112.3 | 0.89 | 73.28 | 82.33 | 66.62% | 2.6% | 3.8% |
| 4 | L.P HYDRAULIC -1 | 22 | 421.3 | 25.2 | 0.82 | 15.08 | 18.39 | 68.54% | 2.2% | 4.2% |
| 5 | L.P HYDRAULIC-2 | 22 | 421.3 | 26.2 | 0.88 | 16.82 | 19.12 | 76.47% | 2.2% | 3.9% |
| PROCESS LINE : CRS 1 | | | | | | | | | | |
| 1 | SCRAP BELLER | 18.5 | 421.3 | 19.5 | 0.87 | 12.38 | 14.23 | 66.91% | 2.2% | 2.9% |
| 2 | SLITTER MOTOR DC | 65 | 423.3 | 68.9 | 0.89 | 44.96 | 50.51 | 69.17% | 2.6% | 3.8% |
| 3 | RECOILER DC MOTOR | 150 | 421.3 | 165.2 | 0.82 | 98.85 | 120.55 | 65.90% | 2.2% | 4.2% |
| 4 | UNCOILER DC MOTOR | 60 | 421.3 | 59.3 | 0.88 | 38.08 | 43.27 | 63.46% | 2.2% | 3.9% |
| PROCESS LINE : CRS 2 | | | | | | | | | | |
| 1 | SCRAP BELLER | 18.5 | 421.3 | 19.6 | 0.83 | 11.87 | 14.30 | 64.17% | 1.6% | 1.8% |
| 2 | SLITTER MOTOR DC | 65 | 421.3 | 68.2 | 0.65 | 32.35 | 49.76 | 49.76% | 1.3% | 3.5% |
| 3 | RECOILER DC MOTOR | 150 | 423.1 | 151.3 | 0.73 | 80.94 | 110.87 | 53.96% | 1.9% | 2.4% |
| 4 | UNCOILER DC MOTOR | 60 | 421.3 | 65.5 | 0.81 | 38.71 | 47.79 | 64.52% | 1.6% | 3.9% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| CRS 3 | | | | | | | | | | |
| 1 | SLITTER MOTOR | 17.5 | 421.2 | 15.2 | 0.87 | 9.65 | 11.09 | 55.13% | 2.2% | 3.9% |
| 2 | RECOILER MOTOR | 20 | 421.3 | 26.2 | 0.79 | 15.10 | 19.12 | 75.52% | 2.1% | 1.2% |
| CRS 04 (FIMMI CRS) | | | | | | | | | | |
| 1 | UNCOILER | 82 | 421.3 | 85.5 | 0.84 | 52.41 | 62.39 | 63.91% | 2.3% | 1.9% |
| 2 | SLITTER | 165 | 421.2 | 169.6 | 0.89 | 110.12 | 123.73 | 66.74% | 2.6% | 2.8% |
| 3 | BURR LAMINATING | 72 | 421.3 | 75.6 | 0.82 | 45.24 | 55.16 | 62.83% | 2.0% | 3.0% |
| 4 | BREAKING PINCH ROLL#1 | 132 | 423.3 | 135.6 | 0.79 | 78.54 | 99.42 | 59.50% | 2.2% | 4.2% |
| 5 | BREAKING PINCH ROLL#2 | 132 | 421.3 | 143.6 | 0.87 | 91.16 | 104.78 | 69.06% | 2.2% | 2.9% |
| 6 | RECOILER | 250 | 423.3 | 262.6 | 0.89 | 171.35 | 192.53 | 68.54% | 2.6% | 3.8% |
| 7 | SCRAP BALLER | 22 | 421.3 | 22.2 | 0.82 | 13.28 | 16.20 | 60.38% | 2.2% | 4.2% |
| 8 | HYDRAULIC EQUIPMENT 1 | 22 | 423.3 | 26.2 | 0.9 | 17.29 | 19.21 | 78.58% | 2.3% | 1.9% |
| 9 | HYDRAULIC EQUIPMENT 2 | 22 | 421.3 | 21.6 | 0.88 | 13.87 | 15.76 | 63.05% | 2.6% | 2.8% |
| CRS 05 | | | | | | | | | | |
| 1 | SLITTER MOTOR | 33 | 421.3 | 35.2 | 0.84 | 21.58 | 25.69 | 65.38% | 1.4% | 2.4% |
| 2 | RECOILER MOTOR | 50 | 423.3 | 50.1 | 0.88 | 32.32 | 36.73 | 64.65% | 1.1% | 2.6% |
| CRS 6 | | | | | | | | | | |
| 1 | UNCOILER MOTOR | 30 | 420.8 | 31.3 | 0.84 | 19.16 | 22.81 | 63.87% | 1.6% | 2.2% |
| 2 | RECOILER MOTOR | 75 | 421.3 | 76.2 | 0.88 | 48.93 | 55.60 | 65.24% | 1.6% | 2.0% |
| 3 | SLITTER HEAD MOTOR | 30 | 421.2 | 31.3 | 0.86 | 19.64 | 22.83 | 65.46% | 1.2% | 2.6% |
| PROCESS LINE : CRS-7 | | | | | | | | | | |
| 1 | UNCOILER | 60 | 421.3 | 63.2 | 0.88 | 40.58 | 46.12 | 67.64% | 2.2% | 3.9% |
| 2 | RE-COILER | 200 | 420.8 | 251.2 | 0.86 | 157.45 | 183.08 | 78.72% | 2.1% | 1.2% |
| 3 | HYD. PUMP ENTRY-1 | 30 | 421.3 | 35.2 | 0.84 | 21.58 | 25.69 | 71.92% | 2.3% | 1.9% |
| 4 | HYD. PUMP ENTRY-2 | 30 | 421.2 | 32.6 | 0.89 | 21.17 | 23.78 | 70.55% | 2.6% | 2.8% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 5 | HYD. PUMP EXIT-1 | 30 | 421.3 | 36.3 | 0.82 | 21.72 | 26.49 | 72.40% | 2.0% | 3.0% |
| 6 | HYD. PUMP EXIT-2 | 30 | 423.3 | 35.2 | 0.79 | 20.39 | 25.81 | 67.96% | 2.2% | 4.2% |
| 7 | SCRAP BALLER | 22 | 421.3 | 25.1 | 0.87 | 15.93 | 18.32 | 72.43% | 2.2% | 2.9% |
| CRS-8 | | | | | | | | | | |
| 1 | SLITTER MOTOR | 17.5 | 421.3 | 15.5 | 0.82 | 9.27 | 11.31 | 53.00% | 2.2% | 4.2% |
| 2 | RECOILER | 25 | 421.3 | 26.3 | 0.88 | 16.89 | 19.19 | 67.55% | 2.2% | 3.9% |
| **PROCESS LINE :CRS-9** | | | | | | | | | | |
| 1 | RECOILER MOTOR | 25 | 421.3 | 28.2 | 0.84 | 17.28 | 20.58 | 69.14% | 2.3% | 1.9% |
| 2 | SLITTER MOTOR | 17.5 | 421.2 | 16.6 | 0.89 | 10.78 | 12.11 | 61.59% | 2.6% | 2.8% |
| **PROCESS LINE :CRS-10** | | | | | | | | | | |
| 1 | RECOILER MOTOR | 25.0 | 423.3 | 26.2 | 0.79 | 15.17 | 19.21 | 60.70% | 2.2% | 4.2% |
| 2 | SLITTER MOTOR | 17.5 | 421.3 | 19.6 | 0.87 | 12.44 | 14.30 | 71.10% | 2.2% | 2.9% |
| **PROCESS LINE :CRS-11** | | | | | | | | | | |
| 1 | RECOILER MOTOR | 25 | 421.3 | 29.6 | 0.82 | 17.71 | 21.60 | 70.84% | 2.2% | 4.2% |
| 2 | SLITTER MOTOR | 17.5 | 420.8 | 18.2 | **0.79** | **10.48** | 13.26 | 59.88% | 2.3% | 5.2% |
| **PROCESS LINE :CRS-12** | | | | | | | | | | |
| 1 | Three Roll Motor | 51 | 420.8 | 53.2 | 0.84 | 32.57 | 38.77 | 63.86% | 1.2% | 2.2% |
| 2 | Main Hydraullic Motor-1 | 30 | 421.2 | 32.3 | 0.86 | 20.26 | 23.56 | 67.55% | 1.2% | 2.1% |
| 3 | Main Hydraullic Motor-2 | 30 | 421.3 | 33.3 | 0.84 | 20.41 | 24.30 | 68.04% | 1.4% | 2.4% |
| 4 | Scrap Beller Motor | 22 | 423.3 | 26.2 | 0.88 | 16.90 | 19.21 | 76.83% | 1.1% | 2.6% |
| 5 | Un-Coiler Motor | 132 | 421.3 | 135.6 | 0.89 | 88.06 | 98.95 | 66.71% | 1.1% | 2.1% |
| 6 | Slitter Motor | 125 | 420.8 | 127.3 | 0.84 | 77.93 | 92.78 | 62.35% | 1.6% | 2.2% |
| 7 | Recoiler Motor | 400 | 421.2 | 425.3 | 0.86 | 266.83 | 310.26 | 66.71% | 1.2% | 2.6% |
| PROCESS LINE :CRS-13 | | | | | | | | | | |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 1 | RECOILER MOTOR | 45 | 423.3 | 42.3 | 0.79 | 24.50 | 31.01 | 54.44% | 2.2% | 4.2% |
| 2 | SLITTER BLOWER MOTOR | 45 | 421.3 | 46.2 | 0.87 | 29.33 | 33.71 | 65.18% | 2.2% | 2.9% |
| 3 | HYDRAULIC PUMP-1 | 37 | 423.3 | 38.2 | 0.89 | 24.93 | 28.01 | 67.37% | 2.6% | 3.8% |
| 4 | HYDRAULIC PUMP-2 | 37 | 421.3 | 37.9 | 0.82 | 22.68 | 27.66 | 61.29% | 2.2% | 4.2% |
| **PROCESS LINE :CRS-14** | | | | | | | | | | |
| 1 | RECOILER MOTOR | 45 | 420.8 | 48.5 | 0.86 | 30.40 | 35.35 | 67.55% | 2.1% | 1.2% |
| 2 | SLITTER BLOWER MOTOR | 45 | 421.3 | 48.1 | 0.84 | 29.48 | 35.10 | 65.52% | 2.3% | 1.9% |
| 3 | HYDRAULIC PUMP-1 | 37 | 421.2 | 39.2 | 0.89 | 25.45 | 28.60 | 68.79% | 2.6% | 2.8% |
| 4 | HYDRAULIC PUMP-2 | 37 | 422 | 38.9 | 0.89 | 25.30 | 28.43 | 68.39% | 1.2% | 4.2% |
| **CRS-15** | | | | | | | | | | |
| 1 | RECOILER | 45 | 421.3 | 48.5 | 0.84 | 29.73 | 35.39 | 66.06% | 2.3% | 1.9% |
| 2 | SLITTER | 45 | 421.2 | 49.2 | 0.89 | 31.94 | 35.89 | 70.99% | 2.6% | 2.8% |
| 3 | HYDRAULIC MOTOR 1 | 37 | 421.3 | 38.3 | 0.82 | 22.92 | 27.95 | 61.94% | 2.0% | 3.0% |
| 4 | HYDRAULIC MOTOR 2 | 37 | 423.3 | 39.2 | 0.79 | 22.70 | 28.74 | 61.36% | 2.2% | 4.2% |
| **CTL-4** | | | | | | | | | | |
| 1 | LEVELLER MOTOR | 75 | 421.3 | 79.6 | 0.88 | 51.11 | 58.08 | 68.15% | 2.6% | 2.8% |
| 2 | FEED ROLL | 45 | 422.2 | 48.2 | 0.84 | 29.61 | 35.25 | 65.79% | 1.6% | 2.9% |
| | CTL-5 | | | | | | | | | |
| 1 | LEVELLER | 75 | 421.6 | 79.2 | 0.84 | 48.58 | 57.83 | 64.77% | 1.6% | 4.5% |
| 2 | FEED ROLL | 45 | 421.5 | 49.2 | 0.89 | 31.97 | 35.92 | 71.04% | 2.1% | 4.1% |
| **GEORGE CTL-8** | | | | | | | | | | |
| 1 | UNCOILER MOTOR | 50 | 420.8 | 53.6 | 0.79 | 30.86 | 39.07 | 61.72% | 2.3% | 5.2% |
| 2 | LEVELLER MOTOR | 250 | 421.3 | 265.6 | 0.82 | 158.92 | 193.81 | 63.57% | 2.3% | 2.5% |
| 3 | SLITTER MOTOR | 35 | 421.2 | 39.3 | 0.87 | 24.94 | 28.67 | 71.27% | 2.2% | 3.9% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 4 | ECC. SHEAR MOTOR (MASTER & SLAVE) | 320 | 421.3 | 315.6 | 0.79 | 181.93 | 230.29 | 56.85% | 2.1% | 1.2% |
| 5 | PINCH ROLL MOTOR | 25 | 423.3 | 29.5 | 0.9 | 19.47 | 21.63 | 77.86% | 2.3% | 1.9% |
| 6 | SCRAP BALLER MOTOR | 22 | 421.3 | 23.9 | 0.82 | 14.30 | 17.44 | 65.00% | 2.2% | 4.2% |
| 7 | MAIN HYD. PUMP MOTOR#1 | 22 | 420.8 | 24.3 | 0.86 | 15.23 | 17.71 | 69.23% | 2.3% | 2.5% |
| 8 | MAIN HYD. PUMP MOTOR#2 | 22 | 421.3 | 26.1 | 0.83 | 15.81 | 19.04 | 71.85% | 1.3% | 2.6% |
| 9 | MAIN HYD. PUMP MOTOR#3 | 22 | 421.5 | 25.2 | 0.81 | 14.90 | 18.40 | 67.73% | 1.4% | 2.4% |
| **FIMI CTL -9** | | | | | | | | | | |
| 1 | Uncoiler Motor | 46.9 | 423.1 | 49.5 | 0.83 | 30.11 | 36.27 | 64.20% | 1.5% | 1.6% |
| 2 | Leveller Motor | 205 | 421.3 | 215.6 | 0.83 | 130.58 | 157.32 | 63.70% | 1.6% | 1.8% |
| 3 | Shear Motor | 170 | 421.3 | 195.2 | 0.65 | 92.58 | 142.44 | 54.46% | 1.3% | 3.5% |
| 4 | Feed.P.R Motor | 17 | 423.1 | 14.2 | 0.73 | 7.60 | 10.41 | 44.68% | 1.9% | 2.4% |
| 5 | B.P.R Motor | 24 | 421.3 | 26.2 | 0.81 | 15.49 | 19.12 | 64.52% | 1.6% | 3.9% |
| 6 | Hydraulic Pump-1 | 22 | 421.3 | 23.5 | 0.88 | 15.09 | 17.15 | 68.59% | 1.6% | 4.9% |
| 7 | Hydraulic Pump-2 | 22 | 421.3 | 26.2 | 0.82 | 15.68 | 19.12 | 71.26% | 1.2% | 3.9% |
| 8 | Leveller Blower | 22 | 419.2 | 25.9 | 0.83 | 15.61 | 18.80 | 70.95% | 1.6% | 4.0% |
| **CTL -10** | | | | | | | | | | |
| 1 | LEVELLER | 22 | 420.8 | 37.5 | 0.84 | 22.96 | 27.33 | 104.35% | 1.2% | 2.2% |
| **CTL-13** | | | | | | | | | | |
| 1 | PAY-OFF REEL | 22 | 421.3 | 25.2 | 0.84 | 15.45 | 18.39 | 70.21% | 1.4% | 2.4% |
| 2 | LEVELLER | 90 | 423.3 | 93.6 | 0.88 | 60.39 | 68.62 | 67.10% | 1.1% | 2.6% |
| 3 | ROTARY SHEAR MOTOR | 75 | 421.3 | 72.6 | 0.89 | 47.15 | 52.98 | 62.86% | 1.1% | 2.1% |
| 4 | PILEAR BLOWER-1 | 22 | 420.8 | 26.2 | 0.84 | 16.04 | 19.10 | 72.91% | 1.6% | 2.2% |
| 5 | PILEAR BLOWER-1 | 22 | 421.3 | 25.1 | 0.88 | 16.12 | 18.32 | 73.26% | 1.6% | 2.0% |
| 6 | HYD. PUMP -1 | 30 | 421.2 | 32.6 | 0.86 | 20.45 | 23.78 | 68.18% | 1.2% | 2.6% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 7 | HYD. PUMP -2 | 30 | 420 | 33.6 | 0.84 | 20.53 | 24.44 | 68.44% | 1.4% | 2.4% |
| CTL-14 | | | | | | | | | | |
| 1 | PAY-OFF REEL | 22 | 421.3 | 21.2 | 0.83 | 12.84 | 15.47 | 58.36% | 1.6% | 2.1% |
| 2 | LEVELLER | 55 | 420 | 59.2 | 0.81 | 34.88 | 43.06 | 63.42% | 1.5% | 2.1% |
| 3 | ROTARY SHEAR | 55 | 421.3 | 56.2 | 0.88 | 36.09 | 41.01 | 65.61% | 2.2% | 3.9% |
| PROCESS LINE : CTL-20 Daehyun | | | | | | | | | | |
| 1 | LEVELLAR MOTOR | 55.00 | 421.3 | 68.6 | 0.88 | 44.05 | 50.06 | 80.09% | 2.2% | 3.9% |
| 2 | AC SERVO MOTOR | 55 | 420.8 | 62.2 | 0.86 | 38.99 | 45.33 | 70.88% | 2.1% | 1.2% |
| **CTL-21** | | | | | | | | | | |
| 1 | LEVELLER MOTOR | 22 | 421.2 | 23.2 | 0.89 | 15.06 | 16.92 | 68.47% | 2.6% | 2.8% |
| 2 | FEEDROLL MOTOR | 23.5 | 421.3 | 25.2 | 0.82 | 15.08 | 18.39 | 64.16% | 2.0% | 3.0% |
| 3 | HYDRAULIC MOTOR | 22 | 423.3 | 26.1 | 0.79 | 15.12 | 19.14 | 68.71% | 2.2% | 4.2% |
| **CTL-23** | | | | | | | | | | |
| 1 | LEVELLER | 22 | 423.3 | 25.2 | 0.89 | 16.44 | 18.48 | 74.74% | 2.6% | 3.8% |
| 2 | FEED ROLL | 22 | 421.3 | 26.2 | 0.82 | 15.68 | 19.12 | 71.26% | 2.2% | 4.2% |
| 3 | ENTRY HYD.POWER PACK MOTOR #1 | 22 | 420.8 | 24.9 | 0.79 | 14.34 | 18.15 | 65.17% | 2.3% | 5.2% |
| 4 | ENTRY HYD.POWER PACK MOTOR #2 | 22 | 421.3 | 26.5 | 0.82 | 15.86 | 19.34 | 72.07% | 2.3% | 2.5% |
| **CTL-25** | | | | | | | | | | |
| 1 | HEAVY LEVELLER | 68 | 421.6 | 68.9 | 0.81 | 40.75 | 50.31 | 59.93% | 2.3% | 3.2% |
| 2 | LIGHT LEVELLER | 45 | 421.5 | 49.5 | 0.83 | 29.99 | 36.14 | 66.65% | 2.1% | 2.9% |
| 3 | ROTARY SHEAR | 86.4 | 422.1 | 89.6 | 0.81 | 53.06 | 65.50 | 61.41% | 2.6% | 2.7% |
| **AIR COMPRESSOR** | | | | | | | | | | |
| 1 | IR COMPRESSOR | 1050 | 11000 | 48 | 0.84 | 768.18 | 914.50 | 73.16% | 2.6% | 4.0% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 2 | CENTAC COMPRESSOR MOTOR-4 | 650 | 412.3 | 974 | 0.83 | 577.30 | 695.54 | 88.81% | 2.2% | 4.5% |
| 3 | CENTAC COMPRESSOR MOTOR-5 | 650 | 412.3 | 994 | 0.84 | 596.25 | 709.82 | 91.73% | 2.3% | 4.5% |
| **PROCESS LINE : R.O.PLANT & PUMP HOUSE** | | | | | | | | | | |
| 1 | CRM COOLING PUMP MOTOR-1 (S/B) | 110 | 423.3 | 116.6 | 0.89 | 76.08 | 85.49 | 69.17% | 2.6% | 3.8% |
| 2 | CRM COOLING PUMP MOTOR-1 | 110 | 421.3 | 116.2 | 0.82 | 69.53 | 84.79 | 63.21% | 2.2% | 4.2% |
| 3 | CRM COOLING PUMP MOTOR-2 | 110 | 420.8 | 114.2 | 0.79 | 65.75 | 83.23 | 59.78% | 2.3% | 5.2% |
| 4 | CRM COOLING PUMP MOTOR-3 | 110 | 421.3 | 121.2 | 0.82 | 72.52 | 88.44 | 65.93% | 2.3% | 2.5% |
| 5 | CRM COOLING PUMP MOTOR-4 | 110 | 421.6 | 115.2 | 0.81 | 68.14 | 84.12 | 61.94% | 2.3% | 3.2% |
| 6 | CRM COOLING PUMP MOTOR-5 | 110 | 421.5 | 116.5 | 0.83 | 70.59 | 85.05 | 64.17% | 2.1% | 2.9% |
| 7 | D.G. COLLING PUMP MOTOR NO.1 | 110 | 422.1 | 114.2 | 0.81 | 67.63 | 83.49 | 61.48% | 2.6% | 2.7% |
| 8 | D.G. COLLING PUMP MOTOR NO.2 | 110 | 420.8 | 115.6 | 0.84 | 70.77 | 84.25 | 64.34% | 1.2% | 2.2% |
| 9 | D.G. COLLING PUMP MOTOR NO.3 | 110 | 421.2 | 116.2 | 0.86 | 72.90 | 84.77 | 66.27% | 1.2% | 2.1% |
| 10 | PARTIAL FILTARTON PUMP MOTOR NO.1 | 18.5 | 421.3 | 19.32 | 0.84 | 11.84 | 14.10 | 64.01% | 1.4% | 2.4% |
| 11 | TREATED WATER MOTOR 1 | 22 | 421.3 | 26.2 | 0.89 | 17.01 | 19.12 | 77.34% | 1.1% | 2.1% |
| 12 | TREATED WATER MOTOR 2 | 22 | 420.8 | 24.6 | 0.84 | 15.06 | 17.93 | 68.46% | 1.6% | 2.2% |
| 13 | CRM COOLING TOWER FAN-1 | 22 | 421.3 | 26.2 | 0.88 | 16.82 | 19.12 | 76.47% | 1.6% | 2.0% |
| 14 | CRM COOLING TOWER FAN-2 | 22 | 421.2 | 24.2 | 0.86 | 15.18 | 17.65 | 69.01% | 1.2% | 2.6% |
| 15 | CRM COOLING TOWER FAN-3 | 22 | 421.3 | 23.6 | 0.82 | 14.12 | 17.22 | 64.19% | 2.0% | 3.0% |
| 16 | CRM COOLING TOWER FAN-4 | 22 | 421.3 | 32.3 | 0.89 | 20.98 | 23.57 | 95.35% | 2.3% | 2.5% |
| 17 | DG COOLING TOWER FAN-1 | 37 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 54.26% | 2.2% | 3.9% |
| 18 | DG COOLING TOWER FAN-2 | 37 | 421.3 | 35.6 | 0.84 | 21.82 | 25.98 | 58.97% | 2.6% | 2.8% |
| 19 | ANNEALING COOLING PUMP-1 | 90 | 421.2 | 92.3 | 0.89 | 59.93 | 67.33 | 66.59% | 2.0% | 3.0% |
| 20 | ANNEALING COOLING PUMP-2 | 90 | 421.3 | 93.2 | 0.82 | 55.77 | 68.01 | 61.96% | 2.2% | 4.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 21 | ANNEALING COOLING FAN | 30 | 423.3 | 37.2 | 0.79 | 21.55 | 27.27 | 71.82% | 2.3% | 5.2% |
| 22 | HIGH PRESSURE PUMP MOTOR NO.1 | 45 | 420.8 | 49.5 | 0.86 | 31.03 | 36.08 | 68.95% | 2.3% | 2.5% |
| 23 | HIGH PRESSURE PUMP MOTOR NO.2 | 45 | 421.3 | 51.2 | 0.88 | 32.88 | 37.36 | 73.06% | 1.9% | 4.1% |
| 24 | HIGH PRESSURE PUMP MOTOR NO.3 | 125 | 420.8 | 126.6 | 0.89 | 82.12 | 92.27 | 65.70% | 2.3% | 3.2% |
| 25 | RAW WATER MOTOR NO.1 | 18.5 | 421.3 | 19.5 | 0.89 | 12.66 | 14.23 | 68.45% | 2.2% | 2.9% |
| 26 | RAW WATER MOTOR NO.2 | 18.5 | 421.2 | 17.8 | 0.89 | 11.56 | 12.99 | 62.47% | 2.6% | 3.8% |
| 27 | RAW WATER MOTOR NO.3 | 18.5 | 421.3 | 19.8 | 0.78 | 11.27 | 14.45 | 60.92% | 2.2% | 4.2% |
| 28 | FIRE FIGHTING PUMP NO.2 | 75 | 423.3 | 78.5 | 0.88 | 50.65 | 57.55 | 67.53% | 2.3% | 5.2% |
| 29 | DEGASSER PUMP NO.1 | 22 | 421.3 | 28.9 | 0.89 | 18.77 | 21.09 | 85.31% | 2.3% | 2.5% |
| 30 | DEGASSER PUMP NO.2 | 22 | 421.2 | 29.1 | 0.88 | 18.68 | 21.23 | 84.92% | 2.3% | 5.2% |
| 31 | RO REJECTED PUMP MOTOR 1 | 18.5 | 421.3 | 19.9 | 0.89 | 12.92 | 14.52 | 69.86% | 2.3% | 2.5% |
| 32 | RO REJECTED PUMP MOTOR 2 | 18.5 | 423.3 | 21.3 | 0.84 | 13.12 | 15.62 | 70.91% | 1.9% | 4.1% |
| 33 | REJECT R.O. HIGH PRESSURE PUMP -1 | 45 | 420.8 | 49.5 | 0.86 | 31.03 | 36.08 | 68.95% | 2.2% | 2.9% |
| 34 | REJECT R.O. HIGH PRESSURE PUMP -2 | 45 | 421.3 | 51.9 | 0.84 | 31.81 | 37.87 | 70.69% | 2.6% | 3.8% |
| PROCESS LINE : BOILER | | | | | | | | | | |
| 1 | COMBUSTION BLOWER-1 | 22 | 423.3 | 24.6 | 0.84 | 15.15 | 18.04 | 68.86% | 2.2% | 3.9% |
| 2 | COMBUSTION BLOWER-2 | 22 | 421.3 | 29.5 | 0.84 | 18.08 | 21.53 | 82.19% | 2.6% | 2.8% |
| PROCESS LINE : AC PLANT – NCRM | | | | | | | | | | |
| 1 | COMPRESSOR OF CHILLER UNIT-1 | 270 | 421.3 | 284.5 | 0.82 | 170.23 | 207.60 | 63.05% | 2.2% | 4.2% |
| 2 | COMPRESSOR OF CHILLER UNIT-2 | 270 | 423.3 | 294.6 | 0.79 | 170.63 | 215.99 | 63.20% | 2.3% | 5.2% |
| 3 | COMPRESSOR OF CHILLER UNIT-3 | 270 | 420.8 | 294.2 | 0.86 | 184.40 | 214.42 | 68.30% | 2.3% | 2.5% |
| 4 | CHILLED WATER PUMP-1 | 37 | 423.3 | 39.5 | 0.79 | 22.88 | 28.96 | 61.83% | 2.3% | 5.2% |
| 5 | CHILLED WATER PUMP-2 | 37 | 420.8 | 38.4 | 0.86 | 24.07 | 27.99 | 65.05% | 2.3% | 2.5% |
| 6 | CHILLED WATER PUMP-3 | 37 | 421.3 | 39.9 | 0.88 | 25.62 | 29.11 | 69.25% | 1.9% | 4.1% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 7 | CHILLED WATER PUMP-4 | 37 | 420.8 | 40.5 | 0.89 | 26.27 | 29.52 | 71.00% | 2.3% | 3.2% |
| 8 | COMPRESSOR OF CHILLER UNIT-1 | 179.7 | 421.3 | 198.1 | 0.89 | 128.65 | 144.55 | 71.59% | 2.2% | 2.9% |
| 9 | COMPRESSOR OF CHILLER UNIT-2 | 179.7 | 421.2 | 185.2 | 0.89 | 120.25 | 135.11 | 66.91% | 2.6% | 3.8% |
| 10 | COMPRESSOR OF CHILLER UNIT-3 | 179.7 | 421.3 | 192.2 | 0.78 | 109.39 | 140.25 | 60.87% | 2.2% | 4.2% |
| **PROCESS LINE : PUMP HOUSE – CRM TOTAL LOAD AT PUMP HOUSE** | | | | | | | | | | |
| 1 | PUMP MOTOR # 1 | 75 | 420.8 | 73.5 | 0.86 | 46.07 | 53.57 | 61.43% | 2.3% | 2.5% |
| 2 | PUMP MOTOR # 2 | 75 | 421.3 | 72.5 | 0.88 | 46.55 | 52.90 | 62.07% | 1.9% | 4.1% |
| 3 | PUMP MOTOR # 3 | 75 | 420.8 | 73.6 | 0.89 | 47.74 | 53.64 | 63.65% | 2.3% | 3.2% |
| 4 | PUMP MOTOR # 4 | 75 | 421.3 | 58.9 | 0.89 | 38.25 | 42.98 | 51.00% | 2.2% | 2.9% |
| 5 | PUMP MOTOR # 5 | 75 | 421.2 | 59.23 | 0.89 | 38.46 | 43.21 | 51.28% | 2.6% | 3.8% |
| 6 | PUMP MOTOR # 6 | 75 | 421.3 | 79.2 | 0.78 | 45.08 | 57.79 | 60.10% | 2.2% | 4.2% |
| 7 | PUMP MOTOR # 7 | 90 | 423.3 | 91.2 | 0.88 | 58.84 | 66.86 | 65.38% | 2.3% | 5.2% |
| 8 | PUMP MOTOR # 8 | 75 | 421.3 | 79.2 | 0.89 | 51.43 | 57.79 | 68.58% | 2.3% | 2.5% |
| 9 | PUMP MOTOR # 9 | 75 | 421.2 | 74.2 | 0.88 | 47.63 | 54.13 | 63.51% | 2.3% | 5.2% |
| 10 | PUMP MOTOR # 10 | 90 | 421.3 | 92.5 | 0.89 | 60.07 | 67.50 | 66.75% | 2.3% | 2.5% |
| 11 | PUMP MOTOR # 11 | 90 | 423.3 | 93.2 | 0.84 | 57.40 | 68.33 | 63.77% | 1.9% | 4.1% |
| 12 | PUMP MOTOR # 12 | 90 | 420.8 | 91.2 | 0.86 | 57.16 | 66.47 | 63.51% | 2.2% | 2.9% |
| 13 | PUMP MOTOR # 14 | 30 | 421.3 | 32.5 | 0.84 | 19.92 | 23.71 | 66.40% | 2.6% | 3.8% |
| 14 | PUMP MOTOR # 15 | 22 | 421.3 | 27.2 | 0.89 | 17.66 | 19.85 | 80.29% | 2.3% | 2.5% |
| 15 | PUMP MOTOR # 16 | 22 | 423.3 | 27.5 | 0.84 | 16.94 | 20.16 | 76.98% | 2.2% | 3.9% |
| 16 | PUMP MOTOR # 17 | 22 | 421.3 | 29.2 | 0.84 | 17.90 | 21.31 | 81.35% | 2.6% | 2.8% |
| 17 | PUMP MOTOR # 18 | 22 | 421.2 | 22.3 | 0.89 | 14.48 | 16.27 | 65.81% | 2.0% | 3.0% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 18 | PUMP MOTOR # 19 | 22 | 421.3 | 25.6 | 0.82 | 15.32 | 18.68 | 69.63% | 2.2% | 4.2% |
| 19 | PUMP MOTOR # 20 | 22 | 423.3 | 28.2 | 0.79 | 16.33 | 20.67 | 74.24% | 2.3% | 5.2% |
| 20 | COOLING TOWER # 1 | 37 | 420.8 | 38.9 | 0.86 | 24.38 | 28.35 | 65.90% | 2.3% | 2.5% |
| 21 | COOLING TOWER # 2 | 37 | 423.3 | 38.1 | 0.79 | 22.07 | 27.93 | 59.64% | 2.3% | 5.2% |
| 22 | COOLING TOWER # 3 | 37 | 420.8 | 35.9 | 0.86 | 22.50 | 26.16 | 60.82% | 2.3% | 2.5% |
| **TOTAL LOAD AT A . C PLANT – CRM** | | | | | | | | | | |
| 1 | AC COMPRESSOR #1 | 125 | 420.8 | 112.2 | 0.89 | 72.78 | 81.77 | 58.22% | 2.3% | 3.2% |
| 2 | AC COMPRESSOR #2 | 125 | 421.3 | 125.2 | 0.89 | 81.31 | 91.36 | 65.05% | 2.2% | 2.9% |
| 3 | AC COMPRESSOR #3 | 125 | 421.2 | 113.5 | 0.89 | 73.69 | 82.80 | 58.95% | 2.6% | 3.8% |
| 4 | AC COMPRESSOR #4 | 125 | 421.3 | 132.2 | 0.78 | 75.24 | 96.47 | 60.19% | 2.2% | 4.2% |
| **H2 PLANT** | | | | | | | | | | |
| 1 | COMPRESSOR MOTOR-1 | 55 | 421.3 | 59.5 | 0.88 | 38.21 | 43.42 | 69.47% | 1.9% | 4.1% |
| 2 | COMPRESSOR MOTOR- | 55 | 420.8 | 56.2 | 0.89 | 36.45 | 40.96 | 66.28% | 2.3% | 3.2% |
| RGM #1 | | | | | | | | | | |
| 1 | HEAD STOCK C-AXIS | 50 | 421.3 | 52.2 | 0.78 | 29.71 | 38.09 | 59.42% | 2.2% | 4.2% |
| **RGM#3** | | | | | | | | | | |
| 1 | GRINDING WHEEL MOTOR | 98 | 421.3 | 96.5 | 0.89 | 62.67 | 70.42 | 63.95% | 2.3% | 2.5% |
| 2 | HEAD STOCK MOTOR | 50 | 421.2 | 49.5 | 0.88 | 31.78 | 36.11 | 63.56% | 2.3% | 5.2% |
| **Narrow – PUMP HOUSE & AC PLANT** | | | | | | | | | | |
| 1 | OUT GOING PUMP-1 | 90 | 423.3 | 84.5 | 0.84 | 52.04 | 61.95 | 57.82% | 1.9% | 4.1% |
| 2 | OUT GOING PUMP-2 | 90 | 420.8 | 86.2 | 0.86 | 54.03 | 62.82 | 60.03% | 2.2% | 2.9% |
| 3 | OUT GOING PUMP-3 | 90 | 421.3 | 84.8 | 0.84 | 51.98 | 61.88 | 57.75% | 2.6% | 3.8% |
| 4 | OUT GOING PUMP ANNEALING-1 | 18.5 | 421.3 | 19.5 | 0.89 | 12.66 | 14.23 | 68.45% | 2.3% | 2.5% |
| 5 | OUT GOING PUMP ANNEALING-2 | 18.5 | 423.3 | 21.2 | 0.84 | 13.06 | 15.54 | 70.57% | 2.2% | 3.9% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 6 | CHILLER PUMP MOTOR-1 | 18.5 | 421.3 | 21.5 | 0.84 | 13.18 | 15.69 | 71.23% | 2.6% | 2.8% |
| 7 | CHILLER PUMP MOTOR-2 | 18.5 | 421.2 | 22.1 | 0.89 | 14.35 | 16.12 | 77.56% | 2.0% | 3.0% |
| 8 | CHILLER PUMP MOTOR-3 | 18.5 | 421.3 | 23.1 | 0.82 | 13.82 | 16.86 | 74.71% | 2.2% | 4.2% |
| 9 | AC COMP NO-1 | 90 | 423.3 | 95.2 | 0.79 | 55.14 | 69.80 | 61.27% | 2.3% | 5.2% |
| 10 | AC COMP NO-2 | 90 | 420.8 | 91.5 | 0.86 | 57.35 | 66.69 | 63.72% | 2.3% | 2.5% |
| **PROCESS LINE : EDT 1 ED-2** | | | | | | | | | | |
| 1 | HEAD STOCK C AXIS | 50 | 423.3 | 59.5 | 0.79 | 34.46 | 43.62 | 68.92% | 2.3% | 5.2% |
| **N2 – GAS PLANT CONNECTED LOAD** | | | | | | | | | | |
| 1 | NEW IR COMPRESSOR | 180 | 421.3 | 195.5 | 0.88 | 125.54 | 142.65 | 69.74% | 1.9% | 4.1% |
| 2 | N2 BOOSTER 3 | 37 | 420.8 | 39.2 | 0.89 | 25.43 | 28.57 | 68.72% | 2.3% | 3.2% |
| 3 | N2 BOOSTER 4 | 37 | 421.3 | 39.5 | 0.89 | 25.65 | 28.82 | 69.33% | 2.2% | 2.9% |
| 4 | N2 BOOSTER 1 | 18.5 | 421.2 | 19.5 | 0.89 | 12.66 | 14.23 | 68.44% | 2.6% | 3.8% |
| 5 | N2 BOOSTER 2 | 18.5 | 421.3 | 21.2 | 0.78 | 12.07 | 15.47 | 65.22% | 2.2% | 4.2% |
| 6 | OLD IR COMPRESSOR | 200 | 423.3 | 201.3 | 0.88 | 129.87 | 147.58 | 64.94% | 2.3% | 5.2% |
| 7 | AIR COMPRESSURE 4 | 110 | 421.3 | 114.2 | 0.89 | 74.16 | 83.33 | 67.42% | 2.3% | 2.5% |
| 8 | NH3 CRACKER FUNACE-1 | 36 | 421.2 | 37.2 | 0.88 | 23.88 | 27.14 | 66.34% | 2.3% | 5.2% |
| 9 | NH3 CRACKER FUNACE-2 | 36 | 421.3 | 35.1 | 0.89 | 22.79 | 25.61 | 63.32% | 2.3% | 2.5% |
| 10 | STAND BY CRAKER FURNACE | 36 | 423.3 | 36.5 | 0.84 | 22.48 | 26.76 | 62.44% | 1.9% | 4.1% |
| 11 | NH3 CRAKER FURNACE-1 | 36 | 420.8 | 31.2 | 0.86 | 19.56 | 22.74 | 54.32% | 2.2% | 2.9% |
| 12 | NH3 CRAKER FURNACE-2 | 36 | 421.3 | 34.2 | 0.84 | 20.96 | 24.96 | 58.23% | 2.6% | 3.8% |
| 13 | N2 DRAYER-1 | 36 | 421.3 | 35.2 | 0.89 | 22.86 | 25.69 | 63.50% | 2.3% | 2.5% |
| 14 | N2 DRAYER-2 | 36 | 423.3 | 31.6 | 0.84 | 19.46 | 23.17 | 54.06% | 2.2% | 3.9% |
| PSA-3 | | | | | | | | | | |
| 1 | NH3 CRAKER FURNACE | 75 | 421.2 | 78.5 | 0.89 | 50.97 | 57.27 | 67.96% | 2.0% | 3.0% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 2 | N2 DRAYER UNIT LEFT | 36 | 421.3 | 38.2 | 0.82 | 22.86 | 27.87 | 63.49% | 2.2% | 4.2% |
| 3 | N2 DRAYER UNIT RIGHT | 36 | 421.3 | 39.3 | 0.89 | 25.52 | 28.68 | 70.90% | 2.3% | 2.5% |
| PSA-2 | | | | | | | | | | |
| 1 | NH3 CRAKER FURNACE | 27 | 421.3 | 28.5 | 0.89 | 18.51 | 20.80 | 68.55% | 2.3% | 2.5% |
| 2 | N2 DRAYER UNIT LEFT | 42 | 423.3 | 46.2 | 0.84 | 28.45 | 33.87 | 67.74% | 1.9% | 4.1% |
| 3 | N2 DRAYER UNIT RIGHT | 42 | 420.8 | 43.5 | 0.86 | 27.27 | 31.70 | 64.92% | 2.2% | 2.9% |
| PSA-4 | | | | | | | | | | |
| 1 | NH3 CRAKER FURNACE | 40 | 421.3 | 42.2 | 0.89 | 27.41 | 30.79 | 68.51% | 2.3% | 2.5% |
| 2 | N2 DRAYER UNIT LEFT | 30 | 423.3 | 32.2 | 0.84 | 19.83 | 23.61 | 66.10% | 1.9% | 4.1% |
| 3 | N2 DRAYER UNIT RIGHT | 30 | 421.2 | 32.6 | 0.88 | 20.93 | 23.78 | 69.76% | 2.3% | 5.2% |
| **COMMON EQUIPMENTS** | | | | | | | | | | |
| **GP1 AMMONIA CRACKER** | | | | | | | | | | |
| 1 | AMMONIA CRACKER UNIT | 100 | 421.3 | 26.2 | 0.88 | 16.82 | 19.12 | 16.82% | 1.6% | 2.0% |
| **GP - 1 LINE CONNECTED LOAD** | | | | | | | | | | |
| 1 | POR#1 | 55 | 421.2 | 46 | 0.56 | 18.79 | 33.56 | 34.17% | 1.6% | 4.9% |
| 2 | POR#2 | 55 | 421.6 | 47 | 0.57 | 19.56 | 34.32 | 35.57% | 1.5% | 4.8% |
| 3 | BR#1B | 18.5 | 421.2 | 16 | 0.82 | 9.57 | 11.67 | 51.74% | 1.9% | 2.6% |
| 4 | ENTRY ACC. | 45 | 421.2 | 26 | 0.84 | 15.93 | 18.97 | 35.41% | 1.6% | 1.9% |
| 5 | BR#2A | 22 | 422 | 18.5 | 0.88 | 11.90 | 13.52 | 54.09% | 2.3% | 3.9% |
| 6 | BR#2B | 22 | 422 | 17.9 | 0.87 | 11.38 | 13.08 | 51.74% | 3.1% | 2.9% |
| 7 | HBR 1 MOTOR | 30 | 421.2 | 49 | 0.78 | 27.88 | 35.75 | 92.94% | 2.1% | 2.6% |
| 8 | HBR 2 MOTOR | 30 | 423.3 | 25 | 0.74 | 13.56 | 18.33 | 45.21% | 2.1% | 1.9% |
| 9 | BR#M1A1 | 30 | 421.2 | 24 | 0.81 | 14.18 | 17.51 | 47.27% | 1.2% | 1.6% |
| 10 | BR#M1B1 | 30 | 420.1 | 35 | 0.89 | 22.67 | 25.47 | 75.55% | 1.6% | 2.1% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 11 | BR#M1A2 | 45 | 422 | 26 | 0.87 | 16.53 | 19.00 | 36.74% | 1.7% | 2.4% |
| 12 | BR#M1B2 | 75 | 422 | 52 | 0.83 | 31.55 | 38.01 | 42.06% | 1.9% | 2.6% |
| 13 | MILL | 160 | 421.21 | 148 | 0.84 | 90.70 | 107.97 | 56.68% | 2.5% | 5.5% |
| 14 | BR#M2A | 55 | 421.2 | 35 | 0.86 | 21.96 | 25.53 | 39.92% | 1.2% | 4.1% |
| 15 | BR#M2B | 160 | 421.2 | 70 | 0.87 | 44.43 | 51.07 | 27.77% | 1.6% | 3.8% |
| 16 | BR#M2C | 55 | 421.5 | 40 | 0.86 | 25.11 | 29.20 | 45.66% | 1.7% | 2.9% |
| 17 | BR#M4A | 250 | 419.9 | 240 | 0.87 | 151.85 | 174.54 | 60.74% | 2.1% | 2.4% |
| 18 | BR#M4B | 110 | 420.3 | 125 | 0.84 | 76.44 | 90.99 | 69.49% | 2.3% | 2.6% |
| 19 | BR#M5A | 75 | 421.2 | 90 | 0.83 | 54.50 | 65.66 | 72.66% | 1.5% | 4.5% |
| 20 | BR#M5B | 37 | 422.1 | 45 | 0.87 | 28.62 | 32.90 | 77.36% | 1.6% | 1.3% |
| 21 | BR#4A | 18.5 | 421.8 | 21 | 0.87 | 13.35 | 15.34 | 72.15% | 1.5% | 2.1% |
| 22 | BR#4B | 30 | 421.3 | 28 | 0.89 | 18.18 | 20.43 | 60.61% | 1.7% | 2.7% |
| 23 | RECOILER | 200 | 422 | 178 | 0.84 | 109.28 | 130.10 | 54.64% | 2.3% | 2.4% |
| 24 | EXIT PUMP1 | 18.5 | 421.3 | 22 | 0.87 | 13.97 | 16.05 | 75.49% | 1.2% | 3.2% |
| 25 | EXIT PUMP2 | 18.5 | 421.6 | 23 | 0.89 | 14.95 | 16.79 | 80.80% | 1.3% | 3.2% |
| 26 | EXIT PUMP3 | 37 | 422.1 | 24 | 0.89 | 15.62 | 17.55 | 42.20% | 1.4% | 3.6% |
| 27 | EXIT PUMP4 | 37 | 423.1 | 25 | 0.9 | 16.49 | 18.32 | 44.56% | 1.2% | 3.4% |
| 28 | CAG BWR2 | 90 | 421.2 | 70 | 0.87 | 44.43 | 51.07 | 49.36% | 1.2% | 2.9% |
| 29 | JCF FAN1 | 37 | 421.2 | 41 | 0.87 | 26.02 | 29.91 | 70.33% | 2.1% | 3.2% |
| 30 | JCF FAN2 | 37 | 419.5 | 41 | 0.88 | 26.21 | 29.79 | 70.85% | 2.3% | 3.5% |
| 31 | JCF FAN3 | 37 | 422 | 35 | 0.87 | 22.26 | 25.58 | 60.15% | 2.3% | 3.1% |
| 32 | JCF FAN4 | 37 | 421.3 | 23 | 0.89 | 14.94 | 16.78 | 40.37% | 2.1% | 310.0 % |
| **Furnace Heater** | | | | | | | | | | |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 1 | Soaking Heaters | 720 | 421.5 | 351 | 0.89 | 228.06 | 256.24 | 31.67% | 2.1% | 2.6% |
| 2 | JCF Heaters | 120 | 421.3 | 142 | 0.84 | 87.04 | 103.62 | 72.53% | 2.3% | 2.5% |
| 3 | HBR Heaters | 75 | 423.3 | 94 | 0.88 | 60.65 | 68.92 | 80.86% | 2.1% | 3.3% |
| 4 | Dryer heaters | 30 | 421.3 | 25.6 | 0.84 | 15.69 | 18.68 | 52.30% | 2.3% | 3.1% |
| **CONNECTED LOAD OF GP-3** | | | | | | | | | | |
| 1 | RTF HEATER | 540 | 421.5 | 395.5 | 0.89 | 228.06 | 256.24 | 31.67% | 2.1% | 2.6% |
| 2 | CHROMIC HEATER TOP | 24 | 421.3 | 26.2 | 0.84 | 87.04 | 103.62 | 72.53% | 2.3% | 2.5% |
| 3 | BOTTOM CHRO. TANK HEATER | 28 | 423.3 | 29.2 | 0.88 | 60.65 | 68.92 | 80.86% | 2.1% | 3.3% |
| 4 | SOAKING BOTTOM, | 36 | 421.3 | 37.2 | 0.84 | 15.69 | 18.68 | 52.30% | 2.3% | 3.1% |
| 5 | SOAKING HEATER | 500 | 421.2 | 532.2 | 0.88 | 341.66 | 388.25 | 68.33% | 2.3% | 5.2% |
| 6 | HBR HEATER | 36 | 421.3 | 39.2 | 0.89 | 25.46 | 28.60 | 70.72% | 2.3% | 2.5% |
| 7 | WELDER | 150 | 423.3 | 161.2 | 0.84 | 99.28 | 118.18 | 66.18% | 1.9% | 4.1% |
| 8 | AVON CRANE | 81.5 | 420.8 | 83.2 | 0.86 | 52.15 | 60.64 | 63.99% | 2.2% | 2.9% |
| 9 | WME CRANE | 86.6 | 421.2 | 89.2 | 0.88 | 57.26 | 65.07 | 66.13% | 2.3% | 5.2% |
| 10 | CTL. CRANE | 94.5 | 421.3 | 96.2 | 0.89 | 62.47 | 70.20 | 66.11% | 2.3% | 2.5% |
| 11 | DESP. CRANE | 70.6 | 423.3 | 75.2 | 0.84 | 46.31 | 55.13 | 65.60% | 1.9% | 4.1% |
| 12 | CTL-2 | 20.5 | 421.2 | 22.5 | 0.88 | 14.44 | 16.41 | 70.46% | 2.3% | 5.2% |
| 13 | CTL-12 | 85.5 | 421.3 | 86.5 | 0.89 | 56.18 | 63.12 | 65.70% | 2.3% | 2.5% |
| 14 | CTL-11 | 89 | 423.3 | 89.5 | 0.84 | 55.12 | 65.62 | 61.93% | 2.2% | 3.9% |
| 15 | CTL-22 | 73.75 | 421.3 | 76.2 | 0.84 | 46.71 | 55.60 | 63.33% | 2.6% | 2.8% |
| 16 | CORRUGATION | 227.5 | 421.2 | 187.2 | 0.89 | 121.54 | 136.57 | 53.43% | 2.0% | 3.0% |
| 17 | SHED LIGHT | 40 | 421.3 | 43.2 | 0.82 | 25.85 | 31.52 | 64.62% | 2.2% | 4.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| **GP-4** | | | | | | | | | | |
| 1 | 400 x 8 | 3200 | 420.8 | 2543 | 0.86 | 1593.93 | 1853.40 | 49.81% | 2.3% | 2.5% |
| 2 | 2.2 x 16 | 35.2 | 421.3 | 86.2 | 0.78 | 49.06 | 62.90 | 139.38% | 2.2% | 4.2% |
| 3 | 30 X 2 | 60 | 423.3 | 63.2 | 0.79 | 36.60 | 46.34 | 61.01% | 2.3% | 5.2% |
| 4 | ENTRY CRANE | 108.5 | 420.8 | 36.2 | 0.86 | 22.69 | 26.38 | 20.91% | 2.3% | 2.5% |
| 5 | EXIT CRANE | 71.4 | 421.3 | 36.2 | 0.88 | 23.25 | 26.41 | 32.56% | 1.9% | 4.1% |
| 6 | PAY OFF REEL NO. 1 | 75 | 420.8 | 79.5 | 0.89 | 51.57 | 57.94 | 68.76% | 2.3% | 3.2% |
| 7 | PAY OFF REEL NO. 2 | 75 | 421.3 | 75.5 | 0.89 | 49.03 | 55.09 | 65.38% | 2.2% | 2.9% |
| 8 | ENTRY ACCUMAULATOR | 75 | 421.2 | 76.2 | 0.89 | 49.47 | 55.59 | 65.97% | 2.6% | 3.8% |
| 9 | BRIDLE NO.1A | 18.5 | 421.3 | 19.5 | 0.78 | 11.10 | 14.23 | 59.99% | 2.2% | 4.2% |
| 10 | BRIDLE NO.1B | 18.5 | 423.3 | 21.2 | 0.88 | 13.68 | 15.54 | 73.93% | 2.3% | 5.2% |
| 11 | BRIDLE NO.1C | 30 | 421.3 | 35.2 | 0.89 | 22.86 | 25.69 | 76.20% | 2.3% | 2.5% |
| 12 | BRIDLE NO.1D | 30 | 421.2 | 34.2 | 0.88 | 21.96 | 24.95 | 73.19% | 2.3% | 5.2% |
| 13 | BRIDLE NO. 2A | 45 | 421.3 | 49.2 | 0.89 | 31.95 | 35.90 | 71.00% | 2.3% | 2.5% |
| 14 | BRIDLE NO.2B | 45 | 423.3 | 48.9 | 0.84 | 30.12 | 35.85 | 66.92% | 1.9% | 4.1% |
| 15 | HOT BRIDLE NO.A | 30 | 420.8 | 32.6 | 0.86 | 20.43 | 23.76 | 68.11% | 2.2% | 2.9% |
| 16 | HOT BRIDLE NO.B | 30 | 421.3 | 33.2 | 0.84 | 20.35 | 24.23 | 67.83% | 2.6% | 3.8% |
| 17 | BRIDLE NO.3A | 30 | 421.3 | 31.6 | 0.89 | 20.52 | 23.06 | 68.41% | 2.3% | 2.5% |
| 18 | BRIDLE NO.3B | 45 | 423.3 | 49.2 | 0.84 | 30.30 | 36.07 | 67.33% | 2.2% | 3.9% |
| 19 | BRIDLE NO.4A | 45 | 421.3 | 43.2 | 0.84 | 26.48 | 31.52 | 58.84% | 2.6% | 2.8% |
| 20 | BRIDLE NO. 4B | 75 | 421.2 | 76.2 | 0.89 | 49.47 | 55.59 | 65.97% | 2.0% | 3.0% |
| 21 | SPM BACKUP ROLL DRIVE | 132 | 421.3 | 133.6 | 0.82 | 79.94 | 97.49 | 60.56% | 2.2% | 4.2% |
| 22 | SPM BACKUP ROLL DRIVE | 132 | 421.3 | 135.5 | 0.89 | 88.00 | 98.87 | 66.66% | 2.3% | 2.5% |

**Motor Details**

| Sl.No. | Drive | KW | Voltage (V) | Current (A) | PF | P (KW) | KVA | LOADING | V THD (%) | I THD (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 | BRIDLE NO. 5A | 200 | 421.2 | 212.2 | 0.88 | 136.23 | 154.80 | 68.11% | 2.3% | 5.2% |
| 24 | BRIDLE NO.5B | 250 | 421.3 | 261.2 | 0.89 | 169.63 | 190.60 | 67.85% | 2.3% | 2.5% |
| 25 | BRIDLE NO.6A | 250 | 423.3 | 259.5 | 0.84 | 159.81 | 190.25 | 63.93% | 1.9% | 4.1% |
| 26 | BRIDLE NO.6B | 200 | 420.8 | 223.1 | 0.86 | 139.84 | 162.60 | 69.92% | 2.2% | 2.9% |
| 27 | BRIDLE NO. 7A | 90 | 421.2 | 92.2 | 0.88 | 59.19 | 67.26 | 65.77% | 2.3% | 5.2% |
| 28 | BRIDLE NO.7B | 55 | 421.3 | 59.2 | 0.89 | 38.45 | 43.20 | 69.90% | 2.3% | 2.5% |
| 29 | BRIDLE NO 8A | 55 | 423.3 | 58.5 | 0.84 | 36.03 | 42.89 | 65.50% | 1.9% | 4.1% |
| 30 | BRIDLE NO 8B | 75 | 421.2 | 76.2 | 0.88 | 48.92 | 55.59 | 65.22% | 2.3% | 5.2% |
| 31 | EXIT ACCUMULATOR | 110 | 421.3 | 115.2 | 0.89 | 74.81 | 84.06 | 68.01% | 2.3% | 2.5% |
| 32 | RECOILER | 250 | 423.3 | 251.2 | 0.84 | 154.70 | 184.17 | 61.88% | 2.2% | 3.9% |
| 33 | AIR KNIFE BLOWER MAIN | 132 | 421.3 | 135.2 | 0.84 | 82.87 | 98.65 | 62.78% | 2.6% | 2.8% |
| 34 | AIR KNIFE BLOWER STANDBY | 132 | 421.2 | 136.5 | 0.89 | 88.63 | 99.58 | 67.14% | 2.0% | 3.0% |
| 35 | COOLING TOWER BLOWER 1 | 110 | 421.3 | 115.2 | 0.82 | 68.93 | 84.06 | 62.66% | 2.2% | 4.2% |
| 36 | COOLING TOWER BLOWER 2 | 110 | 423.3 | 116.2 | 0.79 | 67.30 | 85.19 | 61.18% | 2.3% | 5.2% |
| 37 | COOLING TOWER BLOWER 3 | 110 | 420.8 | 115.4 | 0.86 | 72.33 | 84.11 | 65.76% | 2.3% | 2.5% |
| 38 | DFH Blower | 45 | 421.3 | 49.5 | 0.78 | 28.17 | 36.12 | 62.61% | 2.2% | 4.2% |
| 39 | DFH Blower standby | 45 | 423.3 | 46.5 | 0.79 | 26.93 | 34.09 | 59.85% | 2.3% | 5.2% |
| 40 | RTH Blower | 22 | 420.8 | 26.1 | 0.86 | 16.36 | 19.02 | 74.36% | 2.3% | 2.5% |
| 41 | RTH Blower standby | 22 | 421.3 | 21.5 | 0.88 | 13.81 | 15.69 | 62.75% | 1.9% | 4.1% |
| 42 | Spooner Blower | 250 | 420.8 | 261.2 | 0.89 | 169.43 | 190.37 | 67.77% | 2.3% | 3.2% |
| 43 | HF Blower | 200 | 421.3 | 205.1 | 0.89 | 133.20 | 149.66 | 66.60% | 2.2% | 2.9% |
| 44 | Stabilizer Blower | 45 | 421.2 | 46.2 | 0.89 | 30.00 | 33.70 | 66.66% | 2.6% | 3.8% |
| 45 | Hot Air Generation Blower | 90 | 421.3 | 95.2 | 0.78 | 54.18 | 69.47 | 60.20% | 2.2% | 4.2% |
| 46 | Hot Air Dryer No.1 Blower | 30 | 423.3 | 32.2 | 0.88 | 20.77 | 23.61 | 69.25% | 2.3% | 5.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 47 | Alkali Tank Spray Pump | 22 | 421.3 | 26.2 | 0.89 | 17.01 | 19.12 | 77.34% | 2.3% | 2.5% |
| 48 | Chrome Coater 1-8 | 44 | 421.2 | 46.1 | 0.88 | 29.60 | 33.63 | 67.26% | 2.3% | 5.2% |
| 49 | Acrylic Coater1-8 | 176 | 421.3 | 195.2 | 0.89 | 126.77 | 142.44 | 72.03% | 2.3% | 2.5% |
| 50 | Entry Power Pack | 45 | 423.3 | 46.2 | 0.84 | 28.45 | 33.87 | 63.23% | 1.9% | 4.1% |
| 51 | Entry Power Pack standby | 45 | 420.8 | 49.2 | 0.86 | 30.84 | 35.86 | 68.53% | 2.2% | 2.9% |
| 52 | Exit Power Pack | 45 | 421.3 | 48.2 | 0.84 | 29.54 | 35.17 | 65.65% | 2.6% | 3.8% |
| 53 | Exit Power Pack standby | 45 | 421.3 | 46.5 | 0.89 | 30.20 | 33.93 | 67.11% | 2.3% | 2.5% |
| 54 | LP Power Pack (SPM) | 22 | 423.3 | 23.5 | 0.84 | 14.47 | 17.23 | 65.78% | 2.2% | 3.9% |
| 55 | LP Power Pack (SPM) standby | 22 | 421.3 | 25.2 | 0.84 | 15.45 | 18.39 | 70.21% | 2.6% | 2.8% |
| 56 | HP Power Pack (SPM) | 37 | 421.2 | 38.2 | 0.89 | 24.80 | 27.87 | 67.03% | 2.0% | 3.0% |
| 57 | HP Power Pack (SPM) standby | 37 | 421.3 | 39.5 | 0.82 | 23.63 | 28.82 | 63.88% | 2.2% | 4.2% |
| 58 | SOAKING ZONE 1 | 225 | 421.3 | 228.2 | 0.89 | 148.20 | 166.52 | 65.87% | 2.3% | 2.5% |
| 59 | SOAKING ZONE 2 | 225 | 421.2 | 226.8 | 0.88 | 145.60 | 165.45 | 64.71% | 2.3% | 5.2% |
| 60 | RCS HEATER ZONE 1 | 30 | 421.3 | 32.5 | 0.89 | 21.11 | 23.71 | 70.35% | 2.3% | 2.5% |
| 61 | RCS HEATER ZONE 2 | 30 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 66.92% | 1.9% | 4.1% |
| 62 | RCS HEATER ZONE 3 | 30 | 420.8 | 33.5 | 0.86 | 21.00 | 24.42 | 69.99% | 2.2% | 2.9% |
| 63 | STATIC SECTION | 90 | 421.2 | 95.2 | 0.88 | 61.12 | 69.45 | 67.91% | 2.3% | 5.2% |
| 64 | HBR SECTION | 45 | 421.3 | 46.2 | 0.89 | 30.00 | 33.71 | 66.67% | 2.3% | 2.5% |
| 65 | SNOUGHT HEATERS | 75 | 423.3 | 79.2 | 0.84 | 48.78 | 58.07 | 65.03% | 1.9% | 4.1% |
| 66 | N2H2 HEATERS | 50 | 421.2 | 56.2 | 0.88 | 36.08 | 41.00 | 72.16% | 2.3% | 5.2% |
| **CCL – LINE** | | | | | | | | | | |
| 1 | UNC1 | 55 | 421.3 | 53.3 | 0.89 | 34.61 | 38.89 | 62.94% | 2.3% | 2.5% |
| 2 | UNC2 | 55 | 423.3 | 54.5 | 0.84 | 33.56 | 39.96 | 61.03% | 1.9% | 4.1% |
| 3 | BR1A | 18.5 | 421.2 | 19.5 | 0.88 | 12.52 | 14.23 | 67.67% | 2.3% | 5.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 4 | BR1B | 18.5 | 421.3 | 19.1 | 0.89 | 12.40 | 13.94 | 67.05% | 2.3% | 2.5% |
| 5 | BR1C | 18.5 | 423.3 | 19.5 | 0.84 | 12.01 | 14.30 | 64.91% | 2.2% | 3.9% |
| 6 | ENA | 37 | 421.3 | 36.5 | 0.84 | 22.37 | 26.63 | 60.47% | 2.6% | 2.8% |
| 7 | Leveller | 110 | 421.2 | 121.2 | 0.89 | 78.69 | 88.42 | 71.54% | 2.0% | 3.0% |
| 8 | Chemical Coater top pick | 18.5 | 421.3 | 19.1 | 0.82 | 11.43 | 13.94 | 61.78% | 2.2% | 4.2% |
| 9 | Chemical Coater top Appli | 18.5 | 423.3 | 21.2 | 0.79 | 12.28 | 15.54 | 66.37% | 2.3% | 5.2% |
| 10 | Chemical Coater Bot pick | 18.5 | 420.8 | 23.1 | 0.86 | 14.48 | 16.84 | 78.26% | 2.3% | 2.5% |
| 11 | Chemical Coater Bot Appli | 18.5 | 421.3 | 23.1 | 0.78 | 13.15 | 16.86 | 71.07% | 2.2% | 4.2% |
| 12 | BR3A | 22 | 423.3 | 25.1 | 0.79 | 14.54 | 18.40 | 66.08% | 2.3% | 5.2% |
| 13 | BR3B | 30 | 420.8 | 36.2 | 0.86 | 22.69 | 26.38 | 75.63% | 2.3% | 2.5% |
| 14 | prime Coater top Appli | 18.5 | 421.3 | 18.5 | 0.88 | 11.88 | 13.50 | 64.21% | 1.9% | 4.1% |
| 15 | prime Coater Bot Appli | 18.5 | 420.8 | 19.5 | 0.89 | 12.65 | 14.21 | 68.37% | 2.3% | 3.2% |
| 16 | BR4A | 18.5 | 421.3 | 17.5 | 0.89 | 11.36 | 12.77 | 61.43% | 2.2% | 2.9% |
| 17 | BR4B | 18.5 | 421.2 | 19.1 | 0.89 | 12.40 | 13.93 | 67.03% | 2.6% | 3.8% |
| 18 | finish A Coater Hd-1 Appli | 18.5 | 421.3 | 19.5 | 0.78 | 11.10 | 14.23 | 59.99% | 2.2% | 4.2% |
| 19 | finish A Coater Hd-2 Appli | 18.5 | 421.2 | 17.9 | 0.88 | 11.49 | 13.06 | 62.12% | 2.3% | 5.2% |
| 20 | finish B Coater top Appli | 18.5 | 421.3 | 19.5 | 0.89 | 12.66 | 14.23 | 68.45% | 2.3% | 2.5% |
| 21 | finish B Coater Bot Appli | 18.5 | 423.3 | 17.9 | 0.84 | 11.02 | 13.12 | 59.59% | 1.9% | 4.1% |
| 22 | BR5A | 55 | 421.2 | 59.5 | 0.88 | 38.20 | 43.41 | 69.45% | 2.3% | 5.2% |
| 23 | BR5B | 30 | 421.3 | 32.2 | 0.89 | 20.91 | 23.50 | 69.71% | 2.3% | 2.5% |
| 24 | EXA | 37 | 423.3 | 37.5 | 0.84 | 23.09 | 27.49 | 62.42% | 2.2% | 3.9% |
| 25 | BR6A | 30 | 421.3 | 35.6 | 0.84 | 21.82 | 25.98 | 72.74% | 2.6% | 2.8% |
| 26 | BR6B | 37 | 421.2 | 35.2 | 0.89 | 22.85 | 25.68 | 61.77% | 2.0% | 3.0% |
| 27 | Recoiler | 160 | 421.3 | 165.52 | 0.82 | 99.04 | 120.78 | 61.90% | 2.2% | 4.2% |

**Motor Details**

| Sl.No. | Drive | KW | Voltage (V) | Current (A) | PF | P (KW) | KVA | LOADING | V THD (%) | I THD (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 28 | PO Zone1 Drive | 45 | 423.3 | 49.5 | 0.79 | 28.67 | 36.29 | 63.71% | 2.3% | 5.2% |
| 29 | PO Zone2 Drive | 55 | 420.8 | 56.2 | 0.86 | 35.23 | 40.96 | 64.05% | 2.3% | 2.5% |
| 30 | PO Zone3 Drive | 75 | 421.3 | 86.2 | 0.78 | 49.06 | 62.90 | 65.42% | 2.2% | 4.2% |
| 31 | PO Zone4 Drive | 75 | 423.3 | 87.6 | 0.79 | 50.74 | 64.22 | 67.65% | 2.3% | 5.2% |
| 32 | FO Zone1 Drive | 45 | 420.8 | 49.5 | 0.86 | 31.03 | 36.08 | 68.95% | 2.3% | 2.5% |
| 33 | FO Zone2 Drive | 55 | 421.3 | 59.5 | 0.88 | 38.21 | 43.42 | 69.47% | 1.9% | 4.1% |
| 34 | FO Zone3 Drive | 75 | 420.8 | 79.5 | 0.89 | 51.57 | 57.94 | 68.76% | 2.3% | 3.2% |
| 35 | FO Zone4 Drive | 75 | 421.3 | 75.6 | 0.89 | 49.10 | 55.16 | 65.46% | 2.2% | 2.9% |
| 36 | PFCR Exhaust Fan | 30 | 421.2 | 32.1 | 0.89 | 20.84 | 23.42 | 69.47% | 2.6% | 3.8% |
| 37 | CDryer Fan | 75 | 421.3 | 79.2 | 0.89 | 51.43 | 57.79 | 68.58% | 2.2% | 2.9% |
| 38 | OAM Fan | 60 | 421.2 | 63.2 | 0.89 | 41.03 | 46.11 | 68.39% | 2.6% | 3.8% |
| 39 | O Exaust Fan | 96 | 421.3 | 98.9 | 0.78 | 56.29 | 72.17 | 58.64% | 2.2% | 4.2% |
| 40 | O ID Fan | 110 | 421.2 | 112.2 | 0.88 | 72.03 | 81.85 | 65.48% | 2.3% | 5.2% |
| 41 | Entry Hyd-1 | 22 | 421.3 | 23.4 | 0.89 | 15.20 | 17.07 | 69.08% | 2.3% | 2.5% |
| 42 | Entry Hyd-2 | 22 | 423.3 | 25.2 | 0.84 | 15.52 | 18.48 | 70.54% | 1.9% | 4.1% |
| 43 | Exit Hyd-1 | 22 | 421.2 | 26.2 | 0.88 | 16.82 | 19.11 | 76.45% | 2.3% | 5.2% |
| 44 | Exit Hyd-2 | 22 | 421.3 | 24.2 | 0.89 | 15.72 | 17.66 | 71.44% | 2.3% | 2.5% |
| 45 | Exit Hyd-3 | 22 | 423.3 | 23.2 | 0.84 | 14.29 | 17.01 | 64.94% | 2.2% | 3.9% |
| 46 | Sticher Hyd | 37 | 421.3 | 38.5 | 0.84 | 23.60 | 28.09 | 63.78% | 2.6% | 2.8% |
| 47 | Dryer After Cleaning Section | 22 | 421.2 | 26.2 | 0.89 | 17.01 | 19.11 | 77.32% | 2.0% | 3.0% |
| 48 | Cleaning Section Ext. | 18.5 | 421.3 | 17.9 | 0.82 | 10.71 | 13.06 | 57.89% | 2.2% | 4.2% |
| 49 | AHU | 55 | 423.3 | 59.5 | 0.79 | 34.46 | 43.62 | 62.66% | 2.3% | 5.2% |
| 50 | Dryer For Water Quench After PO | 22 | 420.8 | 26.5 | 0.86 | 16.61 | 19.31 | 75.50% | 2.3% | 2.5% |
| 51 | Dryer For Water Quench After FO | 22 | 421.3 | 25.1 | 0.78 | 14.29 | 18.32 | 64.94% | 2.2% | 4.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| **TTL – LINE** | | | | | | | | | | |
| 1 | UNCOILER (DC) | 110 | 420.8 | 132.2 | 0.86 | 82.86 | 96.35 | 75.33% | 2.3% | 2.5% |
| 2 | RECOILER(DC) | 110 | 421.3 | 135.2 | 0.89 | 87.80 | 98.65 | 79.82% | 2.2% | 2.9% |
| 3 | TRIMMER(DC) | 16 | 421.2 | 18.2 | 0.89 | 11.82 | 13.28 | 73.85% | 2.6% | 3.8% |
| 4 | BRIDLE 1.1(DC) | 37 | 421.3 | 39.2 | 0.78 | 22.31 | 28.60 | 60.30% | 2.2% | 4.2% |
| 5 | BRIDLE 1.2(DC) | 55 | 421.2 | 59.2 | 0.88 | 38.00 | 43.19 | 69.10% | 2.3% | 5.2% |
| 6 | BRIDLE 1.3(DC) | 75 | 421.3 | 76.2 | 0.89 | 49.49 | 55.60 | 65.98% | 2.3% | 2.5% |
| 7 | BRIDLE 1.4(DC) | 100 | 423.3 | 110.1 | 0.84 | 67.81 | 80.72 | 67.81% | 1.9% | 4.1% |
| 8 | BRIDLE 2.1(DC) | 190 | 421.2 | 196.2 | 0.88 | 125.96 | 143.13 | 66.29% | 2.3% | 5.2% |
| 9 | BRIDLE 2.2(DC) | 125 | 421.3 | 135.2 | 0.89 | 87.80 | 98.65 | 70.24% | 2.3% | 2.5% |
| 10 | BRIDLE 2.3(DC) | 85 | 423.3 | 86.2 | 0.84 | 53.09 | 63.20 | 62.45% | 2.2% | 3.9% |
| 11 | BRIDLE 2.4(DC) | 55 | 421.3 | 59.2 | 0.84 | 36.29 | 43.20 | 65.97% | 2.6% | 2.8% |
| 12 | POWER PACK PUMP 1 | 22 | 421.2 | 23.2 | 0.89 | 15.06 | 16.92 | 68.47% | 2.0% | 3.0% |
| 13 | POWER PACK PUMP 2 | 22 | 421.3 | 26.2 | 0.82 | 15.68 | 19.12 | 71.26% | 2.2% | 4.2% |
| 14 | SCRAP BALLER | 18.5 | 423.3 | 19.1 | 0.79 | 11.06 | 14.00 | 59.80% | 2.3% | 5.2% |
| **EMBOSSING LINE** | | | | | | | | | | |
| 1 | UNCOILER | 20.5 | 421.3 | 21.2 | 0.78 | 12.07 | 15.47 | 58.86% | 2.2% | 4.2% |
| 2 | EMBOSSER | 28 | 423.3 | 28.1 | 0.79 | 16.28 | 20.60 | 58.13% | 2.3% | 5.2% |
| 3 | LEVELLER | 68 | 420.8 | 69.2 | 0.86 | 43.37 | 50.43 | 63.79% | 2.3% | 2.5% |
| 4 | SHEAR | 60 | 421.3 | 68.9 | 0.89 | 44.75 | 50.28 | 74.58% | 2.2% | 2.9% |
| 5 | STACKER AIR BLOWER | 22 | 421.2 | 22.1 | 0.89 | 14.35 | 16.12 | 65.22% | 2.6% | 3.8% |
| 6 | HYD POWER PACK PUMP 1, | 18.5 | 421.3 | 19.2 | 0.78 | 10.93 | 14.01 | 59.07% | 2.2% | 4.2% |
| 7 | HYD POWER PACK PUMP 2 | 18.5 | 421.2 | 19.5 | 0.88 | 12.52 | 14.23 | 67.67% | 2.3% | 5.2% |
| **NEW TRIMMER** | | | | | | | | | | |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 1 | UNCOILER | 250 | 423.3 | 265.9 | 0.84 | 163.75 | 194.95 | 65.50% | 1.9% | 4.1% |
| 2 | RECOILER | 250 | 421.2 | 265.2 | 0.88 | 170.25 | 193.47 | 68.10% | 2.3% | 5.2% |
| 3 | TRIMMER | 30 | 421.3 | 32.1 | 0.89 | 20.85 | 23.42 | 69.49% | 2.3% | 2.5% |
| 4 | SCRAP BALLER | 18.5 | 423.3 | 19.2 | 0.84 | 11.82 | 14.08 | 63.92% | 2.2% | 3.9% |
| 5 | POWER PACK PUMP 1 | 37 | 421.3 | 35.9 | 0.84 | 22.00 | 26.20 | 59.47% | 2.6% | 2.8% |
| 6 | POWER PACK PUMP 2 | 37 | 421.2 | 38.9 | 0.89 | 25.26 | 28.38 | 68.26% | 2.0% | 3.0% |
| **OCRM REWINDING LINE** | | | | | | | | | | |
| 1 | UNWINDER MOTOR | 120 | 423.3 | 125.5 | 0.79 | 72.69 | 92.01 | 60.57% | 2.3% | 5.2% |
| 2 | REWINDER MOTOR | 120 | 423.3 | 125.6 | 0.84 | 77.35 | 92.08 | 64.46% | 1.9% | 4.1% |
| **NARROW REWINDING OLD** | | | | | | | | | | |
| 1 | UNCOILER MOTOR | 40 | 421.3 | 35.2 | 0.89 | 22.86 | 25.69 | 57.15% | 2.3% | 2.5% |
| 2 | RECOILER MOTOR | 40 | 423.3 | 36.8 | 0.84 | 22.66 | 26.98 | 56.66% | 2.2% | 3.9% |
| **NARROW REWINDING-06** | | | | | | | | | | |
| 1 | RECOILER MOTOR | 90 | 421.2 | 96.5 | 0.89 | 62.65 | 70.40 | 69.62% | 2.0% | 3.0% |
| 2 | UNCOILER MOTOR | 90 | 421.3 | 95.6 | 0.82 | 57.20 | 69.76 | 63.56% | 2.2% | 4.2% |
| 3 | HYDRAULIC PUMP-2 | 37 | 423.3 | 38.6 | 0.79 | 22.36 | 28.30 | 60.42% | 2.3% | 5.2% |
| **CORRUGATION GP-2 M/C** | | | | | | | | | | |
| 1 | *CORRUGATION M/C-1* | *30* | 423.3 | 35.2 | 0.84 | 21.68 | 25.81 | 72.26% | 1.9% | 4.1% |
| 2 | *CORRUGATION M/C-2* | *45* | 421.2 | 49.5 | 0.88 | 31.78 | 36.11 | 70.62% | 2.3% | 5.2% |
| 3 | *CORRUGATION M/C-3* | *30* | 421.3 | 31.5 | 0.89 | 20.46 | 22.99 | 68.19% | 2.3% | 2.5% |
| 4 | *CORRUGATION M/C-6* | *37* | 423.3 | 38.6 | 0.84 | 23.77 | 28.30 | 64.25% | 2.2% | 3.9% |
| 5 | *CORRUGATION M/C-7* | *22* | 421.3 | 26.2 | 0.84 | 16.06 | 19.12 | 73.00% | 2.6% | 2.8% |
| ***PROCESS LINE :CBL*** | | | | | | | | | | |
| 1 | RECOILER MOTOR | 50 | 421.3 | 59.2 | 0.82 | 35.42 | 43.20 | 70.84% | 2.2% | 4.2% |

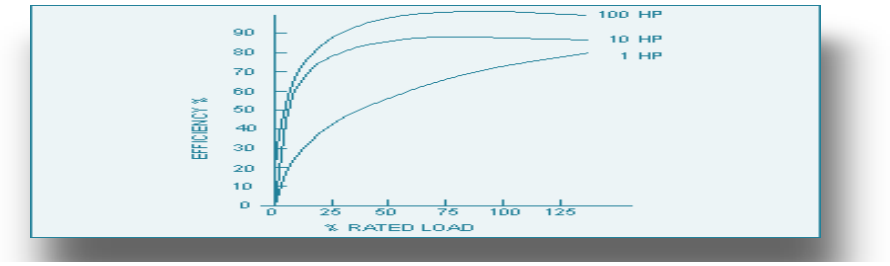
| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| **H&T AREA** | | | | | | | | | | |
| **H&T-1** | | | | | | | | | | |
| 1 | RECOILER-1 | 30 | 421.3 | 31.5 | 0.78 | 17.93 | 22.99 | 59.76% | 2.2% | 4.2% |
| 2 | RECOILER-2 | 30 | 423.3 | 32.2 | 0.79 | 18.65 | 23.61 | 62.17% | 2.3% | 5.2% |
| 3 | RECOILER-3 | 30 | 420.8 | 33.1 | 0.86 | 20.75 | 24.12 | 69.16% | 2.3% | 2.5% |
| 4 | RECOILER-4 | 30 | 421.3 | 32.1 | 0.89 | 20.85 | 23.42 | 69.49% | 2.2% | 2.9% |
| 5 | RECOILER-5 | 30 | 421.2 | 32.1 | 0.89 | 20.84 | 23.42 | 69.47% | 2.6% | 3.8% |
| 6 | TEMPRING FURNACE HEATER ZONE-1 | 72 | 421.3 | 76.5 | 0.78 | 43.54 | 55.82 | 60.47% | 2.2% | 4.2% |
| 7 | TEMPRING FURNACE HEATER ZONE-2 | 72 | 421.2 | 78.2 | 0.88 | 50.20 | 57.05 | 69.73% | 2.3% | 5.2% |
| 8 | QUENCHING HEATER | 55 | 421.3 | 59.5 | 0.89 | 38.64 | 43.42 | 70.26% | 2.3% | 2.5% |
| 9 | LEVELLING DIE HEATER | 18 | 423.3 | 19.5 | 0.84 | 12.01 | 14.30 | 66.72% | 1.9% | 4.1% |
| **H&T-2** | | | | | | | | | | |
| 1 | RECOILER-1 | 30 | 421.3 | 35.2 | 0.89 | 22.86 | 25.69 | 76.20% | 2.3% | 2.5% |
| 2 | RECOILER-2 | 30 | 423.3 | 36.2 | 0.84 | 22.29 | 26.54 | 74.31% | 2.2% | 3.9% |
| 3 | RECOILER-3 | 30 | 421.3 | 35.1 | 0.84 | 21.51 | 25.61 | 71.71% | 2.6% | 2.8% |
| 4 | RECOILER-4 | 30 | 421.2 | 35 | 0.89 | 22.72 | 25.53 | 75.75% | 2.0% | 3.0% |
| 5 | TEMPRING FURNACE HEATER ZONE-1 | 72 | 421.3 | 76.5 | 0.82 | 45.77 | 55.82 | 63.57% | 2.2% | 4.2% |
| 6 | TEMPRING FURNACE HEATER ZONE-2 | 72 | 423.3 | 76.2 | 0.79 | 44.13 | 55.87 | 61.30% | 2.3% | 5.2% |
| 7 | QUENCHING HEATER | 55 | 423.3 | 59.2 | 0.84 | 36.46 | 43.40 | 66.29% | 1.9% | 4.1% |
| 8 | LEVELLING DIE HEATER | 18 | 421.2 | 19.2 | 0.88 | 12.33 | 14.01 | 68.48% | 2.3% | 5.2% |
| **H&T-3** | | | | | | | | | | |
| 1 | RECOILER-1 | 30 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 66.92% | 2.2% | 3.9% |
| 2 | RECOILER-2 | 30 | 421.3 | 32.6 | 0.84 | 19.98 | 23.79 | 66.61% | 2.6% | 2.8% |
| 3 | RECOILER-3 | 30 | 421.2 | 33.2 | 0.89 | 21.56 | 24.22 | 71.85% | 2.0% | 3.0% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 4 | RECOILER-4 | 30 | 421.3 | 31.2 | 0.82 | 18.67 | 22.77 | 62.23% | 2.2% | 4.2% |
| 5 | TEMPRING FURNACE HEATER ZONE-1 | 72 | 423.3 | 33.6 | 0.79 | 19.46 | 24.63 | 27.03% | 2.3% | 5.2% |
| 6 | TEMPRING FURNACE HEATER ZONE-2 | 72 | 421.3 | 198.2 | 0.89 | 128.72 | 144.62 | 178.77% | 2.3% | 2.5% |
| 7 | QUENCHING HEATER | 55 | 423.3 | 188.2 | 0.84 | 115.90 | 137.98 | 210.73% | 1.9% | 4.1% |
| 8 | LEVELLING DIE HEATER | 18 | 421.2 | 88.1 | 0.88 | 56.56 | 64.27 | 314.21% | 2.3% | 5.2% |
| STRIP GRINDING LINE-1 | | | | | | | | | | |
| 1 | RECOILER | 55 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 36.50% | 2.2% | 3.9% |
| 2 | CONTACT ROLL MOTOR-1 | 45 | 421.3 | 32.6 | 0.84 | 19.98 | 23.79 | 44.40% | 2.6% | 2.8% |
| 3 | CONTACT ROLL MOTOR-2 | 45 | 421.2 | 33.2 | 0.89 | 21.56 | 24.22 | 47.90% | 2.0% | 3.0% |
| 4 | CONTACT ROLL MOTOR-3 | 45 | 421.3 | 31.2 | 0.82 | 18.67 | 22.77 | 41.49% | 2.2% | 4.2% |
| 5 | CONTACT ROLL MOTOR-4 | 45 | 423.3 | 33.6 | 0.79 | 19.46 | 24.63 | 43.25% | 2.3% | 5.2% |
| 6 | HOT AIR DRYER HEATER | 48 | 420.8 | 36.2 | 0.86 | 22.69 | 26.38 | 47.27% | 2.3% | 2.5% |
| **STRIP GRINDING LINE-2** | | | | | | | | | | |
| 1 | RECOILER | 55 | 423.3 | 33.6 | 0.79 | 19.46 | 24.63 | 35.38% | 2.3% | 5.2% |
| 2 | CONTACT ROLL MOTOR-1 | 45 | 420.8 | 36.2 | 0.86 | 22.69 | 26.38 | 50.42% | 2.3% | 2.5% |
| 3 | CONTACT ROLL MOTOR-2 | 45 | 421.3 | 52.2 | 0.89 | 33.90 | 38.09 | 75.33% | 2.2% | 2.9% |
| 4 | CONTACT ROLL MOTOR-3 | 45 | 421.2 | 45.9 | 0.89 | 29.80 | 33.48 | 66.23% | 2.6% | 3.8% |
| 5 | CONTACT ROLL MOTOR-4 | 45 | 421.3 | 86.2 | 0.78 | 49.06 | 62.90 | 109.03% | 2.2% | 4.2% |
| 6 | HOT AIR DRYER HEATER | 48 | 421.2 | 88.1 | 0.88 | 56.56 | 64.27 | 117.83% | 2.3% | 5.2% |
| **STRIP POLISHING LINE** | | | | | | | | | | |
| 1 | POLISHING ROLL ( 8 NOS ) | 148 | 423.3 | 188.2 | 0.84 | 115.90 | 137.98 | 78.31% | 1.9% | 4.1% |
| 2 | RECOILER | 45 | 421.2 | 88.1 | 0.88 | 56.56 | 64.27 | 125.68% | 2.3% | 5.2% |
| 3 | FUME EXHAUST BLOWER | 22 | 421.3 | 32.3 | 0.89 | 20.98 | 23.57 | 95.35% | 2.3% | 2.5% |
| **REWINDING LINE-1** | | | | | | | | | | |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| 1 | RECOILER | 30 | 421.3 | 32.6 | 0.84 | 19.98 | 23.79 | 66.61% | 2.6% | 2.8% |
| **REWINDING LINE-2** | | | | | | | | | | |
| 1 | RECOILER | 30 | 421.3 | 31.2 | 0.82 | 18.67 | 22.77 | 62.23% | 2.2% | 4.2% |
| **CRS-15** | | | | | | | | | | |
| 1 | RECOILER | 45 | 423.3 | 188.2 | 0.84 | 115.90 | 137.98 | 257.56% | 1.9% | 4.1% |
| 2 | HYD.PUMP MAIN | 37 | 421.2 | 88.1 | 0.88 | 56.56 | 64.27 | 152.86% | 2.3% | 5.2% |
| 3 | HYD.PUMP STAND BY | 37 | 421.3 | 32.3 | 0.89 | 20.98 | 23.57 | 56.69% | 2.3% | 2.5% |
| 4 | SLITTER MOTOR | 45 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 44.61% | 2.2% | 3.9% |
| **COLOR TEMPERING LINE** | | | | | | | | | | |
| 1 | RECOILER | 30 | 421.2 | 33.2 | 0.89 | 21.56 | 24.22 | 71.85% | 2.0% | 3.0% |
| 2 | SALT TANK HEATER | 150 | 421.3 | 31.2 | 0.82 | 18.67 | 22.77 | 12.45% | 2.2% | 4.2% |
| **EDGE PROFILING LINE** | | | | | | | | | | |
| 1 | RECOILER | 55 | 421.3 | 198.2 | 0.89 | 128.72 | 144.62 | 234.03% | 2.3% | 2.5% |
| **LOGO MARKER LINE** | | | | | | | | | | |
| 1 | RECOILER | 22 | 421.2 | 88.1 | 0.88 | 56.56 | 64.27 | 257.08% | 2.3% | 5.2% |
| SPAN FILTERATION UNIT-1 FOR GRINDING LINE-1 | | | | | | | | | | |
| 1 | COOLING SUPPLY MAIM MOTOR | 30 | 423.3 | 32.6 | 0.84 | 20.08 | 23.90 | 66.92% | 2.2% | 3.9% |
| 2 | COOLING SUPPLY STAND BY MOTOR | 30 | 421.3 | 32.6 | 0.84 | 19.98 | 23.79 | 66.61% | 2.6% | 2.8% |
| **SPAN FILTERATION UNIT- 2 FOR GRINDING LINE-2** | | | | | | | | | | |
| 1 | COOLING SUPPLY MAIM MOTOR | 30 | 421.3 | 31.2 | 0.82 | 18.67 | 22.77 | 62.23% | 2.2% | 4.2% |
| 2 | COOLING SUPPLY STAND BY MOTOR | 30 | 423.3 | 33.6 | 0.79 | 19.46 | 24.63 | 64.87% | 2.3% | 5.2% |
| **COOLING TOWER H&T AREA** | | | | | | | | | | |
| 1 | COLD WELL MOTOR | 30 | 421.3 | 86.2 | 0.78 | 49.06 | 62.90 | 163.54% | 2.2% | 4.2% |
| 2 | COLD WELL MOTOR STAND BY | 30 | 423.3 | 33.6 | 0.79 | 19.46 | 24.63 | 64.87% | 2.3% | 5.2% |

| Motor Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Drive** | **KW** | **Voltage (V)** | **Current (A)** | **PF** | **P (KW)** | **KVA** | **LOADING** | **V THD (%)** | **I THD (%)** |
| **CRANES H&T AREA** | | | | | | | | | | |
| 1 | H&T#1 SINGLE GARDER CRANE 10T | 21.1 | 421.3 | 25.6 | 0.89 | 16.63 | 18.68 | 78.79% | 2.2% | 2.9% |
| 2 | H&T#1 DISPATCH CRANE 15T | 47.2 | 421.2 | 49.5 | 0.89 | 32.14 | 36.11 | 68.09% | 2.6% | 3.8% |
| 3 | GRINDING DOUBLE GARDER CRANE 15T | 47.2 | 421.3 | 48.2 | 0.78 | 27.43 | 35.17 | 58.12% | 2.2% | 4.2% |
| 4 | GRINDING SINGLE GARDER CRANE 10T | 21.1 | 421.2 | 23.1 | 0.88 | 14.83 | 16.85 | 70.28% | 2.3% | 5.2% |
| 5 | POLISHING CRANE 10T | 21.1 | 421.3 | 22.5 | 0.89 | 14.61 | 16.42 | 69.25% | 2.3% | 2.5% |
| 6 | TRANSFER TROLLEY ( 4 NOS .) | 22 | 423.3 | 26.1 | 0.84 | 16.07 | 19.14 | 73.06% | 1.9% | 4.1% |

**Motor loading Analysis**




- If % loading is>100 : Overloaded
- If % loading is ≥ 50 and≤100 : Satisfactory
- If % loading is<50 : Under-loaded

Normally, under normal working conditions, motors should be loaded between 50 to 100% of their rated capacities.

The loading shown in the tables above for the primary &Secondary motors have been calculated based on operating efficiency of 85%.

It is advised to re-check the loading on these motors (if power analyzer not available then at least current can be measured with a tongue tester) when the motors are loaded with maximum loads.

If the loading of the above motors does not go beyond 50% consistently then it is recommended to change the motors with the lowest rating motors as below. When the loading on the motors increase; automatically the efficiency of the motors would also increase thereby reduction in power consumption. This is due to reduction in fixed losses (which consists of both magnetic core losses and friction and wind age losses) inside a motor due to lower rating of the motor.

The motors sold in India have lower energy efficiencies (IE-1 or less) than the efficient products technologically available and manufactured. Based on estimation, 90-95% of the current installed stock of motors is IE-1 & sub-IE1 levels. The issue of multiple rewinding in the services life motors(s) further reduces the efficiency drastically. This result in more consumption, hence affects the
Competitiveness of any business entry.

**REPLACEMENT OF 30 HP Motor with IE 3 Motor :**

| TATA STEEL LIMITED SAHIBABAD | |
|---|---|
| Savings due to replacement of 30 HP Motor with IE 3 Motor | |
| Location | PLANT |
| HP | 30 |
| KW | 22.0 |
| Nos. of Motors | 15 |
| Efficiency of existing motor (Non IE/IE1) | 89.9 |
| Power consumption, KW on 70% loading | 17.130 |
| Efficiency of New IE3 motor | 93 |
| Expected Power consumption KW on 70 % Loading | 14.322 |
| Power SAVED, KW | 2.808 |
| Running hours | 10 |
| Average nos. of day per year | 300 |
| Annual savings, kWh | 126366.51 |
| Annual savings, Rs. | 897462 |
| Investment, Rs. | 2145000 |
| Payback Period, Year | 2.39 |

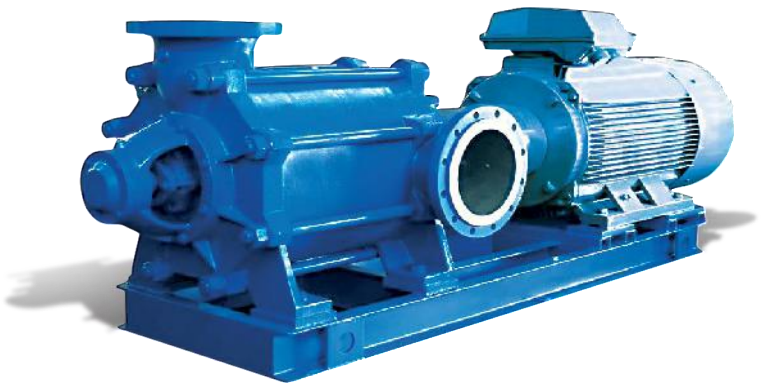
**Observation:**

It is recommended to replace the 30 HP Motor in order to achieve better IE 3 effectiveness of 30 HP Motor. The estimated savings would be 126366.51 kWh for 30 HP Motor. The investment would be Rs. 2145000. and it would be recovered in 2.39 yrs.

# 5. PUMPING SYSTEM:

Existing efficiency of the pump is evaluated by measuring of flow head and head losses and power, operating characteristics curves of pumps are known by the measurement of all parameters at various load conditions. Recommendation made to improve the overall efficiency pumping system with the review and understanding the operational conditions and process of operation of pumping system. Study pattern of operation of individual pumps including number of operating hours of the individual pumps for the past 12 month. Logged details of daily measurements like flow head, power parameters are referred to where available, and used as appropriate, in arriving at conclusion regarding energy measures.

Pumps are installed in Tata Steel Limited Sahibabad whose performances were carried out as below:



| | | Volt. V1 R | Amp. A1 | PF 1 | ACTUAL POWER (KW) | kVA | Flow (M3/hr) | Pressure (Kg/Cm2) | SHAFT POWER | EFFICIENCY OF PUMP (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| **OCRM** | | | | | | | | | | |
| P-1 | 75 | 425.1 | 110 | 0.77 | 62.36 | 80.99 | 326 | 3.2 | 28.43 | 50.65% |
| P-3 | 75 | 424.9 | 98 | 0.78 | 56.25 | 72.12 | 315 | 3.3 | 28.33 | 55.95% |
| P-5 | 75 | 425.3 | 100 | 0.78 | 57.46 | 73.66 | 293 | 3.4 | 27.15 | 52.50% |
| P-8 | 75 | 424.9 | 105 | 0.77 | 59.50 | 77.27 | 310 | 3.3 | 27.88 | 52.06% |
| P-15 | 22 | 424.9 | 32 | 0.66 | 15.54 | 23.55 | 132 | 3.1 | 11.15 | 79.71% |
| P-16 | 22 | 424.9 | 35 | 0.67 | 17.26 | 25.76 | 122 | 3 | 9.97 | 64.21% |
| P-17 | 22 | 425.3 | 30 | 0.68 | 15.03 | 22.10 | 119 | 2.9 | 9.40 | 69.53% |
| P-20 | 22 | 424.9 | 30 | 0.79 | 17.44 | 22.08 | 163 | 2.9 | 12.88 | 82.06% |
| **CT PUMP** | | | | | | | | | | |
| CT PUMP | 90 | 423.1 | 98.1 | 0.78 | 56.07 | 71.89 | 391 | 3.7 | 39.42 | 78.12% |
| CT PUMP | 11 | 421.1 | 13.3 | 0.79 | 7.66 | 9.70 | 39 | 2.8 | 2.98 | 43.15% |
| CT PUMP | 22 | 421.5 | 33.1 | 0.79 | 19.09 | 24.16 | 27 | 3.1 | 2.28 | 13.28% |
| CT PUMP | 11 | 424.2 | 13.5 | 0.81 | 8.03 | 9.92 | 39 | 2.9 | 3.08 | 42.62% |
| NARROW ANNEALING PUMP-2 | 7.5 | 423.1 | 8.8 | 0.81 | 5.22 | 6.45 | 48 | 3.2 | 4.19 | 89.03% |
| ANNEALING CT PUMP-1 | 18.5 | 424.2 | 23 | 0.81 | 13.69 | 16.90 | 75 | 4 | 8.18 | 66.36% |
| NCRM PUMP-1 | 110 | 416 | 135.3 | 0.8 | 77.99 | 97.49 | 415 | 4 | 45.24 | 64.45% |
| NCRM PUMP-5 | 110 | 418 | 153 | 0.9 | 99.69 | 110.77 | 451 | 4.2 | 51.62 | 57.53% |
| NCRM PUMP-3 | 110 | 419 | 140 | 0.8 | 81.28 | 101.60 | 436 | 4.1 | 48.71 | 66.59% |
| **DM PLANT** | | | | | | | | | | |
| DEGASSAR WATER PUMP-2 | 37 | 415.1 | 25.6 | 0.68 | 12.52 | 18.41 | 35 | 4.6 | 4.39 | 38.95% |
| RAW WATER-3 | 22 | 415.5 | 26.9 | 0.8 | 15.49 | 19.36 | 73 | 3.4 | 6.76 | 48.52% |

| | | Volt. V1 R | Amp. A1 | PF 1 | ACTUAL POWER (KW) | kVA | Flow (M3/hr) | Pressure (Kg/Cm2) | SHAFT POWER | EFFICIENCY OF PUMP (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| HIGH PRESSURE PUMP | 45 | 419 | 66 | 0.8 | 38.32 | 47.90 | 91 | 8.1 | 20.09 | 58.24% |
| TREATED WATER PUMP-2 | 45 | 413.9 | 31.22 | 0.78 | 17.46 | 22.38 | 78 | 4.9 | 10.41 | 66.29% |
| NEW ANNEALING PUMP-2 | 110 | 418.3 | 70.2 | 0.92 | 46.79 | 50.86 | 225 | 5.8 | 35.56 | 84.44% |
| NEW RO HPP | 75 | 411 | 60.2 | 0.42 | 18.00 | 42.85 | 24 | 14.3 | 9.35 | 57.73% |
| REJECT RO FEED PUMP-1 | 30 | 412 | 32.39 | 0.72 | 16.64 | 23.11 | 64 | 7 | 12.21 | 81.51% |
| H & T COMPLEX (CT PUMP-1) | 30 | 410.3 | 38.2 | 0.59 | 16.02 | 27.15 | 127 | 3.2 | 11.07 | 76.83% |
| H & T COMPLEX (CT PUMP-2) | 7.5 | 410.2 | 10.95 | 0.74 | 5.76 | 7.78 | 73 | 1.1 | 2.19 | 42.23% |


PUMP EFFICIENCY % COMPARISION
RATED POWER (KW)
EFFICIENCY OF PUMP (%)
ACTUAL POWER (KW)
75 75 75 75 22 22 22 22 90 11 22
50.65% 55.95% 52.50% 52.06% 79.71% 64.21% 69.53% 82.06% 78.12% 43.15% 13.28%
62.36 56.25 57.46 59.50 15.54 17.26 15.03 17.44 56.07 7.66 19.09
P-1 P-3 P-5 P-8 P-15 P-16 P-17 P-20 CT PUMP CT PUMP CT PUMP


PUMP EFFICIENCY % COMPARISION
RATED POWER (KW)
EFFICIENCY OF PUMP (%)
ACTUAL POWER (KW)
18.5
110
110
110
37
22
45
45
110
75
30
66.36%
64.45%
57.53%
66.59%
38.95%
48.52%
58.24%
66.29%
84.44%
57.73%
81.51%
13.69
77.99
99.69
81.28
12.52
15.49
38.32
17.46
46.79
18.00
16.64
ANNEALING CT PUMP-1
NCRM PUMP-1
NCRM PUMP-5
NCRM PUMP-3
DEGASSAR WATER PUMP-2
RAW WATER-3
HIGH PRESSURE PUMP
TREATED WATER PUMP-2
NEW ANNEALING PUMP-2
NEW RO HPP
REJECT RO FEED PUMP-1

# 6. ELECTRICAL DISTRIBUTION SYSTEM, TRANSFORMERS

| Transformer LOADING | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SL NO. | TRANSFORMER | KVA | V(V) | I(A) | PF | P (KW) | KVA | KVAR | LOADING | V THD (%) | I THD (%) |
| 1 | TRANSFORMER#1 | 60000 | 11100.0 | 1018.0 | 0.88 | 5741.24 | 6524.13 | 3098.79 | 10.87% | 1.0% | 4.0% |
| 2 | ECL TRANSFORMER | 2000 | 440.1 | 192.8 | 0.86 | 42.13 | 48.99 | 25.00 | 2.45% | 1.7% | 8.9% |
| 3 | ANNEALING TRANSFORMER | 2000 | 413.1 | 630.0 | 0.92 | 138.24 | 150.26 | 58.89 | 7.51% | 2.9% | 8.3% |
| 4 | GP-1 TRANSFORMER (FEEDER-30) | 2000 | 425.3 | 990.3 | 0.89 | 216.42 | 243.17 | 110.88 | 12.16% | 1.5% | 2.0% |
| 5 | GP-1 TRANSFORMER (FEEDER-30) | 2000 | 420.6 | 1451.0 | 0.87 | 306.55 | 352.36 | 173.73 | 17.62% | 1.6% | 3.2% |
| OCRM | | | | | | | | | | | |
| 6 | NON-OX-6P LINE (FEEDER-25) | 2000 | 433.4 | 764.1 | 0.71 | 135.18 | 191.20 | 135.22 | 9.56% | 3.9% | 13.1% |
| 7 | OLD 6Hi (FEEDER-40) | 4600 | 762.0 | 3512.0 | 0.89 | 1375.15 | 1545.12 | 704.51 | 33.59% | 1.0% | 4.0% |
| 8 | OCRM AUX. TRANSFORMER | 2000 | 431.3 | 924.3 | 0.64 | 146.39 | 230.17 | 177.62 | 11.51% | 1.0% | 2.9% |
| 9 | OLD 6Hi COILER TRANSFORMER (FEEDER-39) | 4600 | 755.0 | 2554.0 | 0.89 | 990.85 | 1113.32 | 507.63 | 24.20% | 1.2% | 3.1% |
| 10 | GP-1 TRANSFORMER (FEEDER-26) | 2000 | 435.1 | 1397.0 | 0.84 | 294.79 | 350.94 | 190.42 | 17.55% | 2.9% | 11.9% |
| 11 | GP-3 TRANSFORMER (FEEDER-26) | 2000 | 417.1 | 1886.0 | 0.88 | 399.68 | 454.19 | 215.73 | 22.71% | 2.8% | 6.4% |
| 12 | GP-1 TRANSFORMER (FEEDER-25) | 2000 | 440.4 | 527.0 | 0.83 | 111.22 | 134.00 | 74.74 | 6.70% | 2.8% | 41.1% |
| 13 | G.I. POT-GP-4 | 2500 | 417.1 | 811.0 | 0.89 | 173.82 | 195.30 | 89.05 | 7.81% | 2.0% | 14.7% |
| 14 | GALVALUME POT-GP -4 | 2500 | 415.4 | 437.0 | 0.84 | 88.04 | 104.81 | 56.87 | 4.19% | 2.5% | 41.8% |
| 15 | ADMIN BLOCK (FEEDER-43) | 2000 | 417.6 | 440.4 | 0.80 | 84.95 | 106.18 | 63.71 | 5.31% | 2.2% | 4.3% |
| 16 | GP-4 TRANSFORMER (FEEDER-16) | 2500 | 443.0 | 505.0 | 0.81 | 104.62 | 129.17 | 75.75 | 5.17% | 2.6% | 7.2% |
| 17 | GP-4 TRANSFORMER (FEEDER-17) | 2500 | 443.0 | 504.0 | 0.82 | 105.71 | 128.91 | 73.78 | 5.16% | 3.3% | 8.9% |

| Transformer LOADING | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SL NO. | TRANSFORMER | KVA | V(V) | I(A) | PF | P (KW) | KVA | KVAR | LOADING | V THD (%) | I THD (%) |
| NCRM | | | | | | | | | | | |
| 18 | NCRM HITACHI AUX-1 (FEEDER-32) | 2000 | 445.3 | 1340.0 | 0.89 | 306.62 | 344.52 | 157.09 | 17.23% | 1.3% | 4.3% |
| 19 | NCRM HITACHI AUX-1 (FEEDER-33) | 2000 | 445.2 | 1290.0 | 0.99 | 328.27 | 331.59 | 46.78 | 16.58% | 1.1% | 5.4% |
| 20 | 4 Hi (FEEDER-3) | 2000 | 415.0 | 1070.0 | 0.81 | 207.67 | 256.38 | 150.35 | 12.82% | 3.9% | 20.5% |
| 21 | HITACHI COILER (FEEDER-6) | 7300 | 1189.0 | 4013.0 | 0.72 | 1983.52 | 2754.88 | 1911.82 | 37.74% | 3.0% | 2.4% |
| 22 | MILL (FEEDER-5) | 8000 | 1188.0 | 4400.0 | 0.80 | 2414.41 | 3018.01 | 1810.81 | 37.73% | 1.2% | 1.9% |
| 23 | HITACHI AUX THY. DRIVE TR (FEEDER-8) | 2000 | 418.6 | 811.2 | 0.89 | 174.49 | 196.06 | 89.39 | 9.80% | 2.3% | 2.1% |
| 24 | 6 Hi CRM-05 AUX TRANSFORMER | 2000 | 415.1 | 1136.0 | 0.68 | 185.14 | 272.26 | 199.62 | 13.61% | 3.3% | 9.3% |
| 25 | 6 Hi CRM-05 MILL TRANSFORMER | 7000 | 974.0 | 708.0 | 0.89 | 354.35 | 398.15 | 181.54 | 5.69% | 3.9% | 5.9% |
| 26 | CRM-05 COILER TRANSFORMER | 7000 | 972.0 | 415.0 | 0.83 | 193.31 | 232.90 | 129.90 | 3.33% | 4.1% | 5.3% |
| 27 | GP-2 TRANSFORMER | 2000 | 422.3 | 1490.0 | 0.85 | 308.80 | 363.30 | 191.38 | 18.16% | 1.1% | 7.2% |
| 28 | CRCA TRANSFOMER | 2000 | 431.9 | 2730.0 | 0.89 | 605.88 | 680.77 | 310.40 | 34.04% | 3.1% | 5.9% |
| 29 | HYDROGEN PLANT TRANSFORMER | 2000 | 430.3 | 1425.1 | 0.88 | 311.57 | 354.05 | 168.17 | 17.70% | 3.3% | 4.9% |
| 30 | CCL TRANSFORMER | 2000 | 422.1 | 1320.0 | 0.88 | 283.09 | 321.69 | 152.80 | 16.08% | 2.1% | 2.6% |
| NARROW | | | | | | | | | | | |
| 31 | CRM-04 MILL TRANSFORMER | 1800 | 653.0 | 421.0 | 0.88 | 139.68 | 158.73 | 75.39 | 8.82% | 3.0% | 5.9% |
| 32 | CRM-04 COILER TRANSFORMER | 1950 | 651.0 | 435.0 | 0.89 | 145.52 | 163.50 | 74.55 | 8.38% | 2.1% | 2.6% |
| 33 | CRM-04 AUX TRANSFORMER | 2000 | 422.7 | 500.1 | 0.82 | 100.08 | 122.05 | 69.86 | 6.10% | 4.2% | 9.3% |
| 34 | OLD PICKLING TRANSFORMER-2 | 2000 | 420.8 | 271.0 | 0.96 | 63.21 | 65.84 | 18.44 | 3.29% | 2.1% | 3.2% |
| 35 | UTILITY TRANSFORMER | 2000 | 414.6 | 1194.0 | 0.78 | 222.94 | 285.82 | 178.86 | 14.29% | 2.3% | 3.6% |

# 7. COMPRESSORS

| TATA STEEL LIMITED SAHIBABADA | | | |
|---|---|---|---|
| **Parameter** | **Design specifications** | | |
| Type: | Screw | Screw | Screw |
| Make | CENTAC | CENTAC | CENTAC |
| Capacity (m3/minute) | 28.32 | 28.32 | 169.9 |
| Motor rating (KW) | 650 | 650 | 1050 |
| Operating voltage (V) | 415 | 415 | 11000 |
| Current (A) | 1085 | 1085 | 65 |
| Working Pressure (Bar or Kg/cm2) | 7 | 7 | 7 |
| | **OCRM CENTAC COMPRESSOR-4** | **OCRM CENTAC COMPRESSOR-5** | **NCRM CENTAC COMPRESSOR-3** |
| Compressor capacity (m3/minute) | 28.32 | 28.32 | 169.90 |
| Cut in pressure, kg/cm2(g) | 5.21 | 5.20 | 5.28 |
| Cut out pressure, kg/cm2(g) | 6.51 | 6.51 | 6.60 |
| Load kW drawn, KW | 584.93 | 596.94 | 769.06 |
| Unload kW drawn, KW | 166.15 | 179.36 | 317.39 |
| Average 'Load' time, T (minutes) | 1.17 | 1.35 | 1.22 |
| Average 'Unload' time, t (minutes) | 1.39 | 2.19 | 2.02 |
| Comment on leakage quantity and avoidable loss of power due to air leakages. | | | |
| Leakage Quality (m3/Minute), q | 12.94 | 10.82 | 63.96 |
| Leakage Quality per day (m3/day) | 6209.15 | 5192.84 | 30700.05 |
| Specific Power for Aire Compressed Air Generation (kWh/m3) | 0.34 | 0.35 | 0.08 |
| Energy Lost due to Leakeage/day (kWh) | 2137.41 | 1824.27 | 2316.10 |

## 8. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM

| Parameter | NARROW CHILLER UNIT #1 | NARROW CHILLER UNIT #2 | OCRM CHILLER UNIT #1 | OCRM CHILLER UNIT #2 | NCRM CHILLER UNIT #1 | NCRM CHILLER UNIT #2 |
|---|---|---|---|---|---|---|
| Mass flow Rate of cooling water m3/h | 132 | 172 | 109 | 105 | 197 | 113 |
| Cooling water inlet temp deg C | 32.4 | 32.9 | 29 | 28.6 | 29 | 28.3 |
| Cooling water outlet temp deg C | 35.8 | 35.3 | 33 | 33.3 | 33 | 34.6 |
| Specific heat of water Kcal/kg deg C | 1 | 1 | 1 | 1 | 1 | 1 |
| Condenser-Heat Rejected (TR)-Measured | 148.41 | 136.51 | 144.18 | 163.19 | 260.58 | 235.42 |
| Compressor (KW)-measured | **60.14** | **60.59** | **147.98** | **116.40** | **157.68** | **165.07** |
| Motor Efficiency | **0.91** | **0.91** | **0.91** | **0.91** | **0.91** | **0.91** |
| Drive Transmission efficiency | **0.98** | **0.98** | **0.98** | **0.98** | **0.98** | **0.98** |
| Estimated Compressor shaft power | **53.40** | **53.80** | **131.39** | **103.35** | **140.00** | **146.57** |
| Compressor (TR)-measured | 17.11 | 17.23 | 42.09 | 33.11 | 44.85 | 46.95 |
| Evaporator (TR)-Measured | 131.31 | 119.27 | 102.09 | 130.09 | 215.74 | 188.47 |
| Design TR | 150 | 150 | 150 | 150 | 316.18 | 316.18 |
| SEC kW/ton | 0.405 | 0.444 | 1.026 | 0.713 | 0.605 | 0.701 |
| Coefficient of Performance COP | 8.676 | 7.921 | 3.426 | 4.929 | 5.811 | 5.014 |
| Energy efficacy Ratio ,EER Btu/h-W | 29.611 | 27.034 | 11.692 | 16.824 | 19.831 | 17.114 |

# 9. COOLING TOWER

| Parameters | Unit | Narrow Cooling Tower | NCRM Cooling Tower | OCRM Cooling Tower | New Anealing Cooling Tower | Old Anealing Cooling Tower | H & T Cooling Tower |
|---|---|---|---|---|---|---|---|
| CW Flow | TPH | 479 | 1302 | 1302 | 350 | 362 | 280 |
| No of Cell | Nos | 4 | 3 | 3 | 1 | 1 | 1 |
| Fan Velocity | m/s | 4.6 | 4.2 | 4.9 | 5.1 | 5.2 | 5.9 |
| CW inlet Temperature | $^{O}C$ | 35.80 | 30.30 | 30.30 | 34.50 | 35.20 | 35.30 |
| CW outlet Temperature | $^{O}C$ | 31.80 | 27.40 | 27.40 | 30.10 | 31.20 | 32.10 |
| Dry bulb temperature | $^{O}C$ | 33.72 | 31.74 | 31.74 | 32.12 | 31.20 | 34.86 |
| Wet Bulb temperature | $^{O}C$ | 28.31 | 26.09 | 26.09 | 26.52 | 27.20 | 27.86 |
| CT range | $^{O}C$ | 4.00 | 2.90 | 2.90 | 4.40 | 4.00 | 3.20 |
| CT approach | $^{O}C$ | 7.49 | 1.31 | 1.31 | 3.58 | 4.00 | 4.24 |
| Effectiveness | % | 34.81% | 68.88% | 68.88% | 55.14% | 50.00% | 43.01% |
| Evaporation loss | TPH | 2.93 | 5.78 | 5.78 | 2.36 | 2.22 | 1.37 |

# 10. FURNACE

## Skin temperature of Furnace

Temperature profiling of Furnace carried out and same is shown in following table.

### Annealing Furnace Temperature Profile

| Annealing Furnace Skin Temp (Degree C) | | | | |
|---|---|---|---|---|
| **Furnace No.** | **Bottom** | **Middle** | **Upper** | **Near Burner** |
| **Furnace-01** | 55.3 | 49.5 | 45.6 | 68.2 |
| **Furnace-05** | 52.2 | 48.1 | 46.2 | 63.2 |
| **Furnace-10** | 54.3 | 45.2 | 45.2 | 68.2 |
| **Furnace-12** | 56.1 | 35.8 | 39.2 | 67.2 |
| **Furnace-15** | 52.6 | 62.23 | 62.2 | 68.2 |
| **Furnace-20** | 56.2 | 55.2 | 63.2 | 62.3 |

### Narrow Furnace Temperature Profile

`

| Narrow Annealing Furnace Skin Temp (Degree C) | | | | |
|---|---|---|---|---|
| **Furnace No.** | **Bottom** | **Middle** | **Upper** | **Near Burner** |
| **Furnace-01** | 45.2 | 38.2 | 40.5 | 43.6 |
| **Furnace-02** | 48.0 | 43.8 | 42.1 | 42.6 |
| **Furnace-04** | 49.4 | 42.0 | 43.6 | 43.0 |
| **Furnace-06** | 45.6 | 42.5 | 42.2 | 45.8 |

## GP Furnace Temperature Profile

| GP Line Furnace Temperature Profile | | | |
|---|---|---|---|
| **Furnace** | **Furnace Section** | **UOM** | **Avg. Temp** |
| GP 1 | Entry Seal | Deg C | 45.6 |
| | Pre-Heating Furnace | Deg C | 52.6 |
| | Radiant Tube Furnace | Deg C | 56.2 |
| | Soaking | Deg C | 56.2 |
| | Jet Cooling | Deg C | 43.2 |
| | Hot Bridle Roll | Deg C | 48.9 |
| GP 3 | Entry Seal | Deg C | 84.5 |
| | Non-Oxy Furnace | Deg C | 68.2 |
| | Sleeve Shop | Deg C | 59.2 |
| | Radiant Tube Furnace | Deg C | 53.1 |
| | Soaking | Deg C | 56.2 |
| | Jet Cooling | Deg C | 39.2 |
| GP 4 | Entry Seal | Deg C | 46.2 |
| | DFH Section Zone-1 | Deg C | 54.9 |
| | DFH Section Zone-2 | Deg C | 114.2 |
| | DFH Section Zone-3 | Deg C | 28.2 |
| | Radiant Tube Furnace | Deg C | 59.2 |
| | Soaking | Deg C | 53.2 |
| | RCS | Deg C | 61.2 |
| | HDR | Deg C | 58.2 |

## H&T Furnace Temperature Profile

| H&T Furnace Temperature Profile | | |
|---|---|---|
| **H&T Furnace- 1** | **UOM** | **Avg. Temp** |
| Hardening Furnace (Gas) | Deg C | 56.2 |
| Levelling Section (Gas) | Deg C | 84.3 |
| Tempering (Electrical) | Deg C | 42.2 |
| Jet Cooler | Deg C | 68.42 |
| Pipe (Hardening to Levelling) | Deg C | 121.2 |
| **H&T Furnace- 3** | **UOM** | **Avg. Temp** |
| Hardening Furnace (Gas) | Deg C | 59.2 |
| Levelling Section (Gas) | Deg C | 54.2 |
| Tempering (Electrical) | Deg C | 38.9 |
| Jet Cooler | Deg C | 49.5 |
| Pipe (Hardening to Levelling) | Deg C | 101.3 |
| After Dilution | Point Not Available | |

## CCL Furnace Temperature Profile

| CCL Furnace Temperature Profile | | | |
|---|---|---|---|
| **Furnace** | **UOM** | **Inside Temp.** | **Avg. Temp** |
| **Prime Oven** | | | |
| Zone-1 | Deg C | 187 | 31.2 |
| Zone-2 | Deg C | 223 | 40.2 |
| Zone-3 | Deg C | 252 | 38.9 |
| Zone-4 | Deg C | 242 | 35.9 |
| **Prime Oven** | | | |
| Zone-1 | Deg C | 201 | 35.6 |
| Zone-2 | Deg C | 203 | 44.2 |
| Zone-3 | Deg C | 214 | 38.9 |
| Zone-4 | Deg C | 231 | 37.9 |
| **Thermoxydiser** | | | |
| Upper Section | Deg C | | 102.3 |
| Middle Section | Deg C | | 174.2 |
| Burner | Deg C | | 59.2 |

# 11. BOILER

| Sr N | Parameters | Unit | Boiler-1 |
|---|---|---|---|
| 1 | Feed Water | MTPD | 126.2 |
| 2 | Feed Water Pressure | Kg/cm2 | 10 |
| 3 | Feed Water Temp | Deg C | 37.8 |
| 4 | Feed Water Temp after Economizer | Deg C | 59 |
| 5 | Operating Hours | Hrs. | 24 |
| 6 | RLNG Consumptions | M3 | 11218 |
| 7 | Calorific Value of RLNG | Kcal/m3 | 8963 |
| 8 | Total Energy in Fuel | Mkcal | 100546934 |
| 9 | Steam Pressure | Kg/cm2 | 4 |
| 10 | Steam Temperature | Deg C | 180 |
| 11 | Steam Enthalpy | Kcal/Kg | 672 |
| 12 | Energy in Steam | Kcal | 77360600 |
| 13 | Efficiency | % | 76.94% |
| 14 | Flue Gas Temp Before Economizer | Deg C | 193 |
| 15 | Flue Gas Temp | Deg C | 140 |
| 16 | Oxygen in Flue Gas | % | 4.2 |
| 17 | Economizer Effectiveness | % | 41.5 |

Observations :

Boiler efficiency is observed as 76.94 % and operating satisfactory

# 12. STUDY OF LIGHTING SYSTEM

Good lighting design is the key to minimize energy costs for lighting. Besides incorporating efficient technology, effective lighting design should address users' priority for visual performance, comfort and ambience, incorporate natural lighting and provide the occupants flexibility in controlling light levels.

Illumination study was carried by measuring the LUX level with the help of Lux Meter and was compared with standard level. There are different types of light fittings available in the plant. Luminosity, CRI and Efficiency of commonly available light sources have been depicted below.

During study it was observed that many places LED fittings are available. Few places FTL and CFL are available. It is suggested to replace all the FTL and CFL by energy efficient luminaries like LED. It is also found that HPSV of 250 and 400 Watts are available which can be replaced by 120-watt LED and 200-watt LED light.

| Sl. No. | Light Sources | Lamp Wattage (Watts) | Lumens | Efficiency (Lumens/ watt) | Choke Rating( watt) | Avg. Service life (hrs.) | Color Rendering Index |
|---|---|---|---|---|---|---|---|
| 1 | Incandescent lamps (GLS) | 100 | 1360 | 14 | --- | 1,000 | 100 |
| 2 | Fluorescent Tube Light (FTL) | 40 | 2400 | 60 | 15 | 5,000 | 70 |
| | Fluorescent Tubes (super) | 36 | 3250 | 90 | 2 | 14,000 | 70 |
| 3 | T5 Fluorescent lamps | 28 | 2700 | 96 | 2 | 18,000 | 70 |
| 4 | Compact Fluorescent Lamp (CFL) | 15 | 810 | 56 | -- | 8,000 | 85 |
| | High pressure | 80 | 3400 | 43 | 9 | 5,000 | 45 |
| | Mercury Vapor | 125 | 6300 | 50 | 12 | 5,000 | 45 |
| 5 | (HPMV) lamp | 250 | 13000 | 52 | 16 | 5,000 | 45 |
| | | 400 | 22000 | 55 | 25 | 5,000 | 45 |
| | | 70 | 4200 | 84 | 26 | 10,000 | 70 |
| | | 150 | 10500 | 70 | 20 | 10,000 | 70 |
| 6 | Metal Halide (MH) | | | | | | |
| | | 250 | 19000 | 76 | 25 | 10,000 | 70 |
| | | 400 | 31000: | 76 | 60 | 10,000 | 70 |
| 7 | Halogen | 500 | 20000 | 22 | -- | 2,000 | 100 |
| | High Pressure | 70 | 5600 | 80 | 13 | 15,000 | 25 |
| | Sodium Vapor | 150 | 14000 | 93 | 20 | 15,000 | 25 |
| 8 | (HPSV) lamp: | 250 | 25000 | 100 | 20 | 15,000 | 25 |
| | | 400 | 47000 | 118 | 40 | 15,000 | 25 |

**LUMINOUS EFFICIENCY AND LIFE OF COMMON LIGHT SOURCES**

## Illumination Survey Report:

| Sr. No. | Name \ Location | Avg. Lux |
|---|---|---|
| 1 | Old pickling TR-2 | 65 |
| 2 | Old pickling PCC Room-2 | 55 |
| 3 | Pickling control Room | 155 |
| 4 | Old mechanical store pickling | 105 |
| 5 | Pickling control pulpul | 205 |
| 6 | New picking MCC Room | 152 |
| 7 | Old pickling-2 | 69 |
| 8 | New pickling | 75 |
| 9 | Utility TR PCC Room | 58 |
| 10 | Utility TR MCC Room/Pump house | 53 |
| 11 | R.O plant control room | 43 |
| 12 | Store ware house | 352 |
| 13 | G.P-3 & 6 Flat old-MCC ROOM | 193 |
| 14 | G.P-3 Shed | 152 |
| 15 | G.P-4 Shed | 278 |
| 16 | G.P finishing line | 152 |
| 17 | CRS-Control room | 135 |
| 18 | H&T quad lab | 241 |
| 19 | H&T ENTRY | 140 |
| 20 | Mechanical office | 251 |
| 21 | H&T-1 furnace control room | 152 |
| 22 | H&T-1 Transformer room | 115 |
| 23 | H&T-1 Control room Elect. | 198 |
| 24 | PCC Control room | 210 |
| 25 | Mechanical Maintenance Area | 230 |
| 26 | PCC Control room H&T-2 | 250 |
| 27 | H&T-Line-3 | 210 |
| 28 | H&T-Line-1& 2 | 101 |
| 29 | ARP & ETP | 120 |
| 30 | Utility Pump House OCRM | 122 |
| 31 | Work Shop | 240 |
| 32 | DG 1000KVA | 220 |
| 33 | CTL 21 | 230 |

| Sr. No. | Name \ Location | Avg. Lux |
|---|---|---|
| 34 | Old Flat 6HI | 240 |
| 35 | Old Flat 6HI Mechanical Room | 141 |
| 36 | GP-1 | 123 |
| 37 | GP Stock Yard | 124 |
| 38 | Gas Plant | 144 |
| 39 | Power Plant Motor Room | 90 |
| 40 | Power Plant DG Room | 101 |
| 41 | HT Control Room | 104 |
| 42 | 220 KVA Switch Yard | 122 |
| 43 | Hitachi Mill | 131 |
| 44 | ECL | 111 |
| 45 | New Annealing | 101 |
| 46 | 4HI Skin Pass Mill | 204 |
| 47 | Rgm Area | 105 |
| 48 | Old Annealing Area | 106 |
| 49 | AC Plant | 201 |
| 50 | Utility NCRM | 101 |
| 51 | New Flat | 95 |
| 52 | Coil Qtroring Area | 93 |
| 53 | CTL-4 | 103 |
| 54 | 4HI Old Mill CRM-06 | 112 |
| 55 | CTL-16 | 214 |
| 56 | 2HI Skin Pass | 223 |
| 57 | Narrow Annealing | 252 |
| 58 | CRCA | 125 |
| 59 | CCL-8 | 123 |
| 60 | Winding Shop & soils assembly Area | 124 |
| 61 | CTL-25 | 122 |
| 62 | 4HI New Mill CRM-04 | 131 |
| 63 | CTL 132 25 | 124 |
| 64 | CTL 14 & CRS-07 | 125 |

# 13. ENERGY CONSERVATION MEASURES

## ENCON 1: REPLACEMENT OF 30 HP Motor with IE 3 Motor :

| TATA STEEL LIMITED SAHIBABAD | |
|---|---|
| Savings due to replacement of 30 HP Motor with IE 3 Motor | |
| Location | PLANT |
| HP | 30 |
| KW | 22.0 |
| Nos. of Motors | 15 |
| Efficiency of existing motor (Non IE/IE1) | 89.9 |
| Power consumption, KW on 70% loading | 17.130 |
| Efficiency of New IE3 motor | 93 |
| Expected Power consumption KW on 70 % Loading | 14.322 |
| Power SAVED, KW | 2.808 |
| Running hours | 10 |
| Average nos. of day per year | 300 |
| Annual savings, kWh | 126366.51 |
| Annual savings, Rs. | 897462 |
| Investment, Rs. | 2145000 |
| Payback Period, Year | 2.39 |

**Observation:**

It is recommended to replace the 30 HP Motor in order to achieve better IE 3 effectiveness of 30 HP Motor. The estimated savings would be 126366.51 kWh for 30 HP Motor. The investment would be Rs. 2145000. and it would be recovered in 2.39 yrs.

## ENCON 2: REPLACEMENT OF HPSV lights of 250 watt with 120 Watt LED

| TATA STEEL LIMITED SAHIBABAD | |
|---|---|
| **Savings due to replacement of HPSV 250 watt with 120 watt LED** | |
| Nos. of HPSV LAMPS | 10 |
| Power consumption, Watt | 250 |
| Expected Power consumption (120W), Watt | 120 |
| Running hours | 10 |
| Average nos. of day per year | 350 |
| Annual savings, kWh | **4550** |
| Annual savings, Rs. | **32305** |
| Investment LED ), Rs. | 40000 |
| Payback Period, Year | 1.24 |

## OBSERVATION & COMMENTS:

It is recommended to replacement of 250Watt of HPSV lights with 120 watt LED lights . The estimated savings would be 4550 kWh worth of Rs 32305 and it would be recovered in 1.24 yrs.

# Certification

This is to declare that,

a) *The data collection has been carried out diligently and truthfully;*

b) *All data monitoring devices are in good working condition and have been calibrated or certified by approved agencies authorized and no tempering of such devices has occurred;*

c) *All reasonable professional skill, care and diligence had been taken in preparing the energy audit report and the content thereof are a true representation of the facts;*

d) *Adequate training provided to the personals involved in daily operations after implementation of recommendations; and*

e) *The energy audit has been carried out in accordance with the Bureau of Energy Efficiency (Manner and intervals of time for the conduct of energy audit) Regulations, 2010*

Signature

Name of the accredited energy auditor **Amulya Kumar Mohini**

Accreditation details : **AEA-002**

Seal


:

# ON-SITE EMERGENCY RESPONSE PLAN

**Revision: 2023-2024**

## TATA STEEL SAHIBABAD LIMITED

**PLANT -23, SITE-IV, SAHIBABAD INDUSTRIAL AREA**
**DISTRICT GHAZIABAD-201010**

**CONTENTS**

**FORWORD**

Tata Steel Limited, Sahibabad is publishing its Revision- 01 of On-Site Emergency Response Plan which is updated and revised by a team of competent safety professionals under the guidance of senior leadership. The plan deals with the probable hazards and their consequences, protections, preventive measures, and action plan to deal with emergencies. The effectiveness of the Disaster Plan is tested and demonstrated by conducting regular Mock drills at Tata Steel Limited, Sahibabad. It is also obligatory on the part of plant management to prepare Emergency Preparedness and Response Plan under the various statutes namely Section 41-B (4) of The Factories Act 1948 & Rules, BOCW Central Rules 1998 and MSIHC Rules 1989.

I hope the contents of the plan will enable and empower employees to operate the plant without injury and no loss.

Wishing all employees, a Happy and Safe work experience.

*EPH :- Mr. Mukesh Kumar*

Occupier: - Mr. T.V. Narendran

**ACKNOWLEDGEMENT**

*We expresses our sincere thanks to Management and Employees of Tata Steel Sahibabad, Distt. Ghaziabad, Uttar Pradesh, particularly Safety Department for their co-operation in carrying out the Safety Audit.*

*We express our sincere thanks to, Mr. Mukesh Kumar (EPH), Mr. Ejaj Ahmad (Factory Manger) for their wholehearted cooperation and support for providing desired information's and documents in preparing the Emergency Preparedness Plan.*

*We are also thankful to the Managers / Executives, staff and workers of Tata Steel Sahibabad Ltd. who extended their help, support and their involvement in completing the Safety Audit in time.*

Mr. Dharmendra Kumar Singh & Ashok Kumar

Qualified Safety Professional from RLI Faridabad Haryana (Govt Of India)

**NAME AND ADDRESS OF PERSON FURNISHING THE INFORMATIONS**

**PERSONS FURNISHING THE INFORMATIONS**

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**Mobile No-9283087071**

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## 1. INTRODUCTION

**TATA STEEL LIMITED SAHIBABAD** is committed to maintain an effective Emergency Response Plan (ERP) to respond for emergencies and to minimize consequential losses.

The success of any emergency plan depends on pre-planning and regular mock drills. All staffs and Operators of Tata Steel Sahibabad including subcontractor/s must know their roles & responsibilities during emergencies to ensure quick and effective response. The emergency procedure shall be kept updated and shall satisfy the Legal requirements.

Systematic testing of the emergency response system shall be conducted regularly to verify its effectiveness, and any identified for improvements shall be implemented promptly.

The plan deals with the probable hazards their consequences, protections, preventive measures and action plan to deal with emergencies on the occurrence of disaster. The effectiveness of the Disaster Plan is tested and demonstrated by conducting regular Mock rills of Tata Steel Sahibabad .

It is also obligatory on the part of plant management to prepare Emergency Preparedness and Response Plan under the various statutes namely Section 41-B (4) of The Factories Act 1948& Rules, BOCW Central Rules 1998 and MSIHC Rules 1989.

## 2. OBJECTIVES:

The objectives of this Emergency Management Plan are:
Secure the health, safety and welfare of all employees, sub-contractors, suppliers, visitors and members affected by workplaces under the control of Tata Steel Limited Sahibabad.

Contain an emergency
Protect property, plant, equipment and the environment
Care for the welfare of casualties and families
Manage the recovery and resumption of normal operations

The purpose of this Emergency Response Plan is to identify the potential for emergency and respond to actual emergency and prevent or mitigate associated adverse Consequences. It also defines the role & responsibilities of Personnel involved.

## 3. SCOPE:

This is applicable to all in the Tata Steel Sahibabad operations, 23, Plant Site IV, Sahibabad. The Targeted Populations are Tata Steel limited Sahibabad Employees, Subcontract Employees, Visitors and neighboring parties.

**4. IDENTIFICATION OF POTENTIAL EMERGENCY SITUATION:**

The various types of emergencies have been classified and in general each type requires a different response and actions, involving different people in an Organization. By classifying the types of emergency, it is possible to ensure that the people who are required to be informed and told without delay are getting immediate information.

**Types of Emergencies at Tata Steel limited Sahibabad**
**(Probable Hazards and Safety Measures)**

1. Structure & Building failures (Causes & Preventions)
2. Bursting of Boiler& Pipelines
3. Gas Leakage (LNG, Hydrogen, NH3, N2)
4. Transformer /Cable vaults and Switch Gears Room Fires
5. Fire Emergencies / Disasters (Buildings and Plant Location Areas)
6. EOT Cranes failures during Operation and Rescue Plan
7. Emergencies caused by Heavy vehicle during transportation of Coils
8. Cellars units Structure failures & Fires

9 Explosions in Heating Furnaces (Zinc, Annealing).

10. Rupture of HCL Tanks/pipelines

**4.1 Structure, Building failures (Causes& Preventions)**
**Objective**

The main purpose is to briefly describe how to carry out the condition assessment of buildings before taking up repair and upgrading work. This will determine whether a distressed building should be demolished to build back better or whether it will be cost-effective to either repair or retrofit it, in the context of overall safety.

**Factors causing Building Distress (Probable Hazards)**

(i) The reason for distress during service is the lack of maintenance of the building which results in Deterioration/ aging of materials and structural components leading to corrosion and cracking.

(ii) Buildings or structures are damaged at different grades of damage when they experience extreme loading conditions like in severe earthquakes or cyclonic storms for which they are not designed.

(iii) They may also fail if the building including the foundation is not properly designed and constructed following the standard Codes of practice. An impression exists that taller structures are seismically unsafe in comparison with low-rise buildings. On the contrary, when properly designed and built, taller structures are generally safer. It is to be noted that most lives were lost in Kutch (Gujarat) earthquake of 2001 in one and two storied masonry buildings. Hence, all buildings have to be built safe.

(iv) Inadequacy of design and poor quality of construction and maintenance are therefore the main reasons for the distress seen in buildings during service or under natural hazards. This is because

building codes and byelaws are not conscientiously followed in design and quality of construction, in maintenance.

(v) The current [Indian standard (I.S.)] building codes and guidelines in India have been tested and found effective in achieving safety of the residents during the last six earthquakes (Uttarkashi 1991 to J & K 2005). Hence not following these codes in design and construction is sure recipe for stress in future.

**Preventive Measures (Condition Assessment of Buildings)**

a. Main objective of condition assessment are to place the building into one of the following three categories:

b. The building has not shown any signs of distress and it satisfies all the safety and serviceability requirements according to relevant Codes of practice, hence no action is needed towards retrofitting.

c. The building is seen to be deficient (or distressed) but it can be repaired and strengthened to satisfy the Coded safety requirements or performance criteria set by the user.

d. Main steps of condition assessment will be

- To record the damage if any, and find out the causes for distress
- To assess the extent of distress and to estimate the residual strengths of structural components and the system including the foundation.
- To plan the rehabilitation and retrofitting/strengthening of the building.

e. Typical visible distress detrimental to the safety of buildings Cracks in RC beams, slabs, masonry walls (particularly if the walls are load bearing walls), spelling of concrete, sagging of beams or slabs, and tilting of columns or RC frames (out of plumb) and major failure of structural members are the typical types of crucial damages that will require structural repairs to bring back the lost strength. Such actions will need to be done along with retrofitting if that is also decided for the building in question.

**4.2. Steam Boilers& Pipelines**

**Major Hazards**

Bursting of Boiler Drum, Bursting of Pipelines, Fires and Explosion

**Safety Measures**

**Precautions to be carried out at Start in Steam Boilers:**

1. Hydraulic Test should be carried out at a defined pressure before the start of a boiler.
2. Check if the pump inlets are open at the start of a boiler.

3. Install an automatic ash removal system such as rotary valves in a boiler to prevent the accumulation of ash in a furnace or other equipment. The accumulation may result in the blockage or excessive heating of boiler parts resulting in its failure.

4. Pump priming must be done at the start of the **boiler**.

5. All loose and wrong connections must be checked and make sure to rectify the connections before starting your boiler.

6. A trained and a **technical boiler operator** must be hired for operating your **boiler**.

**Precautions to be carried out regularly:**

1. Never operate **boiler** above the design pressure and check for the safe operation of **Safety valves** as well as fusible plugs.

2. Regular cleaning of the perforated line is necessary

3. Strainer must be installed before the pump & check for its proper functioning to remove dirt particles from boiler feed water as this prevents the blockage of a feed line.

4. Water must be treated before feeding it to the boiler to prevent the accumulation of dirt in a Boiler shell.

5. Regular inspection and maintenance of boiler including its accessories and valves to check for possible failures and cracks are necessary.

6. Make sure that the boiler vents are not restricted by any kind of obstruction such as cloth etc.

7. Always check for the leakages of steam, water, air and flue gases from any suspicious place.

8. Follow boiler manual for safe and efficient working of your boiler.

9. The panel should be cleaned regularly and should be kept in a cool and an isolated place away from your boiler.

10. Check if all the hot parts of the boiler are insulated, do not touch the parts with bare hands where the insulation is not provided.

11. Maintenance of both FD Fan and **ID Fan** is important and regularly check for greasing in all the movable parts for the ease of operation.

12. Regular cleaning of movable mechanical parts is necessary.

13. Do not increase the frequency of a drive above 50 Hz for the safe operation of motors.

14. **Pressure switch**, and **Pressure Gauge** should be checked for their proper

**Precautions to be carried out occasionally:**

1. Occasionally clean the **boiler tubes** to prevent any ash deposition or scaling inside or outside the tubes. Failure to do so will affect the boiler efficiency and will eventually overheat the tubes leading to the tube leakage problems.
2. The ratio of primary and secondary air must be maintained in accordance with fuel feeding.
3. Periodically check burner operation **back pressure** and line pressure to prevent any thermal hazards.

**4.3 Gas Leakages /Disasters (LNG, Hydrogen, NH3, N2,)**

**Major Hazards**

**Gas Leaks in Storage Tanks, Pipelines, Fires, Explosions**

A basic knowledge of natural gas and how to eliminate or control hazards can streamline emergency operations and, more importantly, ensure the safety of all personnel on scene.

Predominately methane, natural gas is colourless, tasteless and, in its natural state, odourless. Transmission pipeline and utility companies add a distinctive odorant, butyl mercaptan, to natural gas so leaks can be quickly and easily identified. Natural gas is lighter than air and tends to rise, while most other flammable gases have higher vapour densities and tend to move downward.

Natural gas is non-toxic and considered a simple asphyxiate. Utility companies indicate that the natural gas mixture from the pipeline will typically have a lower explosive/flammable limit (LEL/LFL) of 5% and an upper explosive/flammable limit (UEL/UFL) of 15%, or a flammable range of 5–15%.

After determining an incident involves natural gas, immediately notify the utility company. Once they arrive on scene, instruct utility company personnel to report to the incident commander (IC) or the liaison officer.

**Preventive Measures**

**Gas Detection**

Gas meters that are setup to read LEL should be used to determine where the hot zone is. Fire-fighters must be familiar with how these meters work and realize that any LEL reading on a meter (or the distinctive odour of gas) indicates the presence of gas and the potential for a hazard to exist. Meters must be calibrated regularly to be effective, try to use two meters instead of one.

**Escaping Natural Gas outside a Building**

Notify the utility immediately if un-ignited natural gas is escaping from the ground from an excavation or from an open pipe. Establish a hot zone around the location of the leak. This hot zone should include any area where gas detection equipment indicates a reading of 1% or more.

Extinguish all flame and other ignition sources within this hot zone. Be aware that any electrical equipment—including that which is brought to the scene by the fire department—presents a possible ignition source if not rated for flammable atmospheres. Turning electrical equipment on or off can create a spark and ignite leaking gas. Check surrounding buildings for any presence of natural gas odours. Reroute and restrict vehicular and pedestrian traffic from entering the area until utility company personnel bring the natural gas flow under control. If the leak continues, the hot zone must be continuously monitored and may need to expand.

**Natural Gas Burning Outside**

When natural gas is burning, notify the utility department immediately. Only utility company personnel should operate valves on mains. However, emergency responders trained in the use of curb keys may close curb valves on natural gas services, but they should never turn on valves or curb valves. Restoration of gas service requires re-ignition of pilot lights, checking safety equipment associated with burners and other tasks that require specialized training. Once something is shut off, leave it off. Turning the wrong valve or opening a closed valve could further endanger life or property. Leave these actions to utility company

The best method to control an outdoor natural gas fire is to shut off the natural gas flow. In most cases, emergency responders should not attempt to extinguish the fire while gas continues to escape, as an explosion could result.

Do not fill an excavation where gas is leaking with water, as water could enter the gas main system. If it proves necessary to extinguish a natural gas fire before gas flow can be stopped, then use dry chemical. Do this only as a last resort because escaping unburned gas creates the potential for explosion.

**Detecting Flammable Gas Leaks**

Leakage of flammable gases may result in a fire. In the event of a gas leak, first identify the gas and take appropriate action.

- Extinguish all ignition sources
- Evacuate personnel from the area
- Cordon off the area
- Warn everyone in the area of the gas leak
- Ensure the work area is thoroughly ventilated before returning

**Problem - ignited leak**

Extinguish all ignition sources

Wear leather gauntlet

Extinguish the flame with a dry powder extinguisher or a wet rag - but only if it is safe to do so

Close the cylinder valve

If the flame from the cylinder has started a secondary fire, or is heating the cylinder, evacuate personnel to a safe location

Call the fire service

**Hydrogen**

*Major Hazards*

- Fires, Explosions, Gas leakages, bursting of storage tanks

Identifying features:

- Hydrogen is colorless and odorless
- Hissing will reveal leakage from a, tanks, joints, lines or valve
- Specific gravity of gas: 0.7
- Hydrogen is lighter than air and will therefore gather in roof spaces
- Hydrogen burns with an invisible flame
- Look for evidence of heat haze
- Ensure the leaking gas is not ignited before approaching the cylinder
- If a leak has ignited, follow the 'ignited leak procedure' below
- Evacuate personnel from the area
- Move the cylinder to a safe position outside
- Keep the leak uppermost
- Take care to ensure further risks are not encountered along the way
- Cordon off the area
- Warn everyone around the gas leak and give priority to those downwind or downhill
- Ensure the work area is thoroughly ventilated before returning
- Extinguish all ignition sources

**Preventive Safety Measures**

**Wearing leather gauntlets**

Extinguish the flame with a dry powder extinguisher or a wet rag - but only if it is safe to do so

**Close the cylinder valve**

If the flame from the cylinder has started a secondary fire, or is heating the cylinder, evacuate personnel to a safe location

**Call the fire service**

**Safety in the workplace:**

The information contained herein is provided as a general outline and is not intended to be a definitive statement on the subject matter.

Professional advice should be sought before any action is taken in relation to safety in the workplace.

**In the event of a gas leak or suspected leak**

1. Stop the gas flow at the container - for tanks, turn off the Tank Emergency Shut off valves (there will be two of these for tanks with liquid off takes, ie., where it is used for filling vehicles or cylinders); for propane cylinders, turn off the cylinder alive; for butane cylinders, turn off the regulator.
2. Turn off all naked flames and eliminate all sources of ignition BUT do not turn electrical switches on or off.
3. If leak is indoors, open all windows and doors, to disperse the gas.

1. In the case of cylinders, disconnect the cylinder and move it outdoors to an open area.
2. If the leak cannot be stopped or a significant leak has occurred, evacuate the premises.

In the case of Carbon monoxide poisoning

1. The symptoms are drowsiness and headache, in extreme cases a tendency to stagger and nausea.
2. Remove the victim to fresh air immediately and obtain immediate medical assistance.
3. If breathing is inadequate, start mouth to mouth resuscitations.

For further information on any of the above, consult the Safety Data Sheet, available

**AMMONIA GAS**

Main Hazards

Ammonia gas can decompose at high temperatures forming very flammable hydrogen and toxic nitrogen dioxide. It is a COMPRESSED GAS and a confined space explosion and toxicity hazard. ... Ammonia gas may cause lung injury, and the liquefied gas can cause frostbite and corrosive injury to eyes and skin.

**Hazards of Ammonia**

Inform your workers of ammonia's hazards. Ammonia is a health hazard—it is corrosive to the skin, eyes, and lungs. Acute exposure can cause eye and respiratory irritation, coughing, and wheezing. The concentration in air that is immediately dangerous to life and health (IDLH) is 300 parts per million (ppm). Workers who inhale it may experience swelling and accumulation of fluid in the lungs, which can occur up to 24 hours after exposure.

Ammonia can be explosive, especially in an enclosed space or when other flammable chemicals are present. By itself, its flammable range is between 15 percent and 28 per cent by volume in air. When mixed with lubricating oils, the flammable range increases.

Ammonia will react dangerously with some chemicals—most notably, chlorine bleach. Ammonia is also incompatible with other halogens (for example, fluorine), oxidizing agents (for example, nitrogen oxide), and heavy metals (for example, mercury and silver).

**Preventive Measures**

**While Working Safely with Ammonia**

Train employees to work safely with ammonia by following these general precautions and the safe work practices that apply in this facility:

- **Wear personal protective equipment.** To work with liquid ammonia, you may need eye, face, and skin protection. To work with liquid or gaseous ammonia, you may require respiratory protection.
- **Take hot work permitting precautions** whenever hot work will be performed in areas where ammonia is present. If piping, vessels, or containers that have held ammonia will be welded, soldered, drilled, or cut, purge all ammonia first.
- **Use proper ventilation.** Never work with ammonia in an unventilated area. Always ensure that you have adequate ventilation, and make sure that ventilation is no sparking or explosion-proof.
- **Store ammonia separately** from incompatible chemicals, away from heat and ignition sources.
- **Know what to do in case of a spill or leak.** When you work with ammonia, know where the emergency escape respirators are located. If ammonia leaks or is spilled, put on a respirator, and leave the area immediately. Report the spill or leak so it can be appropriately controlled.
- **Know how to respond to splashes.** Liquid ammonia can burn your eyes. Know where the emergency eyewash is stored in your work area and how to use it.

**4.4. Transformer /Cable vaults and Switch Gears Rooms Fires**

**Objective: -**

- To protect employees from electrical hazards and ensure their safety during work.
- Identify electrical hazards when doing maintenance work
- Follow best practice in electrical design for safety
- Identify key electrical safety parameters
- Apply electrical safety Rules, Regulations during entering in hazardous areas
- To learn the key procedures in safe electrical working i.e. Regular periodic inspection and

planned maintenance

- To learn how to conduct an electrical safety audit and ensure compliance
- Learn how to report accidents, carry out investigations and determine measures to improve safety

**Main Hazards in Transformer Yard**

**Electrical hazards**

Requirements for safety i.e., Provision of Firefighting appliances

Operative training

Personnel levels of competency

Safety documentation

Work on live systems, close to live systems Electrical hazards

Requirements for safety Compliance of IEA/IE Rules

Operative training

Personnel levels of competency

Work on live systems, close to live systems

**Other Hazards in Transformer Yard**

Weed control and Prevention of Growth to Prevent Fire Incidents

Fence repair Control /Painting and Maintenance

Uneven Gravel Filling

Fixing of Conductors and Earth Wires

Testing and Commissioning and Final Checks

**SAFETY MEASURES**

Regular preventive maintenance schedules to be followed

Deluge system of firefighting to be made available and checked.

Fire Detection system to be kept in auto

**4.5. Fire Disasters (Buildings and Plant Location Areas)**

**Fire Disasters Emergency Action and Prevention Plan**

The supervisor or person responsible for the area where an emergency occurs is responsible for investigating all emergency incidents and reporting them to Environmental Health and Safety.

**Building Evacuations**

There are several types of actual and potential emergency situations that might necessitate a building evacuation including fire, explosion, chemical spill, gas leak, terrorist threats, etc. The evacuation alarm is primarily intended for initiating a general evacuation during fire emergencies. During emergencies other than fire, the possibility that occupants could enter a danger area (e.g., chemical spill in exit path, potential explosion area, exposure to gunman, etc.) while exiting the building should be considered before initiating the evacuation alarm. In those instances where a general evacuation is not safe, the evacuation will have to be conducted room by room in buildings that do not have a public address system.

**Responsibilities of Area In charge**

Instructional staff is required to instruct personnel who are occupying the area of responsibility on the proper procedures to follow in case the building must be evacuated. The following information must be included in the instructions:

The signal to evacuate the building in case of emergency is the building fire alarm.

Location of exits nearest to the building rooms.

Exit routes have been properly marked and with glowing signage

Building elevators are not to be used for evacuation.

Evacuees are not to congregate in or around the building exits or doorways. A designated assembly area shall be earmarked.

Such evacuation plans may include the system and the use of safe refuge areas—places relatively resistant to smoke and heat within a building (for example a sprinkler protected room or hallway, or a stairway landing) where an occupant could wait until help arrives to assist in an evacuation.

Personnel may re-enter the building only when the Safety Officer at the scene of the emergency gives the "All Clear."

**Building Fires**

Initiate a building evacuation using the nearest alarm pull station.

Dial Fire Station for fire department assistance.

If the fire is small use of portable fire extinguishers, to extinguish the fire.

Use the nearest safe exit route to exit the building. Close all doors on the way out to prevent the spread of smoke and fire.

After exiting, immediately proceed to a safe location at least 100 feet from the building.

Do not re-enter the building until the all-clear is given by Public Safety or the fire department.

**Medical Emergencies**

Evaluate the immediate area for potential safety hazards (fire, toxic or explosive gas vapours, etc.) or situations that may require moving the injured to a safer location. Otherwise move the injured no more than necessary.

Dial and request first aid assistance or an ambulance.

Provide emergency first aid as needed if you have been trained to do so.

If the injury involves exposure to a hazardous chemical, provide the Material Safety Data Sheet to the medical emergency responders. If the MSDS cannot be in time, call the emergency room to offer the information as soon as possible.

**Chemical Spills**

Each employee responsible for an activity involving the use of a hazardous substance must prepare a written procedure to be followed in the event of a spill and communicate the procedure to employees, contractors, visiting employees involved in the activity. The written procedure and associated training must include information on when to request outside assistance.

The following procedures are for chemical spills that cannot be handled safely by persons working in the area.

**Spill Response Procedures**

Individuals that supervise the use or storage of hazardous chemicals and materials must develop written procedures for responding to a spill of those chemicals and materials. Spill response procedures must prioritize human health and safety and clearly define the circumstances when a spill can be safely managed by on-site personnel and when it is necessary to seek outside assistance. Supervisors must ensure that everyone who uses hazardous chemicals and materials is trained to manage spills and knows how and when to get outside assistance if necessary.

If a spill or release is immediately dangerous to life or health OR on-site personnel are unable to safely manage the spill, seek outside assistance as described below:

a. Spill of a Hazardous Chemical or Material inside a Building

b. Evacuate everyone in the immediate area and close all doors as you leave. If there is a potential risk to others in the building pull the nearest fire alarm to evacuate the building.

c. Describe the situation, any injuries, and if there is a fire or potential for a fire.

d. Contact supervisor. Explain what happened and tell them what is being done in response.

It is expected that supervisors will ensure that the department safety officer, department chair, director and/or dean are aware of the incident.

Provide them with directions to the location of the spill/release and information about the spilled or released substance including:

Name of substance(s), quantity released, and any known hazards.

A copy of the Safety Data Sheet(s), if available.

Other hazards that may be in the room / area.

**Outdoor Spill of a Hazardous Chemical or Material**

Evacuate anyone in the immediate area.

From a safe location, Call Emergency Control Centre.

Describe the situation, any injuries, and if there is a fire or potential for a fire.

If the hazard is primarily to the environment and the spill is too large to be cleaned up by on-site personnel or has the potential to reach the waterway, including through storm drains, request assistance from Environmental Health and Safety. Do not attempt a clean-up once you have determined that outside assistance is needed, or if the spill has entered the soil, groundwater, or surface water.

Contact your supervisor. Explain what happened and tell them what is being done in response.

Remain a safe distance away from the spill and warn others to stay clear until help arrives.

When campus Public Safety Services or other emergency responders arrive, provide directions to the location of the spill and information about the spilled/released substance, including:

Name of substance(s), quantity released, and any known hazards.

A copy of the Safety Data Sheet(s), if available.

**4.6. EOT Cranes failures during Loading, Unloading and Rescue Plan**
**Main Causes of Crane Accidents (Hazards)**

- Causes of these accidents include:
- Cranes buckling or collapsing. Cranes have weight limits to ensure they do not tip over. Cranes also use counterweight and out-rigging systems to counterbalance the weight. If the weight limits are exceeded, the crane can tip over or the boom could collapse.
- Improper crane assembly. A major reason booms collapse is improper assembly of the crane. In addition, if the crane does not have the proper wood or metal blocking supports to stabilize the load the crane is carrying, the load could move and cause the crane to collapse.
- Improper employee training. Crane workers must be properly trained in the use of cranes and complete OSHA courses on the proper operation of cranes. Employers also need to ensure that workers are warned of crane dangers and maintain a safe distance between the crane operation and work performed by other workers.

- Mechanical failures. Cranes need to be maintained regularly to prevent accidents caused by mechanical failures. Crane components should be kept oiled, and any problems should be repaired promptly.
- Contact with electrical lines. Electrocution from overhead power lines is a common cause of accidents. The crane operator and workers in the basket must be aware of where live wires are. In addition, the power to electrical lines should be shut off before work begins near live wires.
- Inspections. Employers rushing to get a construction project completed may encourage quick, sloppy inspections of their cranes. However, thorough inspections are critical to prevent crane accidents. Inspectors must ensure the crane is safe before clearing it to be used.

**Other Causes of Crane Accidents**

Crane accidents are dangerous. The problems in cranes can even lead to loss of lives, and that's why cranes need to be handled carefully. The property loss is also high yet bearable, but the loss of human life makes it a crucial point to consider. The EOT crane the accidents could be prevented by adequately operating the machines in addition to following all the maintenance chores.

The following issues mainly faced while handling EOT cranes and the ways to avoid them.

Crane accidents are dangerous. The problems in cranes can even lead to loss of lives, and that's why cranes need to be handled carefully. The property loss is also high yet bearable, but the loss of human life makes it a crucial point to consider. Here are the top issues you might face while handling EOT cranes and the ways to avoid them.

**WIRE ROPE GETS DAMAGE AND DEGRADE**

This is one of the common issues faced while working on overhead crane as sometimes wire rope gets damage and degrade. This happens due to some common reason: Wire rope sometimes gets jumped out of the reviewing system, broken wires or worn outside wires; Wire may get damaged or corroded at the end connection. Many other operation conditions can also make wire rope damage and degrade. The wire ropes can be prevented from getting damage the steps are: Inspect the rope before you start working on the overhead crane and if in case there is any damage so take preventive action. Make sure the wire rope should be properly lubricated.

**ALIGNMENT AND CRANE SKEW ISSUES**

If overhead crane is out of alignment and skewing then it can lead to significant stress and damage to whole crane system. While construction of the crane, forces applied can also cause stress in the crane and hence this type of stress can result in accidents, crane failure, productivity loss and replacement of loss. To prevent from this alignment and crane skew issue crane should be regularly inspected by the service provider and that service provider will inspect and repair the problem before it become bigger.

**END TRUCK WHEEL CAUSING EXCESSIVE WEAR**

End truck wheels are major components of the overhead crane and every time they require frequent maintenance, replacement or adjustment. As they are used daily hence wheel will naturally wear down and need to be replaced when required. To avoid the problem of end truck wheel, overhead crane should be designed, tested, and regularly inspected by a reputable overhead crane manufacturer.

**ELECTRIFICATION SYSTEM PROBLEM**

This is the major problem faced by the overhead crane operator as conduction bar and collector connection gets interrupted and this cause control problem. There can be problem with the push button and radio control and blown flushes is also the problem and to solve this problem operator should contact crane service provider immediately and inspect the fault so that it can be solved.

**HOOKS GETTING BENT OR DAMAGE**

There is load capacity of the hook and if it is above that then hook may start bending or can get damage. Regular check is requiring before starting of the shift. Hooks is one of the major parts of the crane so it should be taken care properly.

**WORN AND TORN WIRE ROPES**

The wires can become damaged or corroded over time, and that can lead to huge problems. The effect of environment and improper maintenance can also lead to breakage of cables. If you see any corrode part or unravelling of strands visible on the wire, it is advised to stop using the wire immediately to prevent accidents.

The hooks of the cranes can bend and eventually damage because of heavy loads. That said, everything needs a replacement or renovation over time; the hooks must be changed or repaired on time. When the hooks get bent due to overloading, you must replace them. Otherwise, they will break making the huge load fall.

**END TRUCK WHEELS**

The end trucks become damaged over time, and they get worn out earlier when there are misaligned runways. Whatever the situation is, damaging wheels can lead to massive disasters if not replaced on time. You should be checking the truck wheels regularly and whenever you feel they need a change, go for it without wasting a minute.

**MALALIGNED RUNWAYS**

The strange scraping noise and the movement of wheels are abnormal then there is some issue with the tracks. This issue is very common and requires immediate attention because it can lead to the damaging of several important parts of the crane like truck wheels and others.

**FAULT IN POWER CIRCUIT**

The large machine requires a considerable amount of electricity to get on the work. The high demand for electricity doesn't ask for regular fuses, and that's why you should be aware of the fact that if the fuses are blowing daily, there are down faults in your power circuit. Pay immediate attention and get it corrected as soon as possible.

**POOR CONTACT**

If the contact between the contact bars and the collector is weak, there is another electrical problem raising its heads. Oxidization, misalignment, and carbon build-up can lead to such issues. The crane becomes hard to operate, and that's why you should prevent such problems from occurring.

**ELECTRICAL DANGERS**

The operator of the crane should pay keen attention to the whole process; otherwise, he might be putting his life on risk. When the crane isn't operated correctly, the surrounding can make the whole of the machine becomes electrical, i.e., the electrical current is flowing through the device, and the life of the operator is on risk.

**RESCUE PLAN IN CASE OF EMERGENCY**

**Working at Heights Rescue Procedures**

**Company Policy on Working at Heights Rescues**

**The implementation and maintenance of a safe work environment is the collective responsibility of all employees, contractors, and visitors to the jobsite. It is our company policy to provide prompt medical treatment when a worker is injured on the jobsite. To do this, workers may have to perform a working at heights rescue to bring down a worker who has fallen and is suspended in a safety harness.**

**This procedure applies to all managers, supervisors, forepersons, employees, subcontractors, and visitors of Tata Steel Limited Plant site.**

**Purpose of Working at Heights Rescues**

**When a worker falls and is suspended in a harness, it's important to rescue him as quickly as possible because of the following reasons.**

- **The worker may have suffered injuries during the fall and may need medical attention.**
- **When workers are suspended in their safety harnesses for long periods, they may suffer from blood pooling in the lower body. This can lead to suspension trauma.**
- **Suspended workers may panic if they are not rescued quickly.**
- **The event that led to the fall may create additional risks that need to be addressed.**
-

**Emergency Planning**

**The three main parts of emergency planning are:**

1) **Training**
2) **Creating an emergency plan**
3) **Outlining rescue procedures.**

**1) Training**

**All site personnel must attend a site-specific safety training session where they will review emergency response procedures and receive instruction on alarms and assembly areas.**

**Train a designated crew to perform the rescue. This crew must know how to use the equipment that is available to them at the jobsite and where they can find it. They should review the rescue procedure every two weeks with the crane crews.**

**2) Emergency Response Plan**

**If a worker falls and is suspended by a safety harness, implement the emergency response plan by following the steps below.**

1. **The site supervisor (or alternate foreperson) takes control of the situation.**
2. **The site supervisor sounds the emergency alarm—two long blasts from a horn. All workers in the immediate vicinity of the incident stop working. The site supervisor quickly evaluates the situation and identifies any further hazards that could arise.**
3. **The site supervisor or their designate goes to get help if workers are close by. If no one is close enough, the site supervisor calls for help.**
4. **The site supervisor calls 911 to notify local police, fire, and ambulance if required.**
5. **The crane operator remains on standby. The operator frees the hook and waits for further direction in case the designated rescue team must perform a basket rescue.**
6. **The site supervisor (or a worker assigned to the task) isolates the accident zone and its perimeter to limit further exposure.**
7. **The site supervisor (or a worker assigned to the task) moves all non-affected personnel to a safe zone or directs them to remain where they are.**
8. **The site supervisor enables radio silence on the jobsite, except for crisis communications from emergency responders. These communications are conducted on a pre-selected "emergency only" radio channel.**

9. **The site supervisor sends a designated worker to the site gate to meet the response team (police, medical, fire, etc.) and ensure that they have a safe access path to the accident scene.**

10. **The site supervisor assembles the emergency rescue team at the accident site as quickly as possible to determine the best rescue procedure for the situation.**

**3) Rescue Procedures**

**The following rescue procedures are ordered (A) through (D), with (A) being the preferred**

**Method and (D) being the method used when there is no other means of rescue.**

**A. Elevating Work Platform (EWP) Rescue**

**If an elevating work platform (EWP) is available on site and the suspended worker can be reached by the platform, follow the procedure below.**

1. **Bring the EWP to the accident site and use it to reach the suspended worker.**

2. **Ensure that rescue workers are wearing full-body harnesses attached to appropriate anchors in the EWP.**

3. **Ensure that the EWP has the load capacity for both the rescuer(s) and the fallen worker. If the fallen worker is not conscious, two rescuers will probably be needed to safely handle the weight of the fallen worker.**

4. **Position the EWP platform below the worker and disconnect the worker's lanyard when it is safe to do so. When the worker is safely on the EWP, reattach the lanyard to an appropriate anchor point on the EWP if possible.**

5. **Lower the worker to a safe location and administer first aid. Treat the worker for suspension trauma and any other injury.**

6. **Arrange transportation to hospital if required.**

**B. Ladder Rescue—if an elevating work platform is not available, use ladders to rescue the fallen worker with the procedure outlined below.**

1. **If the fallen worker is suspended from a lifeline, move the worker (if possible) to an area that rescuers can access safely with a ladder.**

2. **Set up the appropriate ladder(s) to reach the fallen worker.**

3. **Rig separate lifelines for rescuers to use while carrying out the rescue from the ladder(s).**

4. **If the fallen worker is not conscious or cannot reliably help with the rescue, at least two rescuers may be needed.**

5. **If the fallen worker is suspended directly from a lanyard or a lifeline, securely attach a separate lowering line to the harness.**

6. **Other rescuers on the ground (or closest work surface) should lower the fallen worker while the rescuer on the ladder guides the fallen worker to the ground (or work surface).**

7. **Once the fallen worker has been brought to a safe location, administer first aid and treat the person for suspension trauma and any other injury.**

8. **Arrange transportation to hospital if required.**

**C. Rescue from Work Area or Floor Below—if the fallen worker is suspended near a work area and can be safely reached from the floor below or the area from which they fell, use the following procedure.**

1. **Ensure that rescuers are protected against falling.**

2. **If possible, securely attach a second line to the fallen worker's harness to help rescuers pull the fallen worker to a safe area. You will need at least two strong workers to pull someone up to the level from which they fell.**

3. **Take up any slack in the retrieving line to avoid slippage.**

4. **Once the worker has been brought to a safe location, administer first aid and treat the person for suspension trauma and any other injury.**

5. **Arrange transportation to hospital if required.**

**D. Basket Rescue—if a worker has fallen and is suspended in an inaccessible area, you may need to perform a basket rescue. For basket rescues, the basket must be designed by a professional engineer in accordance with good manufacturing processes to withstand all loads to which it may be subjected. It must be kept on site at all times in an accessible location where it is clear of material or other equipment. Fit the rescue basket with appropriate rigging for quick hookup by the crane operator.**

**Always keep the following items in the rescue basket.**

1. **First-aid kit**

2. **Three lanyards equipped with shock absorbers**

3. **One full-body harness**

4. **Tag line attached to the basket at all times**

5. **Descent controller rescue device in good working condition**

6. **Secondary safety line to tie the basket above the headache ball of the crane.**

**To perform a basket rescue, follow the steps below.**

1. **Make sure preferred methods A, B, and C are not possible.**
2. **Notify the crane operator right away to position the crane to attach the basket.**
3. **While the basket is being attached, the crew leader checks that all safety rigging is done and all the required safety equipment is available.**
4. **With two rescuers in the basket, hoist it to a position that is above and as close as possible to the fallen worker. A designated worker on the ground guides the basket with a tag line. The designated worker must make sure that when the rescue basket reaches the right elevation, the door of the basket is facing the structural steel to provide an easy exit for rescuer #1.**
5. **Rescuer #1 exits the rescue basket and gets into a position to reach the fallen worker. When doing this, rescuer #1 must be tied-off at all times to either the structure or the rescue basket.**
6. **Rescuer #2, who is still in the rescue basket, lowers the line that will be used to retrieve the worker. Rescuer #2 attaches an extra lanyard to the line if required.**
7. **Rescuer #1 assesses the fallen worker for injuries and then decides how to proceed (i.e., treat injuries first, guide the fallen worker into the rescue basket, or lower the basket to the ground with the fallen worker attached to it).**
8. **Once the fallen worker has been brought to a safe location, administer first aid. Treat the person for suspension trauma and any other injury.**
9. **Arrange transportation to hospital. A designated worker must accompany the injured worker to hospital.**

**If the basket rescue is the method used, keep the following points in mind.**

- **Perform a basket rescue only when it is not possible to use conventional equipment to rescue the fallen worker in a safe manner.**
- **Never exceed the maximum number of workers in the basket as indicated on the nameplate.**
- **Ensure that a competent worker inspects the crane and equipment being used prior to lifting rescuers.**
- **Always equip the crane with a fail-safe mechanism to prevent the boom from descending in the event of a power source or system failure.**
- **Always maintain an adequate means of communication between the rescuers in the basket and the crane operator.**
- **Ensure that workers in the rescue basket wear full-body safety harnesses attached to a lanyard and anchored to appropriate points in the basket at all times.**

- **Make sure that all rigging used to attach the rescue basket to the hook of a load line has a safety factor of 10 against failure. There should be a safety line attached to the load line directly from the basket.**
- **Do not allow cranes to travel while rescuers are in the basket.**
- **Do not use suspended rescue baskets during high winds, electrical storms, snow, ice, sleet, or other adverse conditions that could affect the safety of personnel on the platform or in the basket.**

**Post-Rescue Procedure**

**All non-affected workers should remain in the designated safe gathering zone until the site supervisor notifies them to do otherwise.**

**The site supervisor and health and safety representative should**

- **Begin the accident investigation.**
- **Quarantine all fall-arrest equipment that may have been subjected to fall fatigue effects and/or shock loading for further investigation.**
- **Secure the area (the OHSA requires that an accident scene not be disturbed where a fatal or critical injury has occurred).**
- **Determine whether the jobsite-specific rescue and evacuation plans were followed as designed.**
- **Record modifications or additions to the plans that the rescue team deems necessary.**
- **Record all documented communications with fire, police, MOL, and other contractors involved. (When a fall occurs and is arrested, you must notify the MOL in writing.)**
- **Record all documented statements from employees, witnesses, and others.**
- **Save all photographs of the incident.**
- **Record all key information such as dates, time, weather, general site conditions, and specific accident locales including sketches of the immediate incident area, complete with measurements if applicable.**

### 4.7. Emergency caused by Heavy Vehicles Transportation in Tata Steel limited Sahibabad

Workplace ***transport*** is the second biggest cause of fatal ***accidents*** in the workplace and ... It can also include ***cars***, vans and ***large*** goods ***vehicles*** when these are ... Such activities are carried out in most business ***sectors*** and by a diverse ... ***due*** to inadequate steps and handrails,

***Heavy-duty vehicles*** have only limited ability to manoeuvre out of incipient ***accident*** producing situations and even less ability to withstand **crashes o**r a complete lack thereof

Fast facts as mentioned earlier, the most common cause for many trucks rolling over is the driver's inability to assess the combination of speed, heavy loads, and cornering.

Securing the load is also an important factor in vehicle stability. The following list highlights the main risk factors for rollover: • High centre of gravity. • High speed. • Load displacement. • Bad road conditions.

Driver behaviour, aggressive driving and distraction are key issues to address. • Secondary fault, such as collision with another vehicle, or skidding towards the edge of the road. What happens to the vehicle?

Wheels on driving axles are most often the first to lift up. • For semitrailers, the trailer wheels are the first to lift up. • For vehicles with trailers, the trailers are usually better balanced than the vehicle.

Basic measures include: • Choose the right vehicle for the job/load. • Review loading and unloading procedures. • Check the load securing regularly, and before and during the journey. • Choose the best route possible for your vehicle and load. • Update your knowledge of specific risks for your vehicle. E.g. when you have changed tyres or suspension, vehicles properties may have changed. • Speak openly about risks and maintain a good attitude to safety. Prevent and think ahead. The best way to achieve a good safety culture is to take control of long-term planning. For this, education and information are important. Below is a list of areas the company can work on with safety personnel: • Add rollover risks to the company's vehicle safety policy. • Arrange introductory courses and further training on rollover risks. • Hold regular safety meetings where rollover risks are a regular item on the agenda. • Keep a guide (like a driver's manual) with a summary of rollover risks. • Provide familiarisation training for drivers of new vehicles by a representative from the supplier. • Ensure close cooperation between the company and safety representatives. • Know the risks for each type of vehicle in the fleet.

**Roads**

You travel on everything from the narrowest gravelled roads to wide motorways with the best possible asphalt and safety barriers. It is important to keep the road's load bearing capacity in mind, as well as to make your own judgement of the conditions. Have natural phenomena such as ground frost or floods affected the road's condition? Be especially observant of the road's edges. Other, more unusual risks come as wheel tracks and the road's banking, which must be correctly angled to counteract lateral forces. Incorrect banking can pose great risks to overall traffic safety and result in lane departure or rollover risk.

**Weather**

Weather and wind are common conversational topics, but for a professional driver they are essential to your risk assessment for your journey. In addition to safety and equipment checks before setting out, it is important to consider rollover risks. Keep the weather and the vehicle in

mind in relation to your route. In a worst-case scenario, you may be driving a vehicle with a covered trailer over a heavily trafficked bridge with signs warning of high winds, while freezing rain has been predicted. In a best case scenario, you will be driving a short distance in nice summer weather on a motorway. Always take the weather into consideration in your risk assessment and ask traffic management for help if you are unsure.

**Day and night**

Different light conditions bring different risks. You may be driving on a poorly lit road where one second of inattention can put you at the edge of the road and in risk of rollover.

But even if you are driving on a main road, you may experience risks such as dazzle, ice, frost or wildlife that can cause you to make sudden changes to your path, with the chance of rollover. Remember to adapt your speed and dip your headlights well in advance. Traffic situation a tough traffic situation can be both stressful and risky. Heavy traffic or emergency situations (accidents/obstacles) force you to make quick decisions that affect the vehicle's ability to stay balanced and on the road. Keep times and your route in mind to enable you to avoid the worst situations by planning ahead. The vehicle may not be best suited for various road, weather and traffic conditions. It may have a high or low centre of gravity depending on the type of vehicle or load carried.

**4.8. Cellars units Structure failures &Fires**

**MAIN HAZARDS**

Some types of mechanical **failure** mechanisms are excessive deflection, buckling, ductile fracture, brittle fracture, impact, creep, relaxation, thermal shock, wear, corrosion, stress corrosion cracking, and **various** types of fatigue.

Structural integrity and **failure** are an aspect of engineering which deals with the ability of a structure in a well- designed system, a localized **failure** should not **cause** immediate or.... Its collapse resulted in cast iron being replaced by **steel** construction and cellars

**Structural failure** occurs because of forces acting on the **structure**. These can be static forces (stationary forces) due to the **structure's** own weight or the load that it is carrying, OR dynamic forces (moving forces) produced by the wind, sea, vehicles, people, etc

**Structural Damage – The Interior Signs:**

Signs of structural damage can include:

- Bowed Walls
- Gaps where your walls and floors meet
- Drywall cracks, especially around door frames
- Cracked basement walls – horizontal, stair-step or vertical
- Uneven or bouncy floors
- Sticking windows or doors

**Structural Damage – The Exterior Signs:**

Stair-step cracks in brick or stonework

Front porch or stairs pulling away

Gaps in windows or door frames

Sometimes something small, like a series of drywall cracks, can be a sign that you have a much larger structural problem. It's very important for to understand the signs and perform periodic foundation inspections. Other key points are drainage and grading factors, which are either set up to keep water away from your foundation or not. Make sure gutters are pointing away and that dips and slopes in your landscape aren't a collection spot for rainwater – especially if you're in an area with a high-water table or have non-porous soils surrounding foundation.
Various structural failures that have reached limit state of collapse & serviceability were investigated.
Following are the reasons for failures:

1. Limit state of collapse due to stability
2. Limit state of collapse due to welding
3. Limit state of collapse due to unsatisfactory filling of old well
4. Limit state of serviceability due to excess deflections
5. Limit state of serviceability due to incorrect fabrication of steel
6. Limit state of serviceability due to orientation of columns

All of the above failure may have been avoided by following fundamental concepts of structural design.

**PREVENTIVE MEASURES**

**Best Practices to Prevent Structural Failures**

Structural integrity can be taken for granted, but failures can be sudden and unforgiving. Train miners and supervisors on these simple measures to help prevent these potentially catastrophic incidents. Good Housekeeping Structural damage can go undetected due to poor housekeeping; accumulations of wet material can cause corrosion.

Remove spillage from around the base of structures, columns and off the flanges of horizontal beams. Prevent further spillage and damage by front-end and skid-steer loaders and forklifts. Inspections Safety and supervisory personnel should inspect structures during audits, and miners should be trained to notice and report potential structural problems.

Periodically, a structural engineer should perform a formal assessment of structural integrity. Examine steel, concrete, wood, masonry, aluminium and fibre reinforced polymer. Take all appropriate personal safety precautions while performing inspections, such as using fall protection at height and following safe confined space entry procedures.

What to look for (signs of damage that can be spotted and reported by anyone): • Cracked, corroded, delaminated or flaked metal • Holes, thinned or missing sections of beams or columns • Bent, buckled or crushed beams or columns; missing or damaged struts or braces • Damage from equipment impact • Missing, lose or corroded bolts • Cracked, broken or inadequate welds • Bulging

or deformed bin sides or tops; gapped joints • Damaged building siding • Cracked, broken, spelled or undermined concrete

**Causes for structure failure**

Defective construction that causes failure may be due to numerous reasons that may not be easy to predict before or during the construction. The major causes of structural failure are defective designs that have not determined the actual loading conditions on the structural elements. Inferior construction materials may also be the cause since the loads are calculated for materials of specific characteristics. Structure may fail even if the design is satisfactory, but the materials are not able to withstand the loads. Employment of unskilled labour on construction work is another reason for structural failures. Therefore, it is important that the owners, designers, and builders are fully conscious of the reasons of failure, and undertake all preventive measures.Bursting of pipelines, overflowing of sump pit, Fires due to high temperatures

**4.9 Heating Furnaces (Zinc, Annealing).**
**MAIN HAZARDS**
**Explosions in Heating Furnace Failures due to**

1. Gas carburising and carbonitriding

2. Neutral hardening and annealing

3. Gas nit riding and nitro carburising

4. Brazing of metals

5. Low pressure carburising and high-pressure gas quenching

6. Sintering of steels

Furnace condition diagnosis

Apart from the tube failures as routinely seen, the inspection revealed unexpected damages on several recuperated and sealing gaskets between the mounting flanges. Analysis led to believe that the deterioration was primarily due to an enduring exposure to high temperature during service. The higher-than-normal temperature can be triggered by the following and propagate by their combining effects. • Insufficient insulation leads to a high heat flux to the structure of the recuperator.

• The supply of combustion fuel and air is out of balance with either too much fuel or too less air to the individual burner units, which prolongs the combustion reaction beyond the radiant tube and further inside the recuperator.

• Air leakage through the flanges due to depleted or missing gaskets provides extra air for post-combustion possibly taking place at the recuperator

. • Air leakage also distorts the normal air supply and transport through the outer shell of the recuperator and weakens its cooling effect on the structure.

• Any misalignment and/or limited

Fires may be caused by overflowing of molten zinc, Adequate Protective clothing to be provided to the workers, Loading / Feeding of Zinc to furnace

**PREVENTIVE MEASURES**

All care to be taken during manual feeding Zinc slabs/ingots.

Barricading to be ensured

Proper usage of PPE's to be ensured.

**4.10 Rupturing in HCL Tanks/pipelines**

Main Hazards

The tanks may rupture or leakage may occur in pipe lines due to non performing of valves or coupling gland leakages (Maintenance schedules not in place.

Preventive Measures

Routine maintenance to be followed o with thickness checks of tank walls.

All pressure gauges to be properly timely calibrated.

Proper check of pumping motors.

Maintenance of Dykes of the tanks and proper housekeeping ensured.

**5.1 SIREN /HOOTERS**

**1. Community Alert Siren**

The purpose of the Community Alert Sirens is to alert the citizens and the Volunteer Fire Department members of an emergency. When people in town hear the sirens, it tells them there's an emergency going on somewhere and it helps with traffic.

**2 sirens Means**

A civil defence siren (also known as an air-raid siren or tornado siren) is a siren used to provide an emergency population warning to the general population of approaching danger. It is sounded again to indicate the danger has passed.

**Different Siren**

Sirens are used on emergency service vehicles such as ambulances, police cars, and fire trucks. There are two general types: pneumatic and electronic. Many fire sirens (used for calling the volunteer fire fighters) serve double duty as tornado or civil defence sirens, alerting an entire community of impending danger.

**Sirens for Various Types of Emergencies**

Sirens are used on emergency service vehicles such as ambulances, police cars, and fire trucks. There are two general types: pneumatic and electronic. Many fire sirens (used for calling the volunteer fire fighters) serve double duty as tornado or civil defence sirens, alerting an entire community of impending

**How does siren work**

It consists of an electric motor which turns a fan called the “rotor” or “impeller”, spinning inside a slotted drum called the “stator”. The first job of the rotor is as a centrifugal fan. It pulls air into the siren axially through the intake and blows it out radically through the holes in the stator.

**Intermittent Siren for different types of emergencies**

Any emergency like fire, leakage, spillage within the plant or work area is termed as a LOCAL EMERGENCY. Siren Pattern: On actuation of fire / emergency alarm by breaking the glass, the following will be activated: * Indication on panel board on main gate with sound of hooter.

**Frequency of Siren Whistling**

**Gas Leak 3 Seconds. Five times with a break of 5 Seconds**

**Fire 5 Seconds Three times with a break of 5 Seconds**

**All Clear One Minute continuously**

**5.2 ESTABLISHING AND IMPLEMENTING EMERGENCY RESPONSE PROCEDURE:**

During any emergency it is essential that good communications are established between the Plant and all other involved parties. It shall be the responsibility of the Plant Head for setting up and using the plant facilities as appropriate.

Emergency Response Team (ERT)

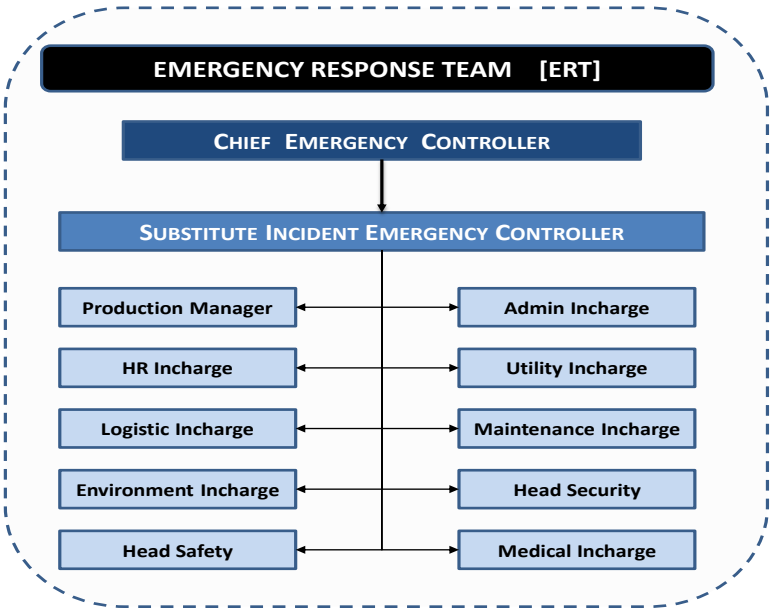
An emergency response team has been formed comprising key personnel of Tata Steel Sahibabad Management.

All the members shall have a deputy to replace them if necessary. The purpose of the Emergency Response Team is to manage the orderly response to an emergency. Emergency team comprising of the following member:

| | | |
|---|---|---|
| 1. | Chief Emergency Controller | Mr. Mukesh Kumar |
| 2. | Substitute Incident Emergency Controller | Mr. Ejaj Ahmad |
| 3. | Production Manager | Mr. Ejaj Ahmad |
| 4. | Administration In charge | Mr. Saurabh Jha |
| 5. | Environment Head | Mr. Ravi Prasoon |
| 6. | Utility In-charge | Mr. Mr. T.N. Shukla |
| 7. | Maintenance In-charge | Mr. Gotum Parida |
| 8. | HR In-charge | Mr. Kanu Agarwal |
| 9. | Logistics In-charge | Mr. Amit Sharma |
| 10. | Packing and Dispatch In-charge | Mr. Ashutosh Sharma |

| | | |
|---|---|---|
| 11. | Store In-charge | Mr. Chandresh Sharma |
| 12. | Doctor | Dr. Samantha |
| 13. | Security Incharge | Mr. Sanjeev Dogra |
| 14. | Safety Incharge | Mr. Aakash Kumar Tiwari |
| 15. | Purchase Incharge | Mr. Ankur Garg |

## 6.0 Roles and Responsibilities of Various Teams




### A. Chief Emergency Controller (CEC)

- Plant head will be the Incident Emergency Controller for Tata Steel Sahibabad.
- He will be the overall controller of the Emergency Situation.
- He will be having all required power to handle the emergency.
- All employees are obliged to follow the instruction of him during emergency.
- He will advise to all ERT Members for their responsibility during Emergency.
- He will take the decision for clearing the Emergency Situation and Emergency Team member shall follow the same.
- He will be the ultimate authority to take decision for outside emergency services require or not.
- Mitigating the impact of the emergency on operations and services
- Coordinating post incident recovery strategies
- He will report to Head Office as per requirements.

### B. Incident Emergency Controller (IEC)

- In absence of Incident Emergency Controller, he will manage the emergency.
- Production Head will be the Substitute Incident Emergency Controller.
- He will have same responsibility as Chief Emergency Controller.

### C. Production Manager (Incident Controller)

- The Overall responsibility lies with the Production Manager for ensuring that a Proper

arrangement and necessary support service are in place for Effective Implementation of this procedure.

- Immediately arrange for an informal on spot meeting of the emergency members preferably at the conference hall to stock of the situation and initiated necessary measures.
- Take on spot decision on the procedure to be adopted based on the nature and extend of the emergency.
- Authorized committee members and other personal to carry out the specified task as described in the ERP / on spot meeting.
- Arrange all the required facilities through administration for the necessary medical aid, manpower, conveyance etc.
- Communicate the occurrence of emergency and steps being taken, to client, and other concerned officials Head office.

**D. Admin In-charge**

- Attend the on-spot emergency meeting. Ensure necessary first aid facilities are available to meet the emergency.
- Ensure necessary arrangements for medical evacuation of injured and shifting to hospital are recommended by the medical practitioner / first aid attendant.
- Coordinate with external agencies such as local police, fire station, ambulance etc.
- Inform the legal and statutory concern and follow other local requirements.
- Organize for the Vehicles if required to transport the evacuated persons to a safer place
- Inform the family of the injured person.

**E. Emergency Team:**

- Safety Head/ Incharge will be supporting Incident Emergency Controller during emergency situation.
- Inform the Plant Head and co-ordinate the Evacuation process
- Organize for Fire Fighting and Aid treatment immediately.
- Co-ordinate and Assist in the evacuation process.
- Report the accident to plant management.
- Collect all relevant information, witness for investigation.
- Investigate the accident and suggested suitable remedial measures.
- Ensure implementation of the remedial measures.
- Create awareness among the staff / students regarding the Emergency Evacuation Procedure

through various interactions.

**F. Utility In-charge**

- Make necessary arrangements for Plant & Machinery, operators and drivers required for rescue operations as decided in the on spot meeting.
- Make necessary arrangements for electricity and water required for rescue operations as decided in the on spot meeting.
- Arrange illumination as required for the rescue and other emergency operations.
- Co-ordinate and Assist in the evacuation process.

**G. Maintenance In-charge**

- Make necessary arrangements for any equipment, operators required for rescue operations as decided in the on spot meeting.
- Make necessary arrangement for Corrective Emergency Maintenance.
- Co-ordinate and Assist in the evacuation process.

**H. HR In-charge:**

- Collect details of manpower working in the area during emergency.
- Ensure the availability of first aid facilities and emergency vehicles so as to shift the victim to the hospital is necessary as advised by accounts and administration in charge.
- To carry out head count to find out the mission personnel (if any) at assembly point.

**I. Logistics In-charge:**

- Make necessary arrangements for movement of all goods and equipment for rescue operations as decided in the on spot meeting.
- Co-ordinate and Assist in the evacuation process.

**J. Packing and Dispatch In-charge:**

- Co-ordinate and Assist in the evacuation process.

**K. Store In-charge**

- If required, arrange necessary materials like tools & tackles for rescue operation as advised by the accounts and administration in charge.

- Assist accounts and administration in charge in his operation.

**L. Medical Team: (MEDICAL DOCTOR / FIRST AIDERS):**

- Rushes to the location with medical aid.
- If the First Aider finds that the injured can be attended to in the First-Aid center he will bring the injured to the First-Aid center for treatment, First Aid Box are keeping inside the Security Cabin of Main Gate.
- If treatment in the First-Aid center is not advisable, they will send the injured to approved Hospital.

**M. Fire Wardens:**

- Fight the Fire if it is minor and safe for them to do so, by suitable type of Fire Extinguisher which is mounted on the wall in Plant.
- Try to prevent the spreading of fire by isolation.
- Ensure all the people are evacuated
- To manage the firefighting team.

**N. Engineers / Supervisors:**

- Convey the message to First-Aid Team, EHS Officer
- Assist in the evacuation of personnel
- Ensure that everyone in their team is evacuated by taking a Roll call at the Assembly point with the help of the Attendance sheet.

**O. Operators/All employees:**

- Try to reach the nearest Assembly Point and follow the instruction of the emergency team members.
- Employees at work are to take care of others and to co-operate with the management

**P. Visitors**

- Persons employed at or visiting or supplying a place of work shall not interfere with or misuse things provided for health, safety and welfare. Nor will they prevent or hinder any person injured at the place of work.
- Try to reach the nearest Assembly Point and follow the instruction of the emergency team members.

**Responsibility of Organization:**

It is the duty to ensure the health, safety and welfare at work of all employees of TATA BSL LTD. will provide an environment that is safe and without risk to health, with adequate facilities for the work. The company will ensure safety and absence of risk to employees when handling dangerous chemicals, lifting any object, strong or transporting any goods concerned with their work, and provide correct training in such operations. Whenever necessary, protective clothing or equipment shall be provided at no charge.

**Declaration of Emergency**

The Chief emergency controller shall declare the emergency and during his absence substitute of Chief emergency controller shall declare the emergency. The emergencies shall be declared by the established communication system such as alarm or siren.
Emergency Control Centre:

The emergency control Centre will be at Admin room, which is located at Beside Security Room, apart from the Plant Building

**Emergency Communication System**

- The continuous siren / alarm is an indication to everyone at Plant that an emergency situation has arisen and if so directed, they may have to stop the work and move towards the Assembly point follow through Emergency Escape Arrow Signage displayed at plant.
- The alarms shall be distinctive and recognized by all personnel working in the plant as a signal to evacuate the work area or perform actions identified in the Emergency Response Plan.

**Escape route & Assembly Point**

- Escape route and Health and Safety Protection Signage has been displayed & Assembly points has been identified in Plant and clearly marked Assembly Point which is located at beside the main security gate or Admin Office.
- In case of emergency all employees other than members of the emergency response team shall reach near the assembly point and wait for instruction.

**Roll Call (Head count)**

- Roll call is a system for accounting for personnel following an evacuation and will be performed by the HR Team and front-line supervisors.

**Termination of Emergency**

- The incident emergency controller is responsible for the termination of the emergency. Once the emergency has been terminated, the Emergency Response committee shall conduct an

inspection of the facilities affected by the incident and complete an initial investigation report.

- Reassessment of the work area must be complete prior to recommencement. Also, resumption of the work can be carried out only after the proper head count.

**6. EMERGENCY RESPONSE MANAGEMENT FLOW CHART**

A flow chart outlining the typical flow of operations that should be followed in an emergency response management is annexed

**7. EMERGENCY RESPONSE EQUIPMENT:**

- Overall Plant Layout/Emergency Rescue Plan
- Firefighting equipment
- Emergency Vehicle/Ambulance, Hard stretcher,
- Breathing sets
- Torch light / Emergency light
- First Aid Equipment
- Siren/Megaphone
- Fireman Axe
- Shovel
- Full body Harness
- Occupational Health Centre (Available at Fab-I)

**8. EMERGENCY RESPONSE TRAINING:**

- The Emergency Team members are trained on the Emergency Procedures.
- All employees in the plant are trained on what action to be taken in case of emergency.
- Selected Team (Consists of Supervisor, Engineer) shall receive the training on Fire Fighting and First Aid/Basic Life Support Training.

**9. PERIODIC TESTING/MOCK DRILL OF EMERGENCY RESPONSE PLAN:**

- The Emergency plan will be tested i.e. Mock Drill is conducted once in a 6 (Six) month.
- All Assembly Points shall be known to all employees including contract labor.

**10. Accident Response Procedure (General):**

- Give first aid to the causality if you are a trained First Aider. If not, never leave the causality alone or unattended.
- Emergency Procedure:

- Initiate any emergency procedures when notified of an accident by contacting Tata BSL
- Emergency number

Give the following information to the operator:

- Who you are?
- Where you are?
- Which Location/Dept./Area are you in?
- What is your contact number?
- What is the emergency?
- Medical support required?
- Fire Support required?

❖ Don't hang until it is confirmed by the operator that all the required information received by the operator. Keep in touch with emergency service until they reach you.
❖ If possible, take the causality to the nearest hospital.
❖ Inform your immediate superior and your safety officer/plant representative.

**ONSITE EMERGENCY PREPAREDNESS PLAN**

**IN THE EVENT OF FIRE/ACCIDENT INSIDE THE UNIT**

**Emergency Preparedness Plan**

**Synopsis of the plan:** The plan has been formulated based on our activities. Emergencies are of two types' viz. Minor & Major. Both types of emergencies will be handled by trained personnel of the factory as they are conversant with the type of emergency and its effect.

**Minor Emergencies:** The aim is to minimize and control the situation by implementing the situation in case of minor emergency.

**Major Emergencies:** It involves two simultaneous operations. One is to control the source of emergency and the other is to control or minimize the loss.
Appended is a complete breakdown of the do's and don'ts in case of an emergency in the form of a Fire. Power Failure or other accidents.

Natural and man-made disasters not only affect the commercial and economic functioning of the industry, but they also play in important role in jeopardizing food safety in an establishment in such situations, in case of emergencies, it is important to lay down prescribed guidelines and evasion processes so as to minimize the potential loss of food and reduce the risk food borne illness.

- The objective of the onsite emergency plan is to formulate and provide an organization capable of taking fast and effective actions in an emergency situation in order to
  - Plant in-house personnel
  - safeguard the property and environment
  - have effective rescue and treatment of casualties
  - bring the incident under control fast and effectively
  - preserve relevant records and equipment for subsequent enquiries
  - ensure rapid return to normal operation after the emergency

***A, Personal Injury/Electric Shock***

Action to be taken during Personal Injury

1. Take victim in adequate ventilation/Clear area.
2. Provide First aid if you are a First Aider otherwise take Help from First Aider
3. Inform to the area Engineer/ Supervisor/ Admin
4. Follow instruction of Superior
5. Send the Victim to Hospital for further treatment.

In an electrical accident, there may be one or more causalities due to electrocution. Generally causalities will be unconscious / or might have mental shock.

1. Immediately put off the power supply and ensure there is no live line contact. (remove the injured from the live conductor circuit with the help of a dry piece of wood or cloth)
2. Remove the injured from the location and provide adequate ventilation. (If required)
3. Render artificial respiration to the injured immediately either through mouth or through resuscitators and massage the hand palm and chest. (If he is unconscious)
4. Inform to the Doctor.
5. Report the accident case to the EHS manager for finding the root cause and investigate in detail
6. Do not try to rescue the casualties before cutting off the electrical supply; even the supply has already tripped. Alternatively, you should separate the casualty from the electric wire by means of non-conductor such as wood, stick or nylon rope
7. In case of mental shock, but conscious, make him comfortable by talking and reassuring him.
8. Remove the casualty to the nearest clinic/hospital as fast as possible with the available transport.

**Burn: -**

- Possibility of Burn from Fire, Canteen/Kitchen, Electrical, Laminator and Chemical. Provide First Aid as per degree of Burn if you are a rained First Aider.
- Immediately send the Victim to nearest Hospital.

***B, Fire Emergency***

ACTION TAKEN IN CASE OF FIRE: Whenever fire is spotted by anyone, he reacts to the emergency to control the fire. He takes the following action: -

1. Shout "FIRE, FIRE, FIRE"!
2. Press the "FIRE ALARM" Button to sound the "SIREN" and inform the On Duty Security Officer about the fire.
3. Put off the Machine / Electrical Power Supply.
4. Close all window of the bay WHERE INFLAMABLES AREKEPT.
5. Isolate Oxygen or Acetylene Cylinders if in use
6. Move If any LPG Gas Cylinders near by the incident out of the area.
7. Reach for appropriate type of fire extinguisher! Or Ask the Co-worker, or if possible himself to

take the Fire Extinguisher on the spot to control the fire.

8. Use it to put off the fire by PASS method.
9. Ask the other workers to remove the flammable items and other important material from the Store.
10. Inform the Chief Emergency Controller, Section In charge about the incident.
11. Remove all other valuable, flammable Materials from the location of incident.
12. Remove all workers of his section to the "SAFE ASSEMBLYAREA".
13. Get a Daily Attendance Print Out from HR Department of the shift.
14. Check all workers are present in the Assembly area while taking of "ROLLCALL".
15. If anyone found missing, check inside and evacuate him to the safe area.
16. If the fire is not in control, inform Chief Emergency Controller to call Co TATA BSL control room and Fire station.
17. Be on the site to control the activities.
18. Evacuated injured to First Aid Center.
19. Post sentries around the area.
20. Suggest remedial measures and implement.
21. Dispose the waste/salvage as per directions.
22. See hazardous materials are removed as per mitigate procedure and dumped in scrap yard.
23. See no other unwanted persons are there.
24. Study the root cause for this incident.
25. Carryout the detailed analysis of the problem.

***C. Oil/Chemical Spillage (HCL in tanks or rupture of transporting pipe lines :-***

**<u>The following precautions to be taken to avoid above Environmental Accidents:-</u>**

1. Avoid handling of leaky containers/drums.
2. Ensure that the sealing caps of containers are properly tightened.
3. Do not carry out the hot work in the vicinity of flammable material such as Chemicals, HSD & Transformer oil tanks.
4. For Carrying out hot work near these tanks, keep the DCP/ABC type of fire extinguisher near the work area and obtain work permit from your seniors.
5. If any of the containers if found leaky, inform the concerned supervisor immediately.
6. Use proper Personal Protective Equipment's while handling of Hazardous Chemicals/wastes in the Shop floor.
7. Take proper care of the equipment's so that the environment remains protected. In case of any

mal function inform to the supervisor immediately.

8. Avoid direct contact of Hazardous chemicals.
9. Ensure that while handling of transformer oil drums/Chemical drums/Diesel storage drums the spillage kit is readily available.
10. While doing any excavation ensures that the underground utility lines are not damaged. In case any of the pipelines is found leaky inform the immediate supervisor.
11. Do not dispose any items (chemicals) into Nalla/drainage flowing from within the Factory/plant premises.
12. You shall not conduct any act which may give rise to any environment related incidents (e.g. Smoking, uprooting of plants, disposing of waste materials in improper way.)

**For information regarding hazardous chemicals refer to Material Safety Data Sheet (MSDS/SDS).**

***D, Gas Leakage and Explosions***

Emergency and Safety Information

Gas leakage and Explosions

A gas leak refers to a leak of natural gas or another gaseous product from a pipeline or other containment into any area where the gas should not be present. Because a small leak may gradually build up an explosive concentration of gas, leaks are very dangerous.

Pure natural gas is colourless and odourless and is composed primarily of methane. Unpleasant scents in the form of traces of mercaptan are usually added, to assist in identifying leaks. These odours may be perceived as rotting eggs, or a faintly unpleasant skunk smell. Persons detecting the odour must evacuate the area and abstain from using open flames or operating electrical equipment, to reduce the risk of fire and explosion.

The gas company is required to inspect gas meters and inside gas piping from the point of entry into the building to the outlet side of the gas meter for gas leaks.

In the event of a gas leak or suspected leak

1. Stop the gas flow at the container - for tanks, turn off the Tank Emergency Shut off valves (there will be two of these for tanks with liquid off takes, i.e., where it is used for filling vehicles or cylinders); for propane cylinders, turn off the cylinder alive; for butane cylinders, turn off the regulator.
2. Turn off all naked flames and eliminate all sources of ignition BUT do not turn electrical switches on or off.
3. If leak is indoors, open all windows and doors, to disperse the gas.
4. In the case of cylinders, disconnect the cylinder and move it outdoors to an open area.
5. If the leak cannot be stopped or a significant leak has occurred, evacuate the premises.
6. Contact your installer and contact the emergency service.

In the event of fire

1. Contact the fire brigade and advise them that an LPG container is on the premises.
2. Turn off the gas supply at the LPG container if it is safe and practical to do so.
3. Evacuate the building
4. Contact the emergency immediately.

For further information on any of the above, consult the LPG/Hydrogen/Ammonia/Nitrogen Safety Data Sheet to be made available at desired locations.

NATURAL GAS EXPLOSION SAFETY TIPS

Natural gas has no odour of its own. That's why gas companies usually add an odorant to it. This allows you to smell the gas, should there be a leak. This safety precaution has saved thousands of lives over the years, but most people still don't know what to do if they smell gas and suspect there might be a gas leak. If you walk into your kitchen and smell that distinctive odour, the first thing you might think of is to turn on the lights. But the small electrical charge that occurs when you flip the light switch is enough to set off the gas when there is sufficient accumulation.

Below are a few basic safety tips to avoid a gas explosion in the plant.

- Don't use your phone. Go outside to make a call.
- Don't turn on a light or anything electrical.
- Don't light a match.
- Let everyone in the house or building know and then leave immediately.
- Have all gas appliances, chimneys, furnaces, vents, and gas lines in your home or business inspected each year.
- Make sure there's at least one working fire extinguisher in your home or office.
- Follow manufacturer's instructions for the use & care of gas appliances & equipment.

**Gas**

Precautions to be taken and laws must comply with when working with gas

The following guidance focuses specifically on the safe use of gas as a fuel in the workplace. It is commonly used as a fuel for heating, welding, cutting and for processing products. Anywhere a flame is needed.

Precautions and legal obligations.

1. Common gas related hazards
2. Gas safety precautions
3. Gas safety legislation

**Common Gas related Hazards**

Gas can be supplied from the mains supply or a storage tank. It can also be supplied from smaller portable cylinders used close to the work site. Types of gas commonly used in the workplace, include

- Liquefied Natural gas
- Hydrogen gas
- Nitrogen Gas
- Ammonia Gas
- There are a number of risks when using gas such as explosion from damaged, overheated or poorly maintained cylinders, pipes equipment or appliances. There is also the risk of carbon monoxide poisoning and burns caused by contact with flame or hot surfaces.

**Carbon monoxide poisoning**

When gas does not burn properly, or is used in an area without adequate ventilation, it produces excess carbon monoxide (CO) which is a colourless and odourless gas. This can happen regardless of the type of gas being burned, whether from cylinders or a mains supply.

When inhaled, carbon monoxide binds with the haemoglobin in the blood and reduces the blood's ability to carry oxygen. This can result in death.

There is a risk of carbon monoxide poisoning where

- there is not adequate ventilation in the room where the appliance is located
- a flue or chimney is blocked and cannot vent the system properly
- An appliance has not been fitted and regularly maintained by a competent person.

Carbon monoxide poisoning can kill within a matter of hours, so it is important to be aware of the risk and symptoms. These include

- Tiredness
- Drowsiness
- Headaches
- Nausea
- Chest and stomach pains.

In case of a gas leak

- Ensure all people and pets are evacuated from the house immediately.
- Leave the doors open and immediately call 911, the local fire department, or the utility company's emergency number.
- Do not make the call from within the house, as this action may ignite the gas.

**LNG Safety**

As a liquid, LNG is not explosive. LNG vapour will only explode if in an enclosed space. LNG vapour is only explosive if within the flammable range of 5%-15% when mixed with air.

When LNG spills on the ground or water it vaporizes quickly and leaves behind no residues. LNG spills on water do not harm aquatic life or damage waterways in any way. As LNG vaporizes, the vapour cloud can ignite if there is a source of ignition, but otherwise LNG dissipates completely.

Liquefied Natural Gas (LNG) vapour is initially heavier than air, after LNG vapours (methane) become warmer than -160°F (-106.7°C), they become lighter than air and will rise and disperse rather than collect near the ground.

The insulation, as efficient as it is, will not keep the temperature of LNG cold by itself. LNG is stored as a "boiling cryogen," that is, it is a very cold liquid at its boiling point for the pressure it is being stored. Stored LNG is analogous to boiling water, only 470°F [243°C] colder.

***E, Earthquakes***

Stay as safe as possible during an earthquake. Be aware that some earthquakes are foreshocks, and a larger earthquake might occur. Minimize your movements to a few steps that reach a nearby safe place and stay indoors until the shaking has stopped and you are sure exiting is safe.

**<u>If indoors</u>**

1. DROP to the ground; take COVER by getting under a sturdy table or other piece of furniture; and HOLD ON until the shaking stops. If there is not a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.

2. Protect yourself by staying under the lintel of an inner door, in the corner of a room, under a table or even under a bed.

3. Stay away from glass, windows, outside doors and walls, and anything that could fall, (such as lighting fixtures or furniture).

4. Stay in bed if you are there when the earthquake strikes. Hold on and protect your head with a pillow, unless you are under a heavy light fixture that could fall. In that case, move to the nearest safe place.

5. Use a doorway for shelter only if it is near you and if you know it is a strongly supported, load bearing doorway.

6. Stay inside until the shaking stops and it is safe to go outside. Research has shown that most injuries occur when people inside buildings attempt to move to a different location inside the building or try to leave.

7. Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on.

## *F MEDICAL EMERGENCY*

1. Call medical Emergency phone number:

   - ❖ Ambulance:
   - ❖ First AidersAnexure-5

2. Provide the following information:

   - ❖ Nature of medical emergency
   - ❖ Location of the emergency (address, building, room number),
   - ❖ Your name and phone number from where you are calling.

3. Do not move victim unless necessary.

   1. Call the following personnel trained in CPR and First Aid to provide the required assistance prior to the arrival of the professional medical help:
   2. If trained First Aider are not available, as a minimum, attempt to provide the following assistance:
      - Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
      - Clear the air passages using the Heimlich maneuver in case of choking.
      - In case of rendering assistance to personnel exposed to hazardous materials,

## *G. REVIEWING & REVISING OF ERP:*

The ERP shall be reviewed / revised in the following circumstances:

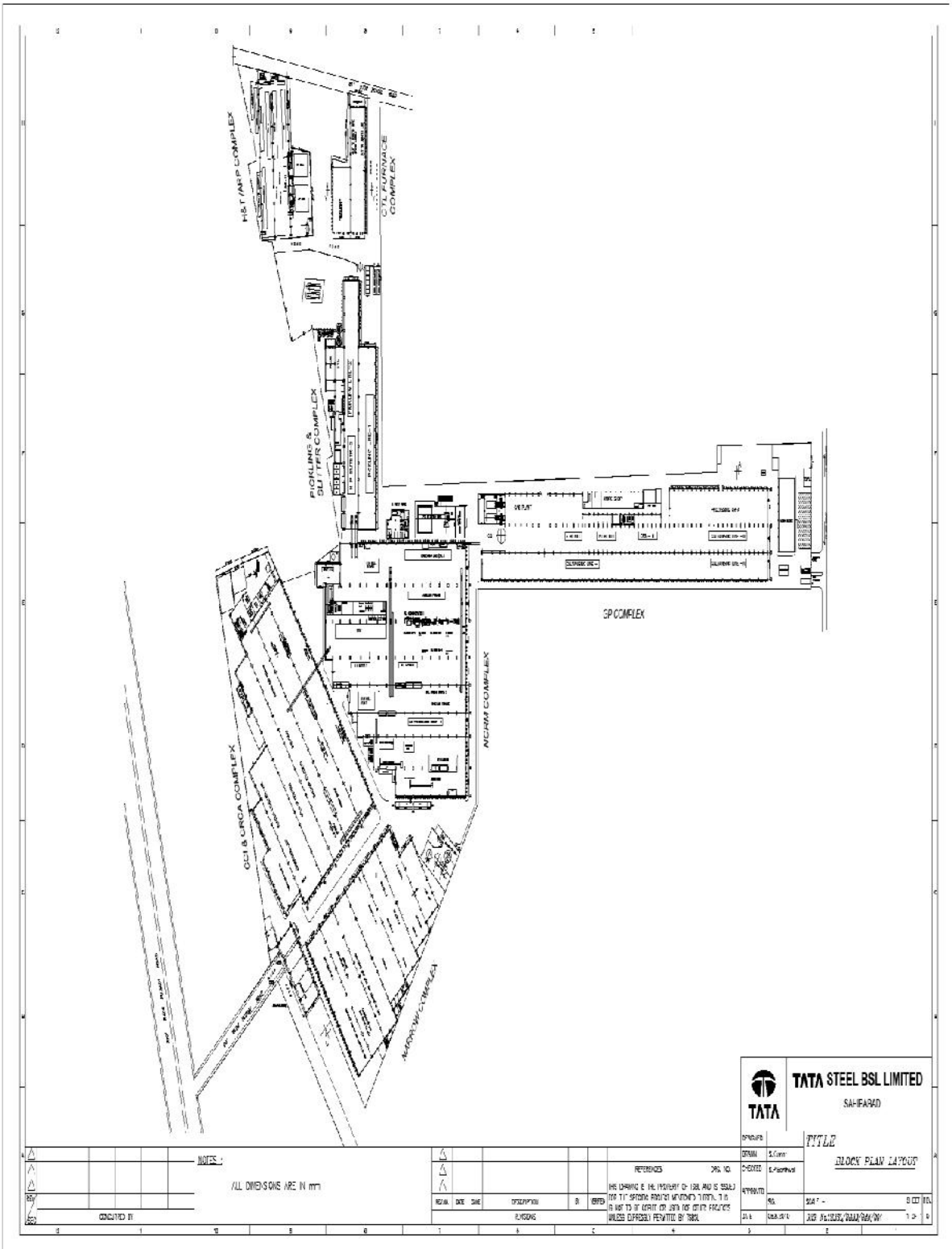
- ❖ Any deficiency is found during periodic emergency testing
- ❖ If the TATA STEEL LTD. Plant-fail to manage the any emergency.
- ❖ Any other circumstances that demand ERP need to be reviewed.

LIST OF ANNEXURES

# ANNEXURES

1. **Location of Plant**
2. **Instructions for Emergency Situation in case of Fire**
3. **Escape and Rescue Plan**
4. **Emergency / Important Contact Numbers**
5. **List of First aiders**
6. **List of Fire wardens**
7. **Outside Emergency Phone numbers**
8. **Details of Fire Extinguishers**
9. **Emergency Response Flow Chart**
10. **Details of Assembly Points in the Plant Area**

## Annexure 1: Location of Plant



## Annexure 2: Emergency Situation Instructions & Assembly Points

**Instructions for Emergency Situation (Fire) Displayed at all Exit Locations**

## Annexure-3: Escape and Rescue Plan

Displayed At All Exits in the Plant Area

## Annexure-4: Emergency Response Team (ERT) – Contact Nos.

| Contacts | Ext. Nos | Mobile No |
|---|---|---|
| Security Control Room | 1201 | 9711879661 |
| Fire Control Room | 1201 | 9711879661 |
| QRT (Quick Response Team) | 1201 | 9811798169 |
| Security HOD | 1873 | 9238087017 |
| Safety Incharge | 1332 | 9304954604 |
| Safety 24X7 | 1391 | 9811798087 |
| Medical Doctor | 1222 | 8882926936 |

(IN CASE OF ANY EMERGENCY RING UP TO THE FOLLOWING DEPT.OFFICIALS
(INTERNAL COMMUNICATION)

**Emergency Response Team (ERT)**

An emergency response team has been formed comprising key personnel of Tata BSL Management. All the members shall have a deputy to replace them if necessary. The purpose of the Emergency Response Team is to manage the orderly response to an emergency. Emergency team comprising of the following member:

| | |
|---|---|
| 1. Chief Emergency Controller | Mr. Mukesh Kumar |
| 2. Substitute Incident Emergency Controller | Mr. Ejaj Ahmad |
| 3. Production Manager | Mr. Ejaj Ahmad |
| 4. Administration In charge | Mr. Saurabh Jha |
| 5. Environment Head | Mr. Ravi Prasoon |
| 6. Utility In-charge | Mr. Trilok Nath Shukla |
| 7. Maintenance In-charge | Mr. Goutam Parida |
| 8. HR In-charge | Mr. Kanu Agarwal |
| 9. Logistics In-charge | Mr. Amit Sharma |
| 10. Packing and Dispatch In-charge | Mr. Ashutosh Sharma |
| 11. Store In-charge | Mr. Chandresh Sharma |
| 12. Doctor | Dr. Samantha |

## Annexure 5: List of First Aider

Attached Annexure

## Annexure-6: LIST OF FIRE WARDEN

| S.NO | NAME | RANK |
|---|---|---|
| 01 | Mr. Banktesh Kumar | F/Supervisor |
| 02 | Mr. Naveen Singh | F/Supervisor |
| 03 | Mr. Kapil Kumar | D.C.P.O |
| 04 | Mr. Subham Tomar | D.C.P.O |
| 05 | Mr. Arun Tomar | D.C.P.O |
| 06 | Mr. Harish Pal | F/M |
| 07 | Mr. Prashant Tomar | F/M |
| 08 | Mr. Siddharth Panwar | F/M |
| 09 | Mr. Gaurav Tewatiya | F/M |
| 10 | Mr. Arun Tewatiya | F/M |
| 11 | Mr. Happy Tyagi | F/M |
| 12 | Mr. Shivam Tomar | F/M |

## Annexure-7: Outside Emergency Contact Number

**List Displayed at locations**

## Annexure-8: Fire Pump / Extinguisher Details

**HYDRANT SYSTEM:**

A well designed and well laid hydrant service is the backbone of entire fire fighting equipment's as it fight fires of serious proportions in all classes of risks and continue to be in full operation even if parts of affected building and / or structure have collapsed, and also keep cool and adjoining properties, thereby minimizing the exposure hazard.

- Fire hydrant system, be got installed in New Stores area. Three- hydrant monitor in hydrogen plant.
- Total 105 numbers of hydrant points are installed in the factory
- The capacity of dedicated water storage for hydrant system is (10,00,000Ltr).
- Four Fire Pumps of 171 M3 / hr. capacity at 70 mtr head each are installed.
- A jockey pump of capacity 30 M3 / hr. at 70 Mtr. Head is available.
- The hydrant system is kept under pressure by jockey pump, but hydrant pumps are required to be started manually.
- Pipelines of hydrant system are installed above ground on the pipe rack for general pipeline service.

**FIRE DETECTION SYSTEM INSTALLED IN PLANT AREA**

**Smoke Detectors** Provided at following locations

- Administrative block, 1st. 2nd. And 3rd. floor
- NCRM Office Ground and First Floor
- Hitachi Control Room
- Hitachi Cellar
- R&D Center
- H&T Office
- CCL Paint Storage

**Heat Detectors** Provided at following locations

Hitachi Cellar

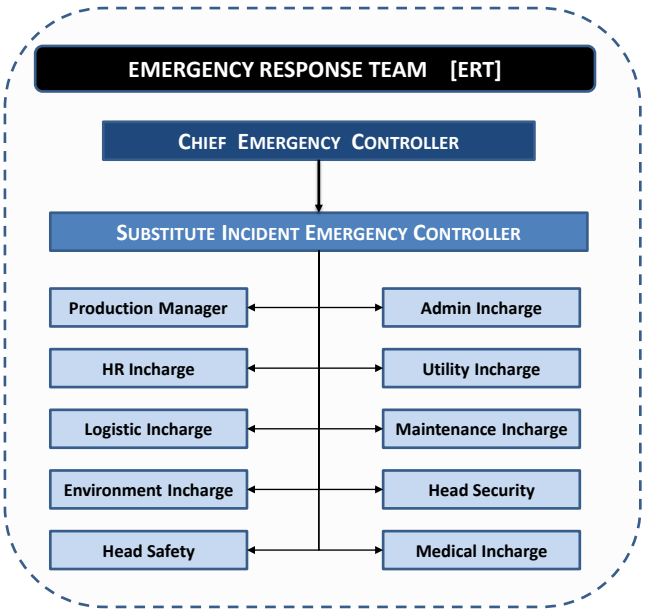
**Gas Leak Detectors**

Hydrogen Generation Plant

**Co2 Flooding System** Provided at following locations

Colour Coating to protect Paint booth and yard & Hitachi Cellar

## Annexure9: Emergency Response Flow Chart



## Annexure 10 : Assembly Points

Assembly Points in the plant areas EAR Marked on 10 Locations with proper signage, clearly visible and made known to all the employees.

1. Admin Building Lawn
2. OCRM Cooling Tower
3. Transport Yard
4. R&D Center
5. Safety Office BEL Gate
6. Infront of H&T
7. Infront of Weigh Bridge -7&8
8. Infront of Shed 19
9. Infront of New Store
10. Infront of Sub Station

TATA STEEL

TATA

# ENVIRONMENTAL POLICY

## Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

1. We are committed to deal proactively with Climate Change issue by efficient use of natural resources & energy; reducing and preventing pollution; promoting waste avoidance and recycling measures; and product stewardship.
   - We shall identify, assess and manage our environment impact.
   - We shall regularly monitor, review and report publicly our environmental performance.
   - We shall develop & rehabilitate abandoned sites through afforestation and landscaping and shall protect and preserve the biodiversity in the areas of our operations.
   - We shall enhance awareness, skill and competence of our employees and contractors so as to enable them to demonstrate their involvement, responsibility and accountability for sound environmental performance.
2. We are committed to continual improvement in our environmental performance.
   - We shall set objective-targets, develop, implement and maintain management standards and systems, and go beyond compliance of the relevant industry standards, legal and other requirements.
3. We will truly succeed when we sustain our environmental achievement and are valued by the communities in which we work.

**Date :** November 1, 2017

**T V Narendran**
CEO & Managing Director

01c

TSL/EC-CRM/2024/07-02
July 16, 2024

**The Member Secretory**
Uttar Pradesh Pollution Control Board
TC- 12-V, Vibhuti Khand, Gomti Nagar
Lucknow (U.P)

**Subject: Intimation of "Grant of Environmental Clearance" for Existing production facilities for 0.91 MTPA Cold rolled strips & sheets (1250 MT/Day) and Galvanized plain/corrugated sheets (1250 MT/Day) at Plot no-23, Site-IV, Industrial Area, Sahibabad, District Ghaziabad, Uttar Pradesh by M/s Tata Steel Limited.**

**Reference:** EC Identification No. - EC23A1012UP5722103N and file no. IA-J-11011/497/2021-IA-II(IND-I) dated July 09, 2024

Dear Sir,

With reference to the aforesaid subject and above cited reference, this is to inform you that as per Ministry's notification dated July 20, 2022, Tata Steel Limited, Sahibabad has been granted for Environment Clearance on July 09, 2024 for the existing production facilities for 0.91 MTPA Cold rolled strips & sheets (1250 MT/Day) and Galvanized plain/corrugated sheets (1250 MT/Day) at Plot no-23, Site-IV, Industrial Area, Sahibabad, District Ghaziabad, Uttar Pradesh.

A copy of above Environment Clearance vide EC Identification No. EC23A1012UP5722103N and File No. - IA-J-11011/497/2021-IA-II(IND-I) issue on July 09, 2024 is attached as Annexure-1 for your kind reference.

We hope above is the line with the statutory requirements.

Thanking you,

**For Tata Steel Limited, Sahibabad**

Anoop Srivastava

Tata Steel Limited * Tata Steel Limited * TATA

**Anoop Srivastava**
**Chief Environment TSM**
**(Authorized Signatory)**
**Encl:** As above

Copy to:

1. Commissioner, Municipal Corporation- Ghaziabad.
2. Regional Officer, Uttar Pradesh Pollution control Board, Vasundhara, Ghaziabad.

नगर निगम 18/7/24

**TATA STEEL LIMITED**
23 Site IV Sahibabad Industrial Area Ghaziabad 201010 Uttar Pradesh Tel 91 120 3028001 99 Fax 91 120 2770509/4100574 75
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com