

INDUSTRIAL SAFETY CHRONICLE

Special Issue

NSCI Safety Awards



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EDITORIAL

Winning a Safety Award is a testimonial for recognising the good performance and commitment by the organisation towards making the workplace safer, healthier and environment friendly. The Safety Awards not only motivate the awardee organisations for their continual improvements, but also encourage others to follow the footsteps of such successful organisations.

NSC has been operating a very prestigious safety awards scheme for the Indian Industry. The award scheme was first introduced for manufacturing sector in the year 1998 followed with the construction sector in 2005 and MSME sector in 2009. Of late the scheme has been extended to recognise the safety performance of organisations in services sector also from the year 2020. These awards have truly become a value addition and help several organisations in India to continually improve their performance.



The evaluation criteria for the NSCI Safety Awards put higher impetus on OSH Management Systems and Procedures of the organization as compared to its accident statistics and other lagging indicators during the assessment period. NSCI Safety Awards evaluation process includes application assessment by experts followed by the site visit and presentation to the jury comprising of senior level industry personnel, before the awards are finalised.

NSC had announced the results of NSCI Safety Awards for the year 2021 on 4th March 2022 and the winners have been felicitated on 4th June 2022 in Mumbai. Out of 568 contestants, 121 award winning organisations comprising 71 units from manufacturing, 26 establishments from construction, 12 enterprises from MSME and 12 establishments from service sectors were felicitated with Sarvashreshtha Suraksha Puraskar (Golden Trophy), Shreshtha Suraksha Puraskar (Silver Trophy), Suraksha Puraskar (Bronze Trophy) and Prashansa Patra.

In this issue of "Industrial Safety Chronicle", we are sharing the success stories of the eight organisations who have won the prestigious 'Sarvashreshtha Suraksha Puraskar' (Golden Trophy) in the Awards Year-2021 from manufacturing and construction sectors. You will find that Indian Oil Corporation Ltd. (Guwahati Refinery, Assam) has shown a sustained performance with continual improvement over last 3 years and they were awarded the Jury's Special Award, over and above the Golden Trophy.

The readers may be aware that, at NSC, we regularly introduce new services and programmes to assess the safety, health and environment (SHE) performance and give suitable recognition to the organisations. NSC has recently launched NSCI Golden Stars Safety Rating System (NSRS) with an objective to systematically assess the organisation's OSH management system performance and accordingly give a rating. One of the Golden Trophy Award Winners of the year 2021 in the manufacturing sector has also been awarded a rating of 5-Golden Stars. Their experience of NSRS and its contribution towards improvement in SHE has also been published alongwith their OSH practices in this issue.

We hope that these good OSH practices adopted by the winning organizations will be useful to our readers.

Lalit R. Gabhane
Director General & Chief Editor

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OCCUPATIONAL HEALTH AND SAFETY RECOGNITION FOR FACTORIES, CONSTRUCTION ESTABLISHMENTS, MSME UNITS AND SERVICE INDUSTRIES

It is a fact that the issue of Occupational Health and Safety (OHS) is relevant to all types of workplaces irrespective of their size in all sectors – agriculture, manufacturing / construction and service industry, etc. Occupational health and safety, signifies promotion and protection of workers' health and safety. Occupational safety focuses primarily on preventing unwanted and unplanned events and aims to eliminate and/or minimize injury and illness. It is imperative that all organizations need to have a sound OHS management system in place for (i) humanitarian reason - as nobody wants anyone can be injured; (ii) legal compliance – as occupier or manager wants to meet all the legal compliance; and (iii) economic reasons – as an accident cause huge losses. Good OSH performance improves productivity and enhances the image of the organization in the eyes of all stakeholders.

There is a need for recognizing organizational OHS performance at national level through awards scheme in order to:

- Minimize accidents in various sectors of growing economy
- Ensure continued protection of people against hazards
- Demonstrate support to international OHS standards like ILO conventions
- Enhance sustainability of development in industry.
- Motivate industries for the achievement of highest level of safety and health
- Benchmark best safety and health practices

NSCI Safety Awards

National Safety Council of India (Council) operates Awards scheme for four sectors viz. Manufacturing, Construction, MSME and Service. The Awards Scheme has been introduced by the Council in the year 1998 for the Manufacturing sector and subsequently for the Construction, MSME and Service sectors in 2005, 2009 and 2020 respectively. These awards are first of its kind which takes into consideration the effective implementation of Safety Management System established by the organisations and the consistency of their Safety Performance.

The objective for launching these schemes is to provide a national level recognition and reward the organisations in Manufacturing, Construction, MSME and Service sectors for their meritorious Occupational Safety & Health (OSH) performance & commitment to reduce workplace injuries, implementations of the best OSH practices and encourage continual improvements.

Who Can Participate?

1. Manufacturing Sector

Industrial undertakings in the manufacturing sector registered as factories under the Factories Act, 1948 and have commenced the manufacturing activity before the assessment period i.e. three calendar years previous to the Awards Year are eligible to apply.

The industrial undertakings (Manufacturing units) are grouped in six groups for the Award purpose as follows:

Group	NIC Code*	Main Activity
A	19	Petroleum refineries, gas processing units and petro-chemical complexes
A-1	19	LPG CNG bottling plants, oil/gas terminal depots, aviation fuel stations, lubricating oil plants and oil/gas pipelines
B	20,21	Manufacturing chemicals & chemical products, manufacture of pharmaceuticals, medicinal chemical and botanical products
C	35	Power Generation (Thermal/ Hydel/ Nuclear Power Plants)
D	23,24,25,27, 28,29 &30	Engineering, Cement, Steel, etc.
E	10,11,12,13,14, 15,16,17,18,22,26,31,32,36 &38	Other industries not covered in above e.g. Manufacture of food products beverages, textiles, tobacco products, electronic items, paper & paper products, rubber & plastic products etc.

2. Construction Sector

The Awards Scheme prescribes the following eligibility criteria for participating for organization from Construction Sector.

Any establishment or contractor “registered under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 [BOCW (RECS) Act, 1996] or under the Contract Labour (Regulation and Abolition) Act 1970 [CL(R&A) Act, 1970] or licensed under CL(R&A) Act, 1970” for executing “building and other construction work” as defined under the BOCW (RECS) Act, 1996 and employed 100 or more building workers in the project for at least 240(180*) days during assessment period.

OR

Any Project Management Consultant (PMC), whose

client or their contractors registered under BOCW (RECS) Act., 1996 or CL(R&A) Act, 1970 or licensed under CL(R&A) Act, 1970 for executing “building and other construction work” as defined under the BOCW (RECS) Act, 1996 and employed 100 or more building workers in the project for at least 240(180*) days during assessment period. (Kindly refer the application for details).

*(No. of days kept minimum due to Covid-19 pandemic situation during the year 2021)

The awards scheme for construction sector has been categorized in two groups as follows w.e.f. award year-2018 based on Construction Activities defined in the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

Group	Nature of Construction Activity
A) Buildings	Residential, Commercial (Educational, Hospital, Malls, Offices, Hotel, IT Hub etc.)
B) Non-Buildings	Streets, Roads, Railways, Tramways, Airfields, Irrigation, Drainage, Embarkment & Navigation Work, Flood Control Work, Generation, Transmission and Distribution of Power, Water Work, Oil & Gas Installation, Electric lines, Wireless, radio, television, telephone, telegraph and overseas communication, Dams, canals, reservoirs, watercourses, Tunnels, Bridges, Viaduct, Aqueducts, Pipelines, Towers, Cooling towers, Transmission towers, Factory, any other not covered above.

3. MSME Sector

The MSME Scheme is open to manufacturing enterprises as defined under Section 2(e) & classified under Section 7 (1) (a) of the Micro, Small and Medium Enterprises Development Act, 2006. Accordingly, the following types of enterprise* engaged in the manufacture or production of goods are eligible to apply:

- Micro enterprise** – where the investment in plant and machinery or equipment does not exceed **Rs. 1 crore** and Annual Turnover does not exceed **Rs. 5 crore**.
- Small enterprise** – where the investment in plant and machinery or equipment does not exceed **Rs. 10 crore** and Annual Turnover does not exceed **Rs. 50 crore**.
- Medium enterprise** – where the investment in plant and machinery or equipment does not exceed **Rs. 50 crore** and Annual Turnover does not exceed **Rs. 250 crore** and which has filed

Memorandum with the District Industries Centre as required under the Micro, Small and Medium Enterprises Development Act, 2006.

Note: While calculating the investment in Plant and Machinery, the cost of Pollution Control, research and development, industrial safety devices shall be excluded.

**As per the Notification No. S.O. 2119(E) dated 26th June, 2021 of the Ministry of Micro, Small & Medium Enterprises, Govt. of India*

4. Service Sector

The service sector scheme opens to the following establishment only who have registered under the Shop & Establishment Act, 1948 (registered premise only) or any other applicable statute and commenced their operation for minimum of 3 years period before the awards year:

- Hotels having more than 100 rooms or 15 m height and above
- IT establishments having high rise buildings (15 m heights & above) or floor area above 1,000 m²
- Hospitals having 100 or more beds or 15 m height and above
- Electricity Transmission line/ distribution line (11 KV above) Station
- Corporate/Bank/Insurance offices located in high rise buildings (15 m heights & above) or floor area above 1,000 m²
- R & D Centre employing more than 100 employees (Independent center not covered in the Factories Act, 1948)
- Warehouses having floor area above 10,000 m²
- Airport operation (Ground activities managed by airport owner/operator)
- Shopping Mall (Activities managed by Owner/ Operator) having floor area above 50,000 m²
- Ports [Major ports and Non-Major Ports (minor ports)]

Assessment Process

The complete process of awarding the organizations for their achieving excellence in safety performance and effective implementation of safety management system is depicted below:

- Receipt of Applications:** The applications for NSCI Awards would be invited from organization by Awards section in March of every year. The filled-in Application form (online/offline mode) required to be submitted by organization along with its annexures and entry fee to Awards section before last date of submission i.e 31st July.
- Assessment by technical team:** Technical team, constituted from NSC panel of experts, would assess the applications. The assessment would be done on the basis of criteria developed by NSC.



The first merit list to be prepared based on assessment of applications by the technical team.

- (iii) Data verification through authorities: Data verification would be sought through statutory authorities for manufacturing, MSME and service sectors and client organisation for construction sector in respect of reportable accident, dangerous occurrence and prosecution & conviction.
- (iv) Field Visit: The field visits to be conducted to the shortlisted organizations by technical team from NSC with an objective to assess the implementation of the safety system & practice on the shop floor. The second merit list would be prepared after field visit.
- (v) Presentation Before Awards Committee: The top ranking organizations in merit list would be called for presentation on safety management system before the Awards Committee, constituted by NSC Board. The objective of the presentation is:
 - To demonstrate senior management's commitment to HSE
 - To substantiate the data / information given in the Application by including extract of relevant documents, photos, etc.
 - To explain how effectively the HSE management systems and procedures are implemented to achieve HSE excellence.

The final merit list would be prepared based on above stages of assessments.

- (vi) Declaration of winners: Winners would be adjudged by the committee based on the final merit list. The winner lists would be published on NSC website. Those organisations secured more than the qualifying score but could get any award will be issued 'Certificate of Appreciation' and their names would also be uploaded on NSC website.
- (vii) Presentation of Awards at Special Function: The awards would be presented to the award winners by the hands of VIP.

Awards Committee

The NSCI awards are adjudged by an Awards Committee constituted by the Board of Governors of the Council. The Committee comprises of NSC Board Members, Senior Executives from esteem organizations/ Institutes, Occupational Health specialist as well as industrial safety expert.

Benefits to award winning organizations

The NSCI Safety Award winning organizations derive the following benefits.

- It benchmarks their health and safety performance at national level
- It demonstrates management's commitment to high standards of SHE
- It enhances the morale of the employees
- It accords national level recognition to their SHE performance
- It heightens the prestige of the organisation
- It enhances business sustainability

Conclusion

NSCI Safety Awards scheme was launched by NSCI to encourage the organizations to adopt safety management system, procedure and practice. The efforts taken by NSCI in this area have considerably contributed in improving the Safety, Health and Environment at Manufacturing, Construction, MSME & Service sector organizations in the country.

UNIQUE FEATURES OF NSCI SAFETY AWARDS

- The Assessment criteria are objective, comprehensive, rigorous and takes into consideration of sustained performance over three years for manufacturing sector, one year each for construction & Service sector and two years for MSME Sector previous to the Award Year.
- To demonstrate the team work, the application form for manufacturing sector to be signed by the Chairman of the Apex Safety Committee and Worker's representative on the Apex Safety Committee. In Construction sector, it should be signed by the In-charge of the establishment and authorized representative of the client organization. Whereas, for MSME sector the form to be signed by Owner / Entrepreneur / Occupier along with Worker's representative and in Service sector the form to be signed by Employer.
- To recognise the team work involved in achieving the award winning performance, each organization is requested to send a 3-member team comprising the Unit Head, Safety Department Head and a Senior Worker-member on the Safety Committee for receiving the award.
- In construction sector, the client organisations are also conferred along with the establishments to recognize their contribution in the achievement.

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(Manufacturing Sector – Group A – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner with Special Jury's Award for continual improvement in SHE performance during last three years 2019, 2020 & 2021)

Prabhakar Kumar, Chief Manager (Fire & Safety), IOCL, Guwahati Refinery, Assam

E-mail: prabhakar@INDIANOIL.IN

1. Company Profile

Indian Oil is a diversified, integrated energy major of India with presence in almost all the streams of oil, gas, petrochemicals and alternative energy sources. A world of state-of-the-art technologies and cutting-edge R&D; a world of best practices, quality-consciousness and transparency; and a world where energy in all its forms is tapped most responsibly and delivered to the consumers most affordably. Indian Oil is a Global Fortune 500 listed company with 212th rank in 2021. As The Energy of India, Indian Oil accounts for nearly half of India's petroleum products market share, with sales of 81.027 million metric tonnes (MMT) in the year 2020-21. Indian Oil has a group refining capacity of 80.55 MMTA and over 15,000 KM of pipeline network dedicated to fuel India's economic rise. Indian Oil led the downstream PSUs in becoming fully BS-VI compliant, ensuring a seamless pan-India transition from BS-IV directly to BS-VI grade transport fuels. Care, Innovation, Passion, Trust – are the Core Values of Indian Oil. Indian Oil's 'Vision with Values' encompasses a matrix of six cornerstones (Customer, Ethics, People, Innovation, Environment, Technology) that together facilitate the Corporation's endeavors to be 'The Energy of India' and to become 'A globally admired company.'

Guwahati Refinery is India's 1st Public Sector Refinery built with Romanian technology and dedicated to the nation on 1st Jan'1962 by the 1st Prime Minister of India Late Pandit Jawaharlal Nehru. The Gangotri of Indian Oil completed 60 years of service to the Nation on 1st Jan'2022. Initial crude capacity of the Refinery was 0.75 MMTA, which was subsequently enhanced to 1.0 MMTA.

Guwahati Refinery is an ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 accredited Refinery with highest standard of Quality, Environment, Safety & Health Management System in its integrated approach. Guwahati Refinery is also accredited with ISO 27001:2015 for Information Security Management System & ISO 50001:2018 for Energy Management System.

2. Process Description

Guwahati Refinery is built with Rumanian technology available in the late 50s, the initial crude processing capacity of the Refinery was 0.75 Million Metric Tonnes Per Annum (MMTPA), which was subsequently enhanced to 1.0 MMTA. Currently, it processed Assam as well as Imported crudes. Refinery has Crude

Distillation, Delayed Coker, INDMAX - RFCC Units among other facilities. With Hydrogen Generation Unit, Hydrotreater, ISOM (MSQ) unit and INDAdaptG (demonstration of indigenous technology) units, Refinery is currently able to produce and supply eco-friendly auto fuels of BS-VI grade. The Refinery produces various products and supplies them to North Eastern India as well as beyond, up-to Siliguri through the Guwahati-Siliguri Product Pipeline (GSPL), which was the first Pipeline of Indian Oil, commissioned in 1964.

The Guwahati Refinery mainly produces Liquefied Petroleum Gas (LPG), Motor Spirit (MS), Superior Kerosene Oil (SKO), Aviation Turbine Fuel (ATF), High Speed Diesel (HSD), Light Diesel Oil (LDO), Internal Fuel Oil (IFO), Sulphur (S), Raw Petroleum Coke (RPC), etc.

3. Awards & Accolades

Guwahati Refinery has been awarded several National & International coveted awards for maintain & sustaining the world-class Safety standard in Refinery operation. In 2021-22 awards received are:

- Sarva-Shreshtha Suraksha Puraskar & Golden trophy in NSCI Safety Award-2020 by National Safety Council, Mumbai. (Pic-01)
- National Safety Award 2018 by Govt. of India. Prize ceremony held on 08.03.2022 at Vigyan Bhawan, Delhi. (Pic-02)



Pic 1: NSCI Golden Trophy Award 2020



Pic 2: National Safety Award 2018 received on 08.03.2022 by ED & Refinery Head

- c) Distinction in International Safety Award-2022 by British Safety Council, UK. (Pic-03)
- d) Guwahati Refinery has been awarded with "Sh. A V Ogale" Award for the Year 2020-21 for sustaining longest Fire & Accident free period among Refinery Division of IOCL. (Pic-04)



Pic 3: International Safety Award 2022 with Distinction by British Safety Council

Pic 4: Sh. A.V. Ogale Award 2020-21 (Internal award amongst Refinery Division of IOCL)



Through the effective implementation of Safety Management System, Guwahati Refinery has build safety culture which has incubated safety in the day-to-day activities of the Refinery. It covers safety in all aspects of plants and facilities like to control loss to personnel, equipment, material and environment. With the top management driven approach, these systems are effectively implement and being sustained to the highest standard in the industry. Process Safety Information, Hazard Analysis, SOPs, Training, Safe start-up & shutdown procedures, Emergency response plans, Management of Change, Compliance audits, On the Job Safety including Off the job safety etc. are major elements of Safety Management System implemented at Guwahati Refinery.

4. Management's commitment to HSE

4.1 Safety Pledge: All meeting & official program including trainings , workshops , seminars, etc. starts with Guwahati Refinery Safety Pledge. The safety pledge start with "I" which is indicates that I am rededicated towards safety at all level.

4.2 Management Safety Committee meeting (MSCM) is conducted monthly chaired by Executive Director & Refinery Head (ED & RH) and participated by Senior Management & HODs. All safety issues are deliberated and action plan are formulated for continual improvements.



4.3 Monthly Safety Day: First working day of each month observed as Monthly Safety Day, which is celebrated at sixteen locations inside the Refinery including townships, Training Center & Hospitals on distinct Loss Control Theme on each month. Each program is presided by top management including Unit Head, Chief General Managers, General Manager, HOD's.



4.4 Safety Observation Visit (SOV) by Senior Management officials

Structured Safety Observations is being done monthly by Senior officials including ED & Refinery Head, CGMs, GMs and DGMs. All Safe act/condition & unsafe observations are entered in online SOV system for compliance.



4.5 Safety, Operation & Maintenance Review Meeting - Refinery Shift Manager Meeting (RSMM): RSM meeting is conducted twice in a week chaired by ED & RH, CGMs, GMs, HOD & Plant In-charge, Maintenance officials. The meeting starts with day to day Refinery safety concerns & issues. In the meeting, immediate decisions are take for safe & reliable operation of the Refinery.



4.6 Motivational prize scheme: for all cadre of employees for motivation on Safety

- For maximum near miss reporting by employees & contractor workers
- For Reporting any major unsafe condition like hydrocarbon .leak, etc.
- On the spot quiz during Monthly Safety Day
- Prizes for Online Safety Quiz
- Safety Hero during plant turn around
- Live Fire fighting competition for employees, contractor workers & security personnel.
- Safety awards to all employees on completing year without any accident..



4.7 Monthly Communication by Executive Director & Refinery Head is published which includes all the latest development/activities completed and under progress. Safety matters are accorded top priority in this communication. All HSE related articles are published in first page of this document which shows the commitment of management towards safety.



4.8 Monthly Evacuation Drill: Disaster siren tested on 1st working day every month. On hearing the disaster siren respective area personal report to their assembly points. Top Management actively participate in this evacuation drill and assemble at nearest assembly point to Administrative Building.

5. Employees' participation and involvement in SHE

5.1 Monthly Safety Day: All employees actively participate in Monthly Safety Day which is conducted on 1st working day of every month. Meeting are conducted by the Area In-charges and headed by top management as chief guest with participation of all employees and contractor worker of that area. Monthly Safety Day is celebrated simultaneously at 16 locations of GR at 10:20 Hrs on 1st working day of the month.



5.2 Near Miss reporting and compliance: All employees including contractor workers actively participate in Near Miss reporting. 8,821 Unsafe Act/ Unsafe Condition and Near Misses were reported by employees during 2021-22. Time bound compliance of the reported near misses by Area In-charges is one of the MOU parameter of Guwahati Refinery.



5.3 Sectional Safety Committee meeting (SSCM): SSCM meeting is conducted monthly at 10 locations of Guwahati Refinery and quarterly in Administrative building, Hospital & Central Stores. Area In-charges with participation from all concerned employees and staff conduct this meeting and discuss the safety issues and way forward for compliance.



5.4 Safety Observation Visit and compliance: After the Safety Observation Visit is conducted by senior management; the observations are entered into the online SOV portal. Area in-charges ensure the compliances of all the observations with involvement of all employees. Compliance of the observations is monitored in the Monthly Safety Committee meeting chaired by ED&RH.



5.5 Toolbox Talk: All toolbox talks are conducted in supervision of concerned engineer & employee of the area. All the job start only after TBT is conducted.

5.6 Hot-Ball-Game: Hot ball concept has been introduced at for engagement of contractor works in Safety issues . A ball is rolled in the morning by Site Engineer and handed over to the worker who was found doing Unsafe act, the workman goes around the site to find out the other worker/supervisor found doing unsafe act and handover the ball to him and this continues. Counselling of all the violators are done by the HSE/IOCL engineer. In case of repeated violator, the gate pass is seized for 07 days. The observation are also entered into online system for monitoring and compliance.



6. Special efforts and approaches to SHE and significant achievements

6.1 For Behavior Based Safety Enforcement– Safety Mirror installed at Entrance Gate of contractor worker which says “Do you know who is responsible for you Safety? Open & See.”



6.2 Plant Safety Inspectors (PSI): Non-executives are encouraged to be part safety management implementation. 14 Nos. of non-executives have been identified in all Units, who continuously monitor & report unsafe acts/ conditions in their area. The observations reported by PSI are liquated in time bound manner by Area In-charges for compliance.



6.3 Regular Certified Scaffold Inspector training are conducted for employees and contractor worker. Those who have attended this training are only certified for signing scaffold tags.



6.4 Mandatory F&S training are conducted with hands on Practices of Fire Fighting Equipment for Employees on regular basis.



6.5 Incident Sharing with Employees & Contractor Workers in Various Forums like Monthly Safety Day, On the Job Training and During Class room training etc.



6.6 Enhancing Emergency Preparedness - Disaster Management Hand Book consisting of in-detail role & responsibility of emergency coordinators published and given to all emergency coordinator. Flame proof mobile phone for emergency coordinators. All emergency points are provided with LED backlit board for visibility during night.



6.7 Safety Training by Newly joined Engineers: In a step towards inculcating safety culture in the newly joined engineers (from other discipline like Electrical, Mechanical, Chemical, etc.) are encouraged to conduct various Safety Training. This step has made them thorough with all safety system and procedure applicable for Refinery operation. All engineers have conducted 11 Nos. training each on various topics like work permit system, safety during hot job, Work at Height Safety, Excavation Safety, etc.



7. Improvement in Safety Management System through Digitalization

7.1 Increasing HSE awareness and Sharing Safety Message Large LED display board installed at Refinery Battery Area Entrance (Gate No. 02) for displaying HSE Messages & Safety Videos. This LED display board is also used for conducting On the Spot quizzes for contractor worker in which unsafe act/condition observed during safety visit/tour are displayed.



7.2 Improvement in work Permit System: Mandatory Work Permit Training to all Gas Safety Inspectors (GSI) / Fire Permit Signatories (FPS) & Permit Receivers. Authorization for role of GSI / FPS approved only after training on work permit system which is valid for 02 years

7.3 Hot Permit Display Dashboard: A portal developed for Real time hot job display at GR Intranet through Hot Job Display portal. **Benefit:** Ease in identification of all hot job locations on single dashboard, Improvement in permit compliance monitoring, etc.



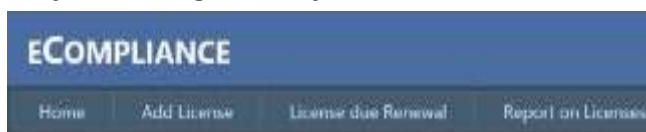
7.4 Development of Road Closure Portal at GR Intranet: A portal developed for display of Road blocks in refinery at GR Intranet through Road Closure portal. **Benefit:** Quick view & easy communication of closed / blocked road & its monitoring at all levels, Fire Crew can easily plan their route for emergency handling, Effective job planning by Maint. / Project taking into consideration of closed Road, etc.



7.5 Disaster Co-Ordinator Availability Portal: A portal developed for the availability of Disaster Co-ordinators in station. Whenever a Disaster Co-ordinators is on leave, auto-mail generated to next level successor for acting as alternate Co-ordinator. **Benefit:** Quick display of available, not available Disaster Coordinators, Change of dashboard colour for not available Disaster Coordinators, Auto-generated email are given through Out Station portal / Covid outstation



7.6 E-Compliance software: For monitoring of all statutory license like PESO, Factory license, PCB etc. an in-house portal developed where all licence details with validity are uploaded for easy monitoring. **Benefit:** Easy accessibility of all statutory license in a single place ,Easy monitoring of validity due date of various license,



7.7 Online Fire Extinguisher Management portal developed. Benefits: List & type of Fire Extinguisher placed at various locations of GR easily assessable through portal, Preventive Maintenance and Hydrotest data readily available for all the fire extinguisher, Preventive Maintenance schedule can be prepared in advance based on the maintenance data of Extinguisher.

7.8 Robotic Inspection of Storage Tanks : Automated Ultrasonic thickness (UT) measurement of storage tanks shell plates and roof plates using robotic Ultrasonic Crawler (Scorpion) **Benefits:** Enhanced Safety, Low cost, time saving, no scaffolding required , Continuous thickness recording.



7.9 Visual inspection and thermal imaging using Drone:

To eliminate fall from height for visual inspection of tall structures and flare Drone fitted with thermographic sensors are in use at refinery.



7.10 Pulsed Eddy Current Testing at GR: To improve reliability of process vessel and early corrosion detection an advanced electromagnetic inspection technology, Pulsed Eddy Current (PEC) is used in detecting flaws and corrosion in ferrous materials typically hidden under layers of coating, fireproofing, or insulation. **Benefits:** It can measure the remaining thickness of a component with a liftoff of any non-ferromagnetic form i.e. Insulation with weather jacket (aluminum, stainless steel, galvanized steel), Concrete/Silicate, Composite wrap/Polymer coating etc.



7.11 Advance NDT: Long Range Ultrasonic Testing (LRUT):

Long Range Ultrasonic Testing (LRUT) done for inaccessible pipelines under culvert, Road /Dyke/Road crossings to check the healthiness of piping. The human innervations for inspection at restricted places has been reduced with help of LRTU.



7.12 Online Interlock Bypass Portal: Online Portal developed for Interlock Bypass system with benefits as below: **Benefits:** Online Approval based on the days of bypass (07 days – HOD, 15Days – GM, etc.), Easy Monitoring of all bypassed interlocks in click of button, Unit wise data available in the portal , How many times interlock is bypassed can be reviewed, etc.



7.13 E-Challan Portal: e-Challan portal for Safety violation has been developed in-house at Guwahati Refinery. The portal keeps record of all safety violations by the contractors with the auto-generated mail to the concerned EICs and HODs for confirmations to impose a penalty against the respective safety violations. **Benefits:** A Easy monitoring of penalties issued to various contractor, Provision of Safety performance evaluation based on penalty, etc.

Sl. No.	Name of Contractor	Vehicle No.	Violation	Amount	Status
1	ABC	1234	Speed Limit Violation	5000	Paid
2	DEF	5678	Unsafe Act	10000	Pending
3	GHI	9012	Unsafe Condition	3000	Paid
4	JKL	3456	Speed Limit Violation	5000	Paid
5	MNO	7890	Unsafe Act	10000	Pending
6	PQR	2345	Unsafe Condition	3000	Paid
7	STU	6789	Speed Limit Violation	5000	Paid
8	VWX	0123	Unsafe Act	10000	Pending
9	YZA	4567	Unsafe Condition	3000	Paid
10	BCD	8901	Speed Limit Violation	5000	Paid

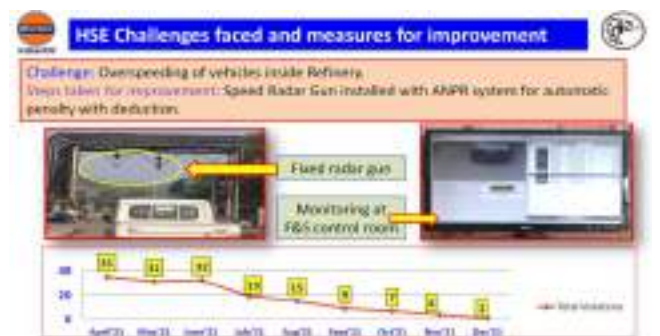
7.14 Online Near Miss Reporting Portal: All near miss / unsafe act/ unsafe conditions can be reported in online portal by anyone (Employee/staff/contractor worker) from any location of Guwahati Refinery with access to PC. **Benefits:** Near Miss can be reported from any corner of the Guwahati Refinery instantly, Area In-charge can sub-delegate the near miss to the job in-charge in online portal itself, Auto-generate mail to Area-Incharge & HOD for every near miss reported, Easy analysis of all near misses as per period select in a click of button, Easy Compliance monitoring of reported near misses, etc.



7.15 E-MOC: Management of Change (MOC) which is an integral element of safety management system is done through Online software. Suggested change as per user department is request in Form-I through online e-MOC portal. Then Technical Service (TS)/Engineering Service (ES) department studies the feasibility of the proposed scheme in Form-II in same online portal. All the stages of Management of Change i.e. feasibility study, HAZOP, etc. are done in online software and finally scheme for change is issued through this portal. **Benefits:** Status of scheme with development report i.e. in which stage the scheme is can be viewed online, Easy monitoring of all the MOC requested and implement, Online centralized record keeping of all data's with respect to MOC.



7.16 Speed radar Gun: Speed Radar Gun has been installed with ANPR (automated number plate reader) system for monitoring the speed of vehicles plying inside the Guwahati Refinery. Through ANPR system, automatic penalty with deduction is also done for the speed limit violators. **Benefits:** Compliance of speed limit in Refinery, Automatic mail to EIC & HOD for speed violation & penalty to the violator, reduction in over-speeding cases.



7.17 Swadhyay e-Learning Portal: Developed with various topics including Safety e-learning & Case-studies. This portal has immensely helped employees to upgrade their self with the latest technology at par with market standard. Completion of minimum 70 Nos. courses are mandatory & being monitored by management regularly & part of MOU target.



8. Conclusion:

The torch bearer of Indian Oil, Guwahati Refinery is always driven by the principle of world class safety standards. Upholding “Safety and Environment” as a core business value, Guwahati Refinery is committed towards safety of its employees, contractors, communities and all stakeholders. The Refinery is round the clock under operation and possesses significant health & safety hazards like fire, explosion and toxic gas release. Since Refinery is highly fire prone industry hence state of art modern fire- fighting

equipment and systems are in place to tackle any mishap. The regular safety training of all stakeholders including contractor personnel is the key element to achieve the highest safety standard. Towards the journey of achieving excellence.

As a result of robust safety system Guwahati Refinery has completed 3598 accident free days which is equivalent of 09 years 10 months and 07 days, this records shows the commitment & highest standard of Safety Practices being followed by Management, Employees, Contractor Workers & all Stakeholders.

NSCI Safety Awards 2021



S.P. Singh, ED & Refinery Head and his team receiving the Award



NATIONAL SAFETY COUNCIL

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 CBD Belapur, Navi Mumbai - 400614 • Tel.: 022-27579924
 Email: admin@nsc.org.in • Website: <https://nsc.org.in>



INDIAN OILTANKING

Common User Terminal – Raipur, Chhattisgarh

(Manufacturing Sector – Group A1 – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)

*Rajesh Ganesh, Managing Director; Rejith Bhaskar, GM-Operations & Terminal In-Charge & Udaykamath, Head- HSSE
 E-mail: Rejith.Bhaskar@iotl.com*

1. Background of the factory

Indian Oiltanking Limited (IOTL) is a 50:50 joint venture company of Indian Oil Corporation Limited (IOC) and Oil tanking GMBH (based in Hamburg, Germany).

Indian Oiltanking Limited (IOTL), an independent specialist in Terminalling service provider has embarked on the task of procurement of land, design, construction, operation, maintenance of the aforesaid Terminal on Build, Own and Operate (BOO) model.



This is India's first Common User Terminal, built in year 2013-14 & commissioned in September 2015. This POL (Petroleum, Oil, Lubricants) terminal has been built for receipt, storage and distribution of petroleum products and the receiving station of the PRRPL (Paradip Ranchi Raipur Pipeline) network. The Petroleum Products ranging from Class A to Class C under the classification in The Petroleum Act, 1934 are stored in various sizes of atmospheric tanks.



The terminal has a total capacity of 1,92,832 KL and is designed to handle HSD/MS/SKO/ATF/ETHANOL & FO. While Oil i.e. HSD, MS & SKO are received via multi product pipeline for IOC and via railway wagon for BPC. The products are dispatched via tank trucks to retail outlets & direct customers situated in Chhattisgarh whereas, dispatched through railway wagons for nearby states.

The entire terminal is equipped with state of art automation system, with facility to operate/monitor all the activities from remote control room. The Tank

Truck (TT) loading gantry has bottom loading facility which is much safer and faster than its past generation technology. Additionally, the entire Tank truck gantry is installed with vapour recovery system for MS, which makes it an environment friendly gantry and minimizes VOC emission.

The Terminal is also equipped with automated facility for Tank Wagon (TW) loading and manual facility for unloading. Terminal has Oil Water Separator network and Tilted Plate Interceptor to treat Oily water if generated from water draining operation in a safe/effective manner. The treated water is routed to rain water harvesting ponds, from where the water is used for gardening or other domestic uses.



The terminal has 02 nos. of firewater tank of 8,000KL capacity each along with 02 no of jockey & 05 numbers of fire engines to cater the fire water demand of the facility. Entire terminal is covered by the fire water & foam network, with adequate amount of hydrants, monitors and Remote Operated High Volume Long Range (RHVLR) monitors. The gantries & pump house is covered by sprinkler network addition to these monitors. Further, mobile foam trolleys, Medium Expansion Foam Generators (MEFG), monitors & fire extinguishers are placed at strategic location for emergency condition.



Hydro-carbon detectors with alarm system are installed at valve manifolds and at gantries, which detect any leakages/spillage. Interlocks are provided with tank levels, valve feedback, etc. as process safety engineering control in the Terminal. Terminal also has access control system for controlling movement of personnel and CCTV to monitor entire terminal.

2. Commitment of the top management to HSSE (Health, Safety, Security, Environment)

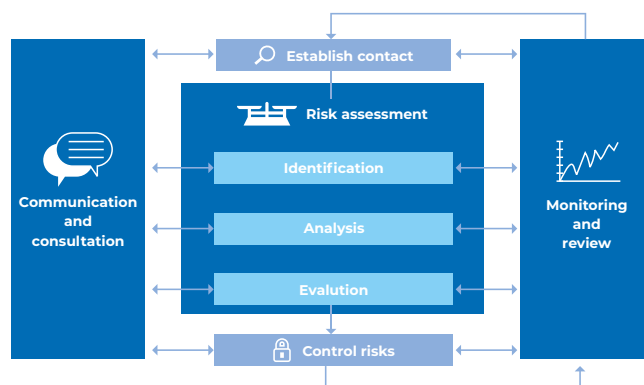
Top Management Commitment is well displayed via the numbers of meeting conducted to review HSSE performance. There is a fortnightly review of HSSE KPIs by top management, followed by monthly, quarterly, half yearly & yearly reviews. Also, HSSE Policy is displayed at all strategic locations for a better understanding amongst the employees and handbooks have been provided.

Management Safety Walks: It is mandatory for HSSE Manager & Terminal Manager along with core team to carry out at least 4 nos. of management safety walks in terminal each month. The management safety walk observations are reported in incident database (an

online data base for reporting of potential hazards etc.) and its compliance is tracked on periodic basis.

Reporting of UA/UC/NM at global database: IOTL has maintained a transparent incident reporting system. All employees have been provided access to report any observed unsafe act/condition or near miss. Based on the severity of the hazard an investigation team is formed for conducting root cause analysis (RCA). The findings of RCA are documented and shared to the entire team for prevention of such incidents in future.

Software-based approach is followed for accident / incident / near-miss investigations. **A rich database** is available along with subject matter experts to **analyze trends and events**, to share lessons learned



Commitment towards Workplace Hygiene: Periodic inspection of work place is conducted to ensure work place is safe to work. On Quarterly basis ambient air monitoring is carried out for gantries. Also the ground water is tested for quality. Half yearly urine phenoltest is carried out for all the officer as well as contract workmen. Industrial hygiene study is also conducted periodically through registered agency.



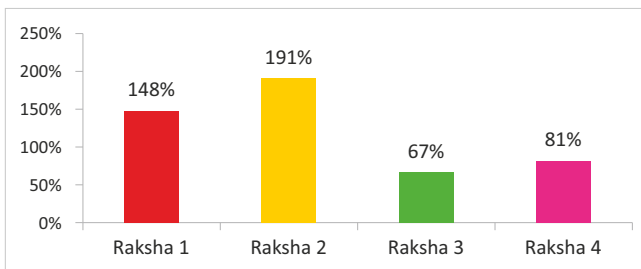
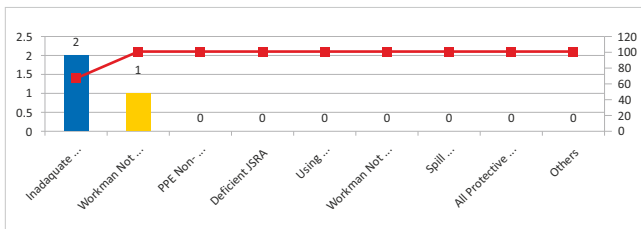
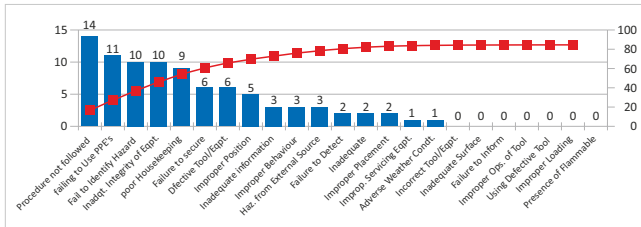
3. Employees' participation and involvement in HSSE matters

Project Raksha

IOT Raipur believes that without employee & contract workmen complete involvement HSSE goals cannot be achieved. To encourage same in year 2020, "Project Raksha" was introduced. Entire team is divided into 04 numbers of groups, each group having set of KPIs which included safety walks, reporting and compliance of UA/UC/NM, work permit audit (WOPAR), intervention with respect or behavioral

safety investigation via issuing STOP cards, and suggestion. A weekly review of the KPIs is conducted & even the best team was recognized through a rolling trophy every month.

Few photographs and graphs to justify the involvement



Every non-routine job has a JSA which is attached with each permit and recommendation of this JSA is shared with the workmen as tool box talk. For routine activities such as loading & unloading operation tool box talk is given at shift starting to workmen and TT Crew by officer. As a way to assess the self-preparedness and employee participation during emergency terminal conducts monthly mock drills considering different potential scenarios.



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Personal Safety Plan

As part of our HSSE leadership initiative, we promote setting up a personal safety plan for all employees. The plan stipulates personal safety goals with a defined completion date. It should be defined once a year and updated on a quarterly basis.

Examples for possible goals are:

- Attending of HSE and toolbox meetings
- Actively contributing to incident investigations

- Participating in HSSE training to improve the competency in a specific field
- Actively taking part in HSSE campaigns.

4. Implementation of the recommendations of studies, audits, etc.:

HAZOP & QRA of the terminal was conducted at designing stage and also post major facility modification (i.e. addition of ATF facility). Recommendations of this are incorporated in the design itself as interlocks or safety Relives valves (SRVs) etc. Further terminal prepared a risk team which studied and prepared HIRA for all routine & non routine activities. Controls of the HIRA are incorporated in engineering design or in SOP as administrative control, which is periodically reviewed buy shift Manager or Operation Manager.

Audits are integral part of operation and all the recommendation/observation are always taken positively. Multi-disciplinary internal audit is conducted every year. Terminal is ISO 9000, 14000 & 45000 certified and conducts its internal audit every 6 months. Furthermore, every year external safety audit also conducted for the terminal by DGFASLI certified agency. A master list of observation & recommendation of this entire audit is maintained, its compliance process is tracked on a monthly basis by terminal core management, and further the top management reviews it on quarterly basis during quarterly review sessions.

Further we are preparing HSSE improvement plans based on the feedback taken from various Audit findings, Corrective actions from incident report in system, and other recommendations etc. through Capex project for next three years.

5. Special efforts and approaches to HSSE and significant achievements:

Take 5 for safety: It's the basic principle that is thought to everyone entering terminal.

The principle is simple, to be applied before every activity. It states as follow:

- Stop & Look - "Stop before you carry out the job"
- Think through the job- Think thru the different step necessary to do the job.
- Identify Hazards- Look close, look wide, look for hidden
- Control & communicate – Take control measures and verify them.
- Do the job safely – with your mind on the task & maintain awareness for changes happening & new hazard from the simultaneous operation if any.



If necessary, communicate with your team. If you believe it to be unsafe, STOP the job.

Job Safety Analysis & LMRA: Each and every non routine activity has job specific safety analysis. The JSA is prepared by the performing team and is then reviewed by HOD's and Plant Manager. Further the recommendation/ control listed in JSA is shared with workmen (who actually perform the Job at field under supervision) as tool box talk. Further before starting of job Last Minutes Risk Assessment (LMRA) is conducted to ensure that nothing is left out.

Learning from others & Life Saving rules: We have a culture of learning from others. Each major incident across IOT/OT is shared via HSSE ALERT (a one pager) to entire team. Further in-house learning session are conducted, relevant finding from same is implemented at location. From analysis of the incidents reports uploaded in database and accidents worldwide 6 Life Saving Rules are formulated.

These Life Saving Rules are:

- **Work at Height** - "Protect yourself against a fall when working at height"
- **Energy Isolation** - "Verify isolation and zero energy before work begins"
- **Confined space** - "Obtain authorization before entering a confined space"
- **Permit to Work** - "Work with a valid permit when required"
- **Safe Lifting** - "Plan safe lifting operations and do not walk under suspended loads"
- **Safe Driving** - "Wear your seatbelt, obey speed limits and do not use any mobile device while driving"

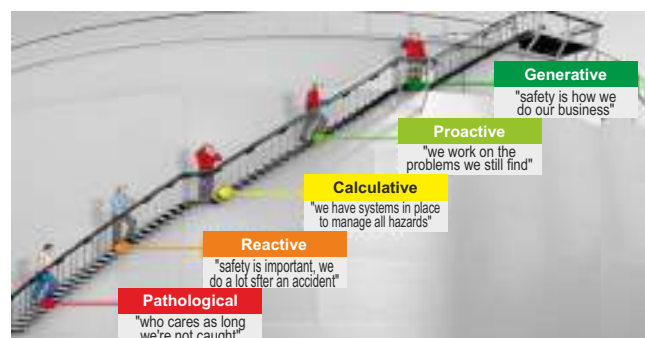


6. Significant Achievements

- IOTL Raipur has completed more than 06 years without any LTI, fatality and LWD cases.
- IOTL Raipur has been awarded the Golden Lighthouse award for the year 2018 for "Best HSSE Performance" globally.
- IOTL Raipur has been awarded the Global Tank Storage Awards for the year 2022 for the category "Safety Excellence"
- IOTL Raipur has been awarded the 9th Global Safety Summit award in the category "National Safety" for the year 2021
- IOTL Raipur has been awarded the "Outstanding achievement" award by DISH, Labor dept. & Govt. of Chhattisgarh for the year 2021.
- IOTL Raipur has been awarded certificate of Appreciation by National Safety Council in 2019.
- IOTL Raipur has been awarded the Certificate of Merit for "Excellence in Management of Health & Safety" for the year 2020 by Indian Chemical Council.
- IOTL Raipur is an active participant in CSR activities to promote safety locally amongst nearby villages.
- IOTL Raipur has established a stringent incident management/reporting system.
- IOTL Raipur has established a visitor safety management system.

7. Conclusion

IOTL Raipur with its stringent HSSE policy and "**Generative**" Safety culture is committed to Frame and implement Safety management system seeking continual performance improvement. Genuine concern and sincere commitment of the top management, whole hearted efforts by each individual, demonstrative leadership, employee involvement, compliance of safety statutes and strict adherence to operating discipline and good engineering practices as well as use of advanced digital technology has brought in an ambiance where there is a total commitment of all the employees to get along with their jobs with lot of confidence and safety consciousness. Recognitions like Prestigious Awards from National Safety Council of India (NSCI), Indian Chemical Council (ICC), Global Safety Summit, Tank storage awards etc. over the years are the testimony of endured efforts being put in by all the employees of IOTL Raipur unit in achieving and maintaining high standard of Health, Safety, Security and Environment (HSSE) in all facets of their work.



NSCI Safety Awards 2021



Rejith Bhaskar, Plant Manager and his team receiving the Award

INDIAN FARMERS FERTILISER COOPERATIVE LIMITED

KALOL UNIT, Gujarat

(Manufacturing Sector – Group B – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)

*D. G. Inamdar, Director; S Mohan, Joint General Manager (EPC); Rajnikant Sharma, Chief Manager (Fire & Safety)
E-mail: rajnikantsharma@iffco.in*

Fertilizer plants manufacturing Ammonia & Urea are amongst the most complex and hazardous plants in Chemical industry. Manufacture of anhydrous liquid ammonia and Urea involves processing of hydrocarbons under high temperature, high-pressure conditions in presence of various catalysts, chemicals, etc. All this has the potential to severely affect the safety of equipment, personnel involved and the environment. Recognizing this, IFFCO-Kalol is continuously putting efforts for improvement in the Safety of plants and personnel. Right from Project conceptualization stage, safety and reliability have been considered the principal criterion for evaluation of technologies for various process plants. Plants are well designed and built incorporating all inbuilt process safety measures to the highest standards.

1. Background of the factory

IFFCO Kalol is the oldest unit of IFFCO. Ammonia-Urea Complex at Kalol was installed and commissioned in the year 1974. The unit built over an area of 96 hectares, started commercial production in April, 1975. The ammonia plant is a Natural gas-based plant of 1970's vintage and Urea Plant is based on M/s Stamicarbon Technology. IFFCO Kalol Unit is presently producing about 1650 MTPD of Urea and 1100 MTPD of Ammonia. Unit is also manufacturing Diesel Exhaust Fluid (DEF) which is a co-product of Urea manufacturing. IFFCO has also established Nano Fertiliser Plant at its premises for the production of Nano Urea liquid fertiliser.

IFFCO Kalol Unit has established and implemented Environment Management System (ISO 14001: 2015), Occupational Health & Safety Management System (ISO 45001:2018) and Quality Management System (ISO 9001: 2015). IFFCO - Kalol unit is also certified with ISO 50001:2015 (Energy Management System) and IFA protect and sustain Product Stewardship certification.

2. Commitment of top management for SHE

The safety philosophy and commitment is spelt out in our SHE policy at corporate level as well as unit level. SHE policy is duly issued by the Managing Director at corporate level and by the Occupier at unit level. IFFCO Kalol is committed to provide a Healthy and Safe working Environment to all the employees, contractors, visitors & other stakeholders.

At IFFCO Kalol unit, Occupational Health and Safety (OH&S) is treated as an integral part of our business

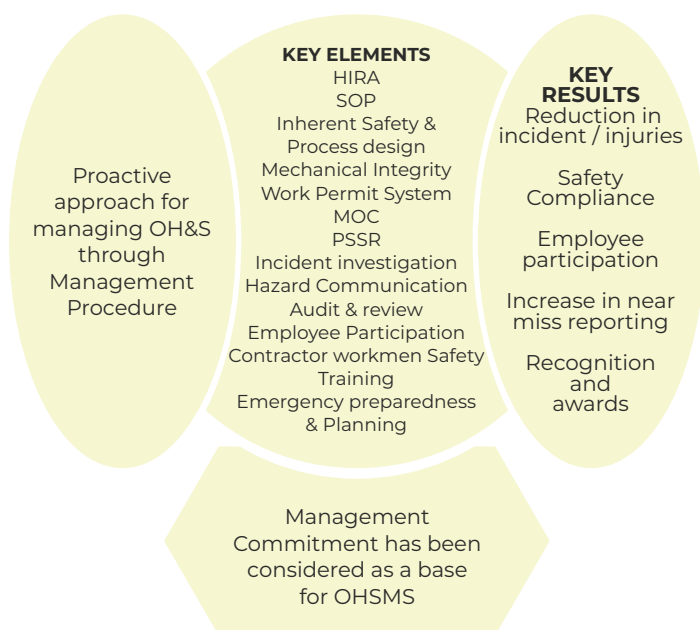
activity. Management believes that Safety is not a priority, it's a core value.

- IFFCO Kalol is committed to continual improvement of OH&S Management System, and to meet the OH&S legal and other requirements.
- Safety, health and environment protection are direct responsibilities of management and employees at all levels and they are considered collectively as one of the measures for their career development.
- IFFCO management has always been committed to implement & maintain best in class safety systems and procedures.
- IFFCO management is highly focused on providing world class & quality safety equipments and PPEs. Budget is not a constraint for safety.
- IFFCO management considers safety training, a very important tool for maintaining safe work environment at workplace and strives to provide all the required resources for imparting safety training to each and every employee and contract workers.
- In all business decisions due care is paid to optimize consumption of resources and minimize generation of waste.
- Safety performance of the unit is discussed monthly and quarterly in the safety committee meetings and quarterly review meeting at management level.
- A resume of Health and Safety performance occupies important place in the Annual Report of the company for information of all concerned.

3. SHE Management, its linkages with Key result Areas and Outcomes

IFFCO Kalol unit has established and implemented safety management system based on a proactive systematic approach for improving and managing safety through management procedures. Emphasis is given on controlling the hazards by applying the hazard control hierarchy of Avoid, Prevent and Mitigate. The methodology is based on PDCA approach for continual improvement in overall safety performance of the unit.

Various elements of SHE management system are shown in the following diagram:



Some of the elements of SHE management system at IFFCO Kalol Unit are discussed here briefly:

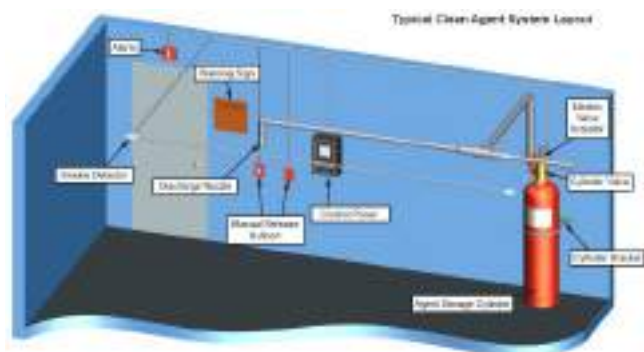
- Hazard identification, frequency estimation, consequence analysis, facility siting evaluation, inherently safer process evaluation and risk analysis have been carried out by using advanced software and techniques such as HAZOP study, failure mode & effects analysis, fault tree analysis, event tree analysis, quantitative risk assessment, etc. In addition to that audit, inspections, incident investigation, case studies, job safety analysis, hazard spotting, etc. are used to identify hazards, assess risks and implementation of control measures.
- **Safe Operating Procedures:** Safety Manual, Safe working methods & procedures, Safety rules, Safety Policy, Safety work permit procedure, Tagging procedures, Do's and Don'ts of hazardous jobs, Start up and shutdown procedure emergency shutdown procedures, etc. have been formulated and propagated among the employees to eliminate any unsafe act and the same are reviewed periodically.
- **The mechanical integrity** of the equipments and pipelines is ensured by annual inspection, non-destructive testing and preventive /predictive maintenance. The Unit has computerized master preventive schedule list for the same. Continuous monitoring of vessels and running equipments is being done using various condition monitoring methods and different types of non-destructive testing. Overhauling of equipment & hydro-testing of pressure vessels, thickness measurement of pipelines and vessels, hardness measurement (Metal & Rubber), spark testing of rubber lined pipelines and vessels, DP test, radiographic testing, etc. are being carried out at periodic intervals.

- **Incident Investigation:** To prevent the reoccurrence of any incident, it is necessary to know exactly how and why incident occurred. All level of employees are made responsible for prompt reporting of any incident. All near misses/accidents /first aid cases are investigated by plant supervisor/ plant in-charge / special nominated committee; as per the severity of the incident.
- **Safety work permit system** (for hot work, cold work, vessel entry, work at height, electrical work, etc.) and safe operating procedures are strictly implemented to provide safe working environment during the maintenance and any plant job.
- **Management of Change** committee is constituted for management of all modifications to process chemicals, technology, equipment, facilities, and processing conditions or any changes within the documented technology.
- **Safety training modules** have been prepared for employees, contract workmen including security staff, IFFCO trainees including graduate engineer trainees, apprentice trainees, vocational trainees and visitors.

Induction training, job specific safety training and tool box talk related to specific jobs like welding, cutting, grinding, vessel entry, work at height, excavation, handling hazardous chemicals etc. and refresher training for employees as well as contract employees, GETs, apprentice trainees and IFFCO trainees, etc. is regularly organized.
- **Contractor safety:** SHE system and procedures of the contractors are reviewed and only reputed and experienced contractors are awarded the job. All the contractor staffs are imparted safety induction training prior to their deployment at work site. Various job specific PPEs are issued to all the contractors on returnable basis by F&S department. Tool box talk or job specific trainings are also imparted to the contractor staff at worksite.
- **PPEs:** Quality PPEs (Respiratory and Non respiratory) confirming to relevant National/ International standards for head to toe protection have been made available and use of required PPEs is ensured.
- ON-SITE emergency plan has been prepared for the factory. Emergency mock drills are conducted as per plan. Offsite mock drills are conducted in collaboration with District Crisis Group (DCG). Emergency mock drills are also conducted with NDRF battalion stationed at Gandhinagar.
- Colour coding of process and utility pipelines has been carried out as per relevant standards



- NOVEC Based Automatic Fire Suppression system & Smoke detection system has been installed at IT Server room and Plant telephone exchange.



- State of the art airline suit and gas tight suit are provided for protection against toxic release. Electrical arc flash suits for performing job at electrical panels and Hot liquid suit for performing jobs related to hot liquid/steam are also available and being used.

4. Statutory compliance and Implementation of the recommendations of studies, audits, committees, etc.

IFFCO Kalol is IMS (ISO-9001, ISO-14001 & ISO-45001) certified company and committed to meet the OH&S

legal and other requirements beyond statutes also. Compliance of the safety provisions under various statutes such as, Factories Act, MSIHC Rules,

Environment (Protection) Act, Electricity Regulations, Static and Mobile Pressure Vessels Rules, Petroleum Rules, Indian Boiler Regulations, etc. is done on top priority. External safety audit is carried out as per statutory requirement. Internal safety audit and visual inspection of plant is carried out by management level committee. IMS Internal audits, surveillance audits and recertification audits are carried out as per their schedule. QRA study, HAZOP study, HAC, etc. is also carried out as per requirement. Compliance of the recommendations of all such studies, audits, safety committee and various other committees is strictly ensured within stipulated time interval and a copy of these reports and compliance status are submitted to concerned statutory bodies too.

5. Employees participation and involvement in SHE matters

Involvement of the employees in SHE matters plays a crucial role in improving the safety culture. At IFFCO Kalol, different schemes/ measures have been implemented to increase the participation from the employees and workers in enhancing the safety of the plant.

- **Online Suggestion scheme** is established to motivate employees to come out with creative thinking and noble ideas. The purpose of this scheme is to improve safety, productivity, quality and environment. All the suggestors are motivated through cash prizes. Best suggestions are rewarded and recognized by the management.
- **Safety Committees** is constituted to ensure participation of the employees of management and worker level in safety management and to strengthen the safety culture in the organization.
- Through **Shop Floor Safety Committee Meetings** participation of all levels of employees in safety management is ensured. It raises the safety consciousness among all cadres of Employees, who are directly involved in operation & maintenance of equipments at shop floor. safety issues related to their workplace/job are discussed and
- **National Safety Week** is celebrated and **National Fire Service week** is observed every year with a goal to create awareness among the employees and workers regarding safe work practices.
- Various competitions like Safety Slogan, Safety Poster, Safety Essay, Safety Quiz, Fire Drill, etc. are organized for different group of employees and their family members. All the winners and the runners are awarded with fabulous prizes.
- Employees are also involved in preparation of SOPs and investigation of incidents.

- Through good housekeeping competition, all the sections participate in making their workplace clean and tidy thereby preventing fires and incidents caused due to poor housekeeping. Winner sections are awarded with fabulous prizes.

6. Special efforts for SHE and significant achievement-

- Online near miss reporting system** has been established. Any unsafe condition, near miss incident, and unsafe act can be reported by means of this system. Mobile app is also developed for the same and can be used by all employees.
- Induction training is given to Contract workmen before allowing them to start job at plant site and periodically safety meetings/ safety talk/ tool box talk is arranged with contract workmen on various safety aspects.



- Lock Out and Tag Out procedure has been established for isolation of energized equipments / machineries.
- All the pressure vessels/pipe lines are provided with safety relief valves, audio-visual alarms, trips, Safety interlocks.
- At IFFCO Kalol Unit; we believe in the Concept of Reduce, Reuse & Recycle of wastes based on "Eco-friendly technology. Effluent Treatment Plant and Air Emission Control Systems are installed and working efficiently. Total effluent generated is recycled/reused after necessary treatment.

- Periodic Medical check-up of employees is carried out on a regular interval by qualified doctors. Focus has been given to evaluate Cardio Vascular System, Liver function, Lung function and Hearing function of employees.
- A Task Force is constituted for monitoring issues of Plant Health pertaining to Piping, Structures and Equipment from safety point of view and for efficient running of the plant. Suggested recommendations and remedial measures have been implemented in order to improve reliability of operation & maintenance of plant piping, structures and critical equipment to reduce sudden unplanned outages.
- Safety Exhibition at Safety department and Safety Park at construction site to display various safety equipments, procedures and PPEs along with methods for their use. This helps in improving the effectiveness of training and learning.



- Safety showers with eye wash unit have been installed at strategic locations all over the plant area.
- Remotely operated sprinkler system has been installed at Ammonia loading pumps, Ammonia loading gantry (rail & road) at ammonia storage area, ammonia & Carbamate pumps in Urea plant for neutralization and dilution of ammonia vapour in case of any leakage thereby controlling its spread.
- Automatic sprinkler system has been installed for the protection of Automated Storage & Retrieval System (ASRS).



- All chemical containers are labelled according to standard practice and placed at their earmarked locations. Material Safety Data Sheets are prepared for all chemicals in prescribed format. Boards have been displayed in plant/storage areas regarding hazards, do's and don'ts and use of personal protective equipments. TREM Cards are provided to the drivers of chemical transport vehicles.

કલોલીન ગેસ
DANGER चेतावनी **चेतवणी**

કલોલીન એ લીક મેંઝ ક્ષતિયોતી ખુલ્લો જેવી મેલ છે. તેની કચમાં બહુજ
સોડી વામા (C.H.P.G) જાલ સમસ્યા મારે વોળવવારક છે.
કલોલીન ઉપજોતક તમા લેલુ જલન કરતા ઉપકરણોની મ્યામત કરતો કલો
તમામ સમસ્યાઓ સમાવો જેવાડે લેલોડલુડ ઠામલ ધોજ, પીલોલી લોડેલ,
પીલોલી લુડ, ડેલ વીલ, લામ, લોડલારલ મલક, લુડ / જમલુડ વાલેલો
ઉપજોતક કરતો જલો લો.
કલોલીનુ જાલતર (લીડ) વાલતો ડાલગર લાલિયમલ રલે લુલક મિલકમો
ફોલ - કલકર લેલ જાલ કરો કલો લે મિલકલે લોડેલ કરી કોલેલે જાલ લે
કલુ જોલકા દેલો જલો. જો તમે જાલકાલી ઉપજાલ કોલ તો લેલ-લકલ
મલક જલોલીને કલોલીન કોલો જાલતર કલ કલકાલી મલકલ કરો.
કલોલીન કલો તો લાલકો વીલકા મીલકલ કલકાલી જાલો કલો જુલક
લાલકાલકાલી જલોલી જાલોલકાલ કરો. જલક પડે લે લુલિલ જાલોલાલો
ઉપજોતક કરો.
કલોલીન કલકાલી કલોલીને જુલકા જાલકાલી પાલોલી લાલક કરો કલો
જાલકાલ લાલકાલ કલોલીને પાલોલી જાલો.

SAFETY BULLETIN (IFFCO)
DECEMBER : 2019
IFFCO KALOL, A SHINING BEACON IN OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

FROM THE DESK OF REGIONAL GENERAL MANAGER.

Dear Sirs,

I am pleased to inform you that IFFCO Kalol has been awarded the 'SAFETY BULLETIN' award for the year 2019. This award is given to the organization that has achieved the highest level of safety performance in the industry. IFFCO Kalol has achieved this feat by implementing a comprehensive safety management system that focuses on the prevention of accidents and the promotion of a safe working environment.

The award is a testament to the dedication and hard work of all the employees of IFFCO Kalol. It is a reflection of the commitment of the management to safety and the active participation of the workers in the safety program. I am proud to say that IFFCO Kalol has set a benchmark for safety in the industry and has become a shining beacon for other organizations to follow.

I am sure that this award will serve as a great source of inspiration for all the employees of IFFCO Kalol. It will also serve as a reminder to all the employees that safety is always the top priority. I am confident that IFFCO Kalol will continue to maintain its high level of safety performance and will continue to be a shining beacon in the industry.

Yours faithfully,
Regional General Manager

- At construction sites boom lifter, scissor lift and mobile working platforms are used for performing any job at height. This is safer method and eliminates the use of scaffolding which results in prevention of incidents due to fall from height.



- Management level Visual Inspection committee is setup which quarterly carries out Hazardous Installation Inspection at these places
- Replacement of High Energy Consuming Ballast, Lamps, etc. with energy efficient Compact Fluorescent Lamps (CFL), LED lighting fixtures have been carried out at plant and township.
- Kalol unit is having mutual aid agreement with neighbouring industries.
- Environment audit by Schedule-I auditor is carried out at IFFCO-Kalol Complex every year and Annual environment audit report is submitted to GPCB before 30th June.
- No treated effluents are being discharged outside the plant premises.

7. Use of advanced digital technology to enhance safety

There has been a rapid increase in the use of emerging technological innovations to enhance safety of a chemical process plant.

- At IFFCO Kalol unit; application of digital technologies such as online databases, Geographic Information Systems (GIS), 3D MODELLING , 4D Computer-Aided Design (4D CAD), robotics, laser scanning, photogrammetry, wireless technology, sensor-based technologies, and automation have significantly increased the effectiveness of process safety management.
- An integrated system with robotic arms, bulk conveyors and automated storage and retrieval system (ASRS) has been installed for loading, unloading, storage and shipping of finished material at Nano Fertiliser Plant. This integrated system involves use of advanced robotics technology for material handling, eliminating human intervention thereby reducing incidents and injuries.



- The process control is sufficiently automated by suitably designed high reliability instrumentation system. Distributed Control Systems are provided in ammonia, urea, boiler and other control rooms. Early warning alarms and provision of adequate

pressure relieving systems (like safety valve, rupture discs, etc.) are incorporated in critical areas to prevent possible mishap.

- Various process instruments such as flow / temperature / pressure and level controllers along with recorders for controlling and recording various critical process parameters are provided along with alarms/trip alarms, etc.
- **Proxy Switch (Laser Based Switch)** has been installed on Ammonia Pump and Ammonia Pump Assembly to detect any Ammonia Leak, from Ammonia Pump Plunger due to damage/ displacement of Tie Rod. In case of any minor ammonia leakage from the plunger due to damage/ displacement of Tie Rod, the Proxy Switch will detect the same and give alarm & subsequently will trip the running pump through the Trip System installed on DCS and a major accident /heavy leakage of ammonia due to damage in pump plunger can be averted.
- IFFCO Kalol has installed Yokogawa make ProSafe-RS, the world's first truly integrated "safety PLC" for the process industries system as Emergency shutdown system (ESD) for safety of man, machine and Environment. It is an independent system with Safety Integrity Level 3 (SIL-3). SIL3 system ensures that the frequency of risk occurrence is reduced to less than 1/1000 under the current conditions. If the process value continues in an unsafe direction and the trip level is reached, the SIS executes an emergency shutdown action, preventing the process from exceeding the safe levels.
- CCTV cameras have been installed for safety at various critical locations such as near ammonia pumps with display unit at control room. Any abnormal condition at field can be monitored by sitting at control room and appropriate action can be taken at the earliest to prevent emergency situation. Reliability of all such systems is periodically checked.



- An online health monitoring system has been established for employees where the entire health checkup data and history can be retrieved anytime for future references.
- Ammonia and Hydro-carbon detectors are installed in various critical locations in plants to continuously monitor the working atmosphere. The low and high alarms are set as per the TLV and STEL values and the system is integrated with the DCS panel, which allows the control room personnel of the particular plant area to monitor any leaks and get timely alerted by the alarms.



- State of art portable digital gas detectors/ multi gas detectors with continuous data logging facilities are provided for monitoring of work environment for any hazardous gas/vapour.
- Online visitor safety management system has been set up in which a visitor safety film is shown to all the visitors on safety aspects, do's and don'ts, etc. at visitor lounge at factory gate. After watching the film visitor has to undergo an online safety quiz through Visitor kiosk, based on the information displayed in safety film. Gate pass is automatically issued to them after successfully completing the quiz through online system.



- Online Database: MSDS, safety manuals and SOPs have been made available to all the users through a common network drive in the computer system thus making it readily available for reference.
- The maintenance history of equipments has been made available in the Plant Maintenance Management System Portal.
- Conventional MCCs are being replaced by Intelligent MCCs in a phase manner which enhances the personnel safety by enabling us to view status and data from outside the arc flash boundary minimizing operator exposure to potential hazards.
- Online instruments / analyzers have been installed for measurement of pH, flow and ammonical nitrogen at the outlet of Effluent Treatment Plant (ETP). Online data is captured in data logger and connectivity has also been established with Gujarat Pollution Control Board & Central Pollution Control Board Servers.
- Intelligent addressable microprocessor based fire alarm system has been installed in plant. It comprises of the photoelectric smoke detectors, Rate of Rise/ fixed temperature heat detectors, manual call points positioned in zones/loops throughout the plant site. It is also integrated with clean agent extinguishing system. State of art beam detection system has been installed at Urea empty bag storage area.

8. Significant Achievements:-

- Kalol unit has completed more than 11 years (3980 days till 31.05.2022) without any reportable accident.
- IFFCO Kalol unit has been awarded prestigious 'Sarvashreshtha Suraksha Puraskar' by National Safety Council of India for the excellent SHE performance in the manufacturing sector.
- IFFCO Kalol has won FAI Environment award, safety award as well as Special Award for Research and Development/ Innovation for Development of Liquid Urea Fertilizer for the year 2020-21.
- Training Centre at IFFCO-Kalol has been approved by Directorate of Industrial Safety and Health (DISH) for imparting HSE trainings as per section 111-A of

the Factories Act-1948.

- IFFCO Kalol has also installed and commissioned Nano Urea Liquid Fertiliser plant within 19 months without any reportable accident.
- IFFCO Kalol has established online near miss reporting system and suggestion scheme.
- IFFCO Kalol has established visitor safety management system.
- Approx. 2000 persons have been imparted safety & health training during the calendar year 2021.

9. Conclusion

IFFCO-Kalol is committed to frame and implement Safety management system seeking continual performance improvement. Genuine concern and sincere commitment of the top management, whole

hearted efforts by each individual, demonstrative leadership, employee involvement, compliance of safety statutes and strict adherence to operating discipline and good engineering practices as well as use of advanced digital technology has brought in an ambiance where there is a total commitment of all the employees to get along with their jobs with lot of confidence and safety consciousness. Recognitions like Prestigious Awards from National Safety Council of India (NSCI), FAI Awards on Safety, Environment and overall plant performance, NIPM Award for best HR Practices, National Energy conservation awards from GOI etc. over the years are the testimony of endured efforts being put in by all the employees of IFFCO –Kalol unit in achieving and maintaining high standard of Safety, Health and Environment in all facets of their work.

NSCI Safety Awards 2021



S. Mohan, Jt. GM (EPC) and his team receiving the Award

GMR WARORA ENERGY LIMITED

Warora MIDC, Chandrapur, Maharashtra

(Manufacturing Sector – Group C – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)
and Success Landing of 5-Golden Stars of National Safety Rating System (NSRS)

Dhananjay V. Deshpande, COO & Praveen Shetty, Head - EHS
E-mail: Praveen.Shetty@gmrgroup.in

1. Background of the factory



GMR group has an asset base of over US \$ 6 billion. GMR group is a world renowned infrastructure developer that has excellent track record of creating mega infrastructure projects in India and overseas.



GMR Power and Urban infra (GPUIL) a subsidiary of GEPL holds expertise in the sectors of Energy, Urban Infrastructure and Transportation. GMR Energy sector is prominent contributor to the Indian power sector through various Thermal, Hydro and Renewable projects, headquartered in New Delhi. The group has 18 power projects of which 13 are operational and 5 are in various stages of development. Thermal- Operating Capacity is 3000 MW, Renewable (Solar, Hydro & Wind) Operating capacity is 208.35 MW, under development is 1000 MW.

GMR Warora Energy Ltd (GWEL) is a subsidiary of GMR Power and Urban Infra Ltd, operates 2x300 MW Coal Based power plant. Located at Warora MIDC, Chandrapur district of Maharashtra, 90 km from Nagpur. Electricity Generated is transmitted through Power Grid Corporation of India Ltd., Bhadrawati, 35 Km from plant location. Supplies power under Long term power purchase agreement ensuring sustainability. Fuel supply agreement available with coal India for the entire life of PPA.

Plant consisting of subcritical type coal fired boilers. The technology & major equipment used at the plants are boilers and auxiliaries, turbo-generators, transformers and auxiliaries, equipment for coal and ash handling, fuel oil system, de-mineralized water plant and other associated equipment. The equipment's are operated and controlled by state-of-art control and instrumentation system which

includes Digital Distribution Control (DDC), Programmable Logic Control (PLC), and Supervisory Control & Data Acquisition System (SCADA).

The safety of the generation process is ensured through protection and interlock system such as DEH (Digital Electro Hydraulic Governing), FSSS (Furnace Safeguard Supervisory System), etc. IT infrastructure is extensively used within the company. Integrated ERP system (SAP) is used for carrying out all transactions, HR operations, etc. Distributed Control Systems (DCS) and various other modern plant automation systems at the plant ensure real time monitoring and control of plant operations and environmental performance parameters. Further, stack and ambient air parameters are monitored online as well as off-line.

GWEL rapidly gained position amongst the best performers in thermal power industry. We are well positioned to deliver sustainable and profitable growth, backed by our hybrid O&M Module.

Our System based approach allows us to capitalize opportunities while minimizing associated risks.

We are leveraging the best available technologies to further improve Safety, Efficiencies and reduce our environmental footprint.

2. Commitment of the top management to SHE

Environment, Health, Safety and Quality Policy frameworks is top driven & has been signed by GMR Group Chairman and it is being followed in letters & spirits.

At GWEL plant (Factory) EHSQ policy and GWEL's OH&S Policy. Integrated Management System (ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018) Policy issued by COO is adopted.

The GWEL Top Management actively monitors and oversee all decisions made by it on Occupational Health & Safety. EHS department periodically provide feedback and advice to the departments on implementation of decisions made by management on Safety. Decisions are implemented in time bound manner.

Management establishes a strategic annual operating plan and sets the health and safety performance objectives and targets at a business level which forms the basis of the GWEL's HSE annual operating plan. Annual HSE plans, which are drawn from time to time,

Review meeting	Reviewed by	Periodicity
Daily Planning meeting	Plant Head/COO	Daily
COVID 19 outbreak GWEL-War Room	Plant Head/COO	Daily
EHSQ management system MRM(Management review meeting)	Plant Head/COO	Monthly
EHS Council meeting	Dy. CEO	Monthly
Quarterly Board meeting	Board	Quarterly
Board meeting	Board	Yearly
GWEL Operation Review Meeting (ORM) Review	CEO	Monthly

clearly mentioning the targets, time frame are set every year in the month of March. Stakeholder's participation and consultation being ensured during the process. COO ensures implementation of HSE programs/plans at GWEL level. Processes are in place to ensure healthy and safety performance and regularly measured, monitored, recorded and analysed with results reported.

The Top management review occurs in a clearly defined, appropriate and sensible output, which is easily being directed for execution. GWEL have core Environment Health & Safety (EHS) team consists of Medical Officer, Fire Officer, Safety Manager and Environment Manager headed by General Manager (EHS). EHS Head is reporting directly to COO, who is an Occupier of GWEL.

HSE performances and activities were appraised to Top Management in the following periodicity. HSE performance of the factory is published in the Annual Report and Sustainability Report of the Company

Leadership is strength within GWEL with demonstrable commitment being shown from the COO through to worker level. Managers are made accountable not only for the processes under their control but also for the day-to-day management of specific zones within the plant. Top level objectives are agreed by the GMR Board and are delegated down to operational levels. Health and safety is widely promoted throughout the plant through signage and a number of cultural initiatives to raise awareness and report issues. The top management demonstrates a strong commitment towards Environment Health & Safety. This can be observed in the following actions taken by the top management

- o Implemented comprehensive EHS management software Sarathi
- o Assessment of our OH &S management system through National Safety Council Safety Rating system to achieve continual improvement
- o Assessment of OH&S management system as per British Safety Council's five-star Audit specification

- o Implementation of business excellence initiatives
- o Releasing corporate sustainability reports
- o Implementation of energy management system
- o Recertification of Integrated Management System as per the new standard i.e (ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018), 5S, ISO 50001 -Energy Management system).
- o Implementation of BBS (Behaviour Based Safety)
- o Implementation of 5S system for housekeeping
- o Implementation of employee wellness program called "GWEL Nirmal Jeevan"
- o Implementation of SA 8001 social accountability management system
- o Participation in various HSE awards to benchmark ourselves

Top management always demonstrate their commitment towards worker's safety on the job by embedding health and safety in every aspect of the workplace. Top management takes regular safety rounds of factory. COO participates in monthly EHS walkthroughs

Senior Management Walkthroughs



3. Employees' participation and involvement in SHE matters

Employees participation and involvement in SHE matters is ensured in following way

Safety committee: Safety committee comprises of 25 management and representatives from employees of various departments, 25 representatives from workers including contractors is constituted. COO is Chairman of the committee and EHS Head is Convener. Safety Committee meets once in a month to review the safety practices being adopted in the plant and matters related to promoting Safety

KAUSALIKA a friendly enquiry of your health with COO: Kausalika is a platform for employees to interact with COO, where an informal friendly enquiry and counselling of their health & wellbeing takes place

Spot the Hazard Scheme: Under this scheme employees including contractor's workers are encouraged to spot and report any unsafe condition. Employees reported more than 5 hazards were being reward. Monthly mass meeting with workers followed by safety pledge

Auxiliary Fire Fighting Force (AFFF):

Keeping in view of emergency preparedness and protect the plant, employee, community and neighbouring populations around the plant an Auxiliary Fire Fighting Force (AFFF) concept were introduced for better and effective handling of emergency situations. We have identified and nominated as AFFF member from associate employee who is engaged at site for day to day activity.

Theme based safety exhibition by contractors: Contractors working in GWEL participates in this competition. Individual contractors prepared theme based safety demo module and exhibits in exhibition. Employees and contractor's workers visits this exhibition and got benefited. Best modules are rewarded by management

Plant Head & Head (O&M) visit Safety Exhibition Display Area



EHS Awareness campaigning: We regularly organize Safety Awareness Campaign covering workforce inside the plant and people in nearby villages. Some of the campaigning's are

- o National Safety Week celebration-4th to 11th March
- o Observing National Fire Service Day / Week - 14th to 21st April
- o Road Safety Week - 10th - 18th January
- o Electrical Safety Week - 26th June to 2nd July
- o World Environment Day celebration 5th June
- o Energy Conservation Week 7th Dec'2020 – 14th Dec
- o Women Wellness Program & mammography camp on 8th March





Competitions - Extempore Speech

4. Implementation of the recommendations of studies, audits, committees, etc.

GWEL has adopted PDCA approach with continual improvement at its core. To support this, we have developed auditable Occupational Health & Safety Management System (OHSMS) at the beginning of the O&M phase of plant. Our OHSMS is initially built on OHSAS 18001 model. Since 2014 system has improved and matured significantly after bringing multiple initiatives. In 2018 implemented OHSMS as per new ISO standard & got certification as per ISO 45001:2018.

To assess effectiveness of system various Internal and external audits, assessments, studies, surveys are carried out for identifying opportunities for improvement. Compliance evaluation to legal and other requirement is done on daily as well as monthly basis. Further bench marking with national and international level is carried out by conducting various surveys, assessments, rating system.

The recommendations received from all these are treated as system non compliances and thorough RCA is been carried out. Accordingly, corrective & preventive actions been taken up with time bound manner. Concerned departmental safety budget is spent for compliance of these action. Any capex requirement is met by obtaining top management approval.

5. Special efforts and approaches to SHE and significant achievements (tangible and non-tangible)

We like mention some of the special efforts approaches taken in recent past.

Workplace Assessment for Safety & Hygiene" (WASH): As GWEL is essential service providers, it was compulsion to keep our operation running during COVID 19 pandemic and at the same time it was challenge for us to protect the health of our employees, employee's family, associated contractor employees and larger community around us which may be affected due to our operation. As a part of various measures to contain the spread of COVID-19 at work place, GWEL has implemented standard developed by

Quality Council of India and successfully carried out "Workplace Assessment for Safety & Hygiene" (WASH) assessment through BVQI. This has been helping us in

- Ensuring safe operations and workplace for safeguarding health and safety of employees, associate employees, family members, customers and public.
- Complying with all new COVID-19 related requirements from health authorities and/or other government bodies.
- Ensuring business continuity in operations to serve customers and protect businesses.



SAP based Permit to Work System: We have implemented modern SAP based automated and e-enabled Permit to Work (PTW) system. Benefit's achieved are

- All possible manual processes eliminated
- Process is controlled, automated, documented, tracked and reviewed
- Hazard Identification and Risk Assessment (HIRA) being captured from the system
- Safety precautions and SOP & Work instructions being captured from the system
- Incidents due to non-adherence to SOP significantly reduced
- Head of the departments and plant heads having rights to view whole departments permit to work compliance status in graphical gauge or detailed task-wise report. They make use of this system to track and review
- As soon as PTW application created, an auto-mail is triggered to Safety Officers & Permit requester. This

enables Safety officer to plan for PTW audits / Checks etc. accordingly.

Identification / Nomenclature of equipment



Loto - Stations



Loto



Training Activity for field Engineers / Operators



Training on different types of lock used



IT Enabled Legal Register (Legatrix): We implemented an IT- enabled legal support service interface for legal compliance monitoring. The compliance management involves defining and executing compliance tasks based on the defined calendar. This system provides robust escalation mechanism up to CEO (Chief operating officer)/ Board of director's level. Head of Departments monitors legal compliance status of their respective department through this portal. They receive a trigger mail well in advance prior to expiry of compliance and this gives them an opportunity to complete the tasks within given schedule. Plant Head receives departmental wise graphical gauge or detailed task-wise report through this portal for legal compliance review whole GWEL. Compliance status report generated through Legatrix portal becomes the part of agenda points for board meeting

GWEL Shreshtha Suraksha Puraskar for contractors: This Award has been given in each quarter to recognize contractor's companies for their meritorious Environment Health & Safety (EHS) Performance and implementing effective EHS Management Systems, Practices &

Shreshtha Suraksha Puraskar Award to Associates



Benchmarking at National & international level: GWEL has undergone assessment of Occupational Health and Safety Management system as per as the requirement of British Safety Council's Five Star Occupational Health & Safety Audit. We have attained 5 Star Rating in the British Safety Council's Five Star Occupational Health & Safety audit with a score of 97.64% in 2019.

Factory is also certified for SA 8000 Standard i.e. Social Accountability management system (SAMS). The certification will help us in sustaining our performance in the areas like statutory compliances, Prevention of Forced & Child labour, Prevention in discrimination and other EHS Indicators.

GWEL is certified for energy management system, Water efficiency management system which is helping us in sustaining our performance in the area of environment management.

6. SHE management, its linkages with Key Result Areas and outcomes

GMR Warora Energy establishes a strategic annual operating plan and sets the health and safety performance objectives and targets at a business level, which forms the basis of the GWEL's HSE annual operating plan. Annual HSE plans which are drawn from time to time clearly mentioning the targets, time frame is set every year in the month of March. Stakeholder's participation and consultation being ensured during the process.

Different functions at GWEL establish their own functional specific health and safety plan which outlines their health and safety performance objectives and targets aligning with the GWEL HSE annual operating plan for the coming financial year. Performance appraisal system is established in which health and safety objectives delegated to individual employees are discussed with individual by his manager. During the midterm performance appraisal process, objectives and targets can be amended if required. Head of the departments will ensure the implementation of plan in their respective department and reviews the progress on monthly basis. Processes are in place to ensure healthy and safety performance is regularly measured, monitored, recorded and analysed with results reported. Department's measure and reports HSE performance data on a monthly basis. The reported data is collated and analysed, as appropriate, and reported to personnel who have the responsibility to take action on the basis of this information. Information from Departmental safety review meetings and operation review meetings are used for management reviews. Management Review aims at arriving at decisions, identifying actions, assigning responsibilities and target dates. Decisions made during the Management Review Meetings will be

implemented and communicated to all relevant parties, including any external parties. EHS department periodically aggregate and analyse health and safety performance data for all department, provide feedback and advice to the departments on initiatives to drive improvement in EHS performance. Systems are established to ensure the appropriate reporting of health and safety performance to relevant authorities. Relevant HSE systems and performance information is routinely communicated by management to relevant stakeholders.

7. Use of advanced digital technology (AI, AR/VR, Robotics, Drone, etc.) to enhance safety

EHS Management Software – “SARATHI”: Sarathi is a Digital Transformation for Safety. SARTHII is Web based and mobile application EHS management software covering 23 modules like Accident/ Incident/ Near-miss management & analysis, Corrective & Preventive Action Management, EHS Training Management, BBS Observation, Employee Occupational Health Management, EHS Observation, Senior Management EHS walkthrough, Site Inspection, EHS Audit, Safety Equipment Inspection, MOM tracker, EHS Dash board, HIRAC, Register of Regulation, Environment Parameter Monitoring, Emergency Preparedness, Hazardous Waste Management, Environment Review (Aspect & Impact), EHS Objective Tracker, Hazardous substance register with MSDS, Central Document repository, Safety Portal -knowledge base, Mobile App, Employee Feedback(Survey), Contractor Evaluation, 5S management, Toolbox talk management. Benefits achieved by implementation of this software are

- Capturing of the near misses, EHS observation and incidents have improved and made easy as the employee / associate can directly upload the problem through mobile app reducing the time and paperwork thus reduction in operating expenses by approximately 25%
- Timely analysis by the concerned process owner has increased due to auto trigger mails and thus faster communication. Estimated 20-40% increase in performance gains – Safety, Reliability and Regulatory compliance
- Report preparation for top management & review has improved.
- Concept of reporting incident has penetrated till the bottom of the organisation thus strengthening the action planning process.
- The observation / incidents is analysed and the recommendations are directly integrated with individual task list thus eliminating the chance of overlooking the problem.
- Fast moving processes & flexible systems – manage risk more effectively

Whole plant is including plant and machinery operation area is covered through CCTV, which helps in remotely

monitoring the area and early identification abnormalities. Power plant simulator is available for enhanced training of operating staff

NSCI Safety Awards 2021



Dhananjay V. Deshpande, Chief Operating Officer and his team receiving the Award

Success Landing of Five Golden Stars of NSRS

Experience of NSRS and its contributions towards improvements in SHE at GMR, Warora.

GWEL has scored 95.80% and been awarded 5 Golden Safety Stars rating in the prestigious National Safety Council's Safety Rating System (NSRS) Assessment.

GWEL operation philosophy is driven by group's vision of "Building an Institution in Perpetuity". In line with this we have adopted various management system for Occupational Health & Safety, Quality & Resource conservation in our last 8 years of operation. However, during COVID-19 pandemic our focus was more on ensuring employees and stakeholder are safe from being infected. We have taken various initiatives and control measures to prevent wide spread of COVID-19. During this period there were various industrial disasters happened across the country, which have caused loss of life and property. So, it was apprehended that there could be lapse in our workplace safety management system also. So with an objective of sustaining and further strengthening the OHSMS in spite of being certified for 5-Star rating by British Safety Council in 2019, we have decided to go again for assessment of OHSMS through National Safety Council.

As we experienced during the assessment, NSRS is an in-depth assessment process of Safety Management system conducted by expert assessors from NSCI. The Assessment

was in three phase which include Study of the organisations Safety system with Pre-Visit Questionnaire. Assessment of safety systems during the site visit/through discussion/ review of documents, Re-verification site visit & Rating.

The Process started in July 2021 with Pre-Visit Questionnaire as first phase and 2nd phase was site visit by a team of three assessors in Dec'21. All the assessors have taken thorough round of the plant and the system was thoroughly investigated along with verification of documents in which many points have been raised which have escaped from our eye. The Element wise observations and area for improvements were shared by assessors in feedback meeting with management.

GWEL team worked on all the observations and prepared the corrective actions with responsibility and target date for completion.

In 3rd phase, 2nd site visit assessment was carried out by the assessors. Assessors re-verified all the systems for sustenance and verified the corrective actions taken against the observations. NSC Appreciated the efforts put by GWEL for completing the corrective actions.

Probably GWEL is the first organisation to reach 5 Golden starsafety rating in recent years. The 5 Golden Star Safety Rating will surely give leap towards better standard in OHS, workplace environment leading to better productivity and Safety culture.

The experience with the NSRS is fabulous. Though, we have implemented many world-class OHS management systems but still we have learned a lot from the assessment from NSCI. It will help us a lot to further strengthened our Management System. These type of assessment from an independent third party plays a very major role in strengthening of the system.

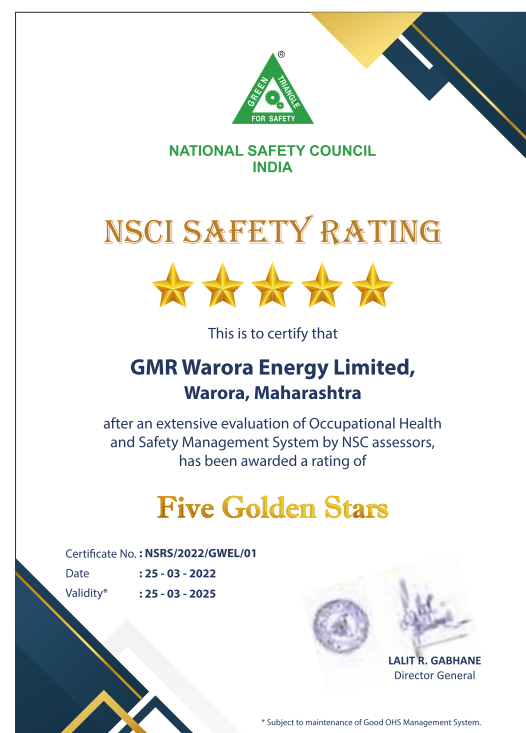
NSRS have definitely contributed a lot in improving our system especially machine guarding, fire hydrant line upkeepment, contractor's tools tackle management, electrical safety. Some of the observations raised in the first site visit were eye opener, which needs immediate attention. Our team worked tirelessly and closed all the observations and also gone beyond, which shows their commitment for a better and safer workplace. Taking care of those observations definitely improved our OHS management system and helped us in getting the prestigious Five Golden star safety rating in the NSRS.



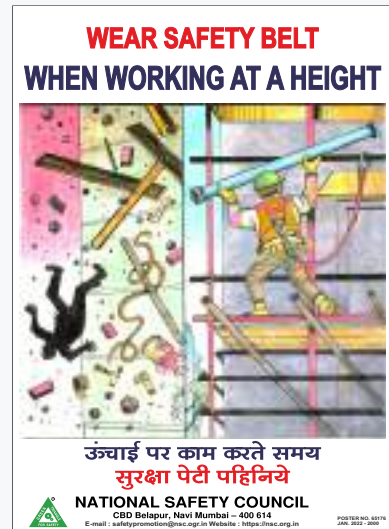
NSC Assessors with GMR Team



Opening meeting by NSC Assessors



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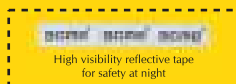
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JK LAKSHMI CEMENT LIMITED

DURG UNIT, Chhattisgarh

(Manufacturing Sector – Group D – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)

Ravi Kumar Mishra, Manager - Safety
 E-mail: ravimishra.safety@gmail.com

1. Company Profile:

JK Lakshmi Cement Ltd., a member of the prestigious JK Organisation, is a well renowned and established name in the Indian cement industry for over three decades. The company's core values are:

- Caring for people
- Integrity including intellectual honesty, openness, fairness & trust.
- Commitment to excellence.

JK Lakshmi Cement limited has modern and fully computerized, integrated Cement Plant at Ahiwara (Durg) in Chhattisgarh. The company is positioned amongst the least cost producers in the industry, the operating parameters of the company are at par with the international standards.

JK Lakshmi Cement is relentlessly focussing on the product quality, customer satisfaction, safe working environment and innovation. This helped us push the boundaries and tap the immense potential for development in the infrastructure and construction sectors of the country.

JK Lakshmi Cement endeavour is to become a complete solution provider to the customers looking to make their dream home. The product range includes an array of cement products like ordinary Portland cement, Portland pozzolana cement, Portland slag cement, and newly introduced composite cement. In addition to cement products the company provides a host of value-added products and services viz. Ready mix concrete, gypsum plaster, wall putty, autoclaved aerated blocks, construction chemicals and adhesives.

JK Lakshmi Cement Ltd. follows green practices that confirm with Green Globe Standards and is a responsive partner in ensuring a brighter tomorrow for future generations. We are committed to pursue initiatives that are smart for our business and good for the safety, environment and we are proud of the significant progress we are making in this regard. The major ways in which the company demonstrate its commitment are by reducing energy usage, managing waste, managing safe working and by working to increase fuel efficiency and measuring & reporting on environmental impacts.

JKLC Durg, is ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 accredited, with highest standard of Quality, Environment, Safety & Health Management

System in its integrated approach. Also accredited with ISO/IEC17025:2017 & ISO 50001:2018 for Energy Management System.

2. Process Description:

Project description with process details:

JK Lakshmi Cement Ltd., Durg has existing installed capacity to produce 1.98 MTPA clinker, 5 MTPA cement, 10 MW waste heat recovery based power plant and captive power plant of capacity 20 MW.

Process Details: Clinkerization and Cement Grinding:

The process involves clinker production and grinding, largely comprising based on the following steps:

- Transport of excavated limestone from mines site via covered trucks.
- Raw Mix Preparation & Homogenization
- Coal preparation
- Calcination
- Clinkerization & Storage
- Grinding
- Packing

3. Award & Accolades:

JK Lakshmi Cement has been awarded several coveted awards for maintaining & sustaining the Safety standards in Cement integrated unit.

- Gold in cement sector for outstanding achievement in OSH by Sustainable development in 2019
- Effective Safety Culture Award from Greentech foundation for the assessment period of 2020
- Outstanding achievement in the field of Ind. Safety by DISH Labour dept. Gov. of (C.G.) in 2022



Gold award in cement sector for outstanding achievement in OSH by Sustainable development foundation in 2019



Effective Safety Culture Award from Greentech foundation for the assessment period of 2020



Outstanding achievement in the field of Industrial safety by DISH Labour dept. Gov. of Chhattisgarh in Feb 2022



Safety Management System at JKLC Durg Unit:

Through the effective implementation of Safety Management System, JKLC Durg has built safety culture which has incubated safety in the day-to-day activities of the JKLC integrated plant. It covers safety in all aspects of plant and facilities i.e. to control loss to personnel, equipment, material, and environment. With the top management driven approach, these systems are effectively implemented and being sustained according to the highest standard in the industry. Hazard identification & risk assessment, SOP's, training, BBS, incident management system, near miss reporting, safety observation visit, logistic safety inspection through app, safe start-up & shutdown procedures, emergency response plans, management of change, statutory compliances audits, on the job safety are major elements of Safety Management System implemented at JKLC Durg Unit.

4. Management's Commitment to HSE:

4.1 Safety Induction: Each person including all stakeholders must have Safety induction training through Animated safety video facility available at JK Lakshmi Cement Durg Safety Induction Centre.



4.2 Safety First:

All meeting & official program including trainings, workshops, seminar etc. starts with Safety first. The safety first starts with "I" which indicates that I am dedicated towards safety at all levels.

4.3 Apex Safety Committee meeting (ASCM) is conducted quarterly chaired by Unit Head –Sr. V.P. (Works) and participated by equal nos. of staff and representative of workers. All safety issues are deliberated, and action plan are formulated for continual improvements.



4.4 Monthly Safety gate Meeting:

First working day of each month observed as Monthly Safety gate meeting which is celebrated at main gate location inside the factory premises. Each program is presided by top management including Unit Head, Engg. Head, HOD's and Section In-charges.



4.5 Safety Audit by Cross functional Team (CFT)

Structured Safety audit (Internal) is being done monthly by CFT Senior officials including UH, EH and HOD's & Section in charge. All Safe acts/conditions & unsafe observations are followed through Safety Visit App and Email for compliance.

4.6 Safety, Operation & Maintenance Review Meeting:

Daily coordination meeting is conducted twice chaired by Unit Head, Engg. Head & HOD's, Section In charge, Maintenance officials. The meeting starts with day to day plant safety concerns & issues. In the meeting, immediate decisions are taken for safe & reliable operation of the cement integrated unit.



Safety Motivational and promotional activities & prizes: For all cadre of employees and workers

Celebrating National Safety Week every year and during closing ceremony following motivational activities are carried out:

- Safety person of the Year
- Safety champions of National Safety Week
- Safest department of the year
- Best TBT Department of the year
- Best Near miss reporting Department of the year
- Online Safety quiz Winners
- Safety Models/Play/Skit Winners
- Fire service day is observed for awareness and evaluating to emergency system.
- Road safety week celebrations
- Electrical safety week celebrations
- Appreciation from Top management to all on completing year without any accident.

4.7 Monthly Safety Message by Unit Head – Sr. VP Works

It is communicated which includes all the latest development/activities completed and under progress. All Safety matters are accorded top priority in this communication which shows the commitment of management towards safety.

4.8 Monthly Evacuation and Mock Drill:

Emergency siren is tested on 1st working day of every month after monthly safety gate meeting as a best safety practice and on hearing the Emergency siren respective area personnel's assemble to their assembly points.

Top Management actively participate in this Emergency siren testing as a part of evacuation drill and assemble at nearest assembly point.

In addition to the above, mock drills are conducted to Evaluate Plant emergency preparedness, response and evacuation system on quarterly basis (Once in a 3 Months) and its Report contains details as follows:

1. Chronological order of events with timing
2. Observations
3. Suggestions/Recommendations
4. Action plan with Completion status.

5. Employees' Participation and Involvement in OSH:

5.1 Monthly Safety gate Meeting:

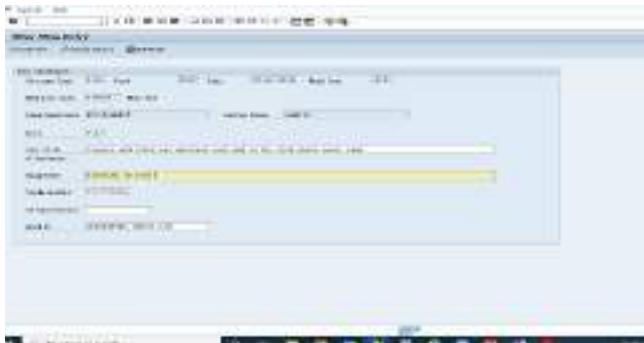
It is conducted on 1st working day of every month, that is coordinated by the Safety In-charge and headed by top management Sr. V.P. (Works) as chief guest alongwith the participation of all employees and workers.

1. Wherein Our Unit Head Sr. V.P. (Works) communicate in which includes all the latest development / activities completed / under progress and all the Safety matters are accorded top priority in this communication which shows the commitment of management towards safety.
2. Safety in charge share about Plant Safety statistics till current month and year to date.
3. Safety talk is conducted on the safety relevant topics by Senior Staff person.
4. Safety skit also conducted in this Safety gate meeting and participants are rewarded through gifts as token of appreciation.



5.2 Near Miss reporting and compliance:

All employees including contractor workers actively participate in near miss reporting. 5254 BBS observations and near misses were reported by employees during 2021-22. Time bound compliance of the reported near misses by concerned person is one of the mandatory requirements of JKLC Durg Unit.



5.3 Plant Safety Committee meeting (PSCM):

PSCM is conducted monthly at Conference Hall chaired by Unit Head including the participations of Engg. Head, HOD's, Section In-charges and all concerned staff & workers discuss the safety issues and way forward for compliance.

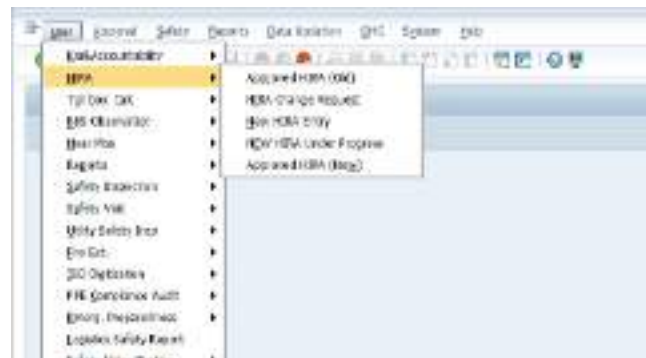


5.4 Safety observation Visit / Tour(SOT):

Safety Observation Visit is conducted by senior, sectional, and site engineers and the observations are entered into the online safety visit app. Concern responsible person ensures the compliance of the observation with involvement of other concerned employee. Compliance of the observations is monitored in the Plant Safety Committee meeting chaired by Unit Head.

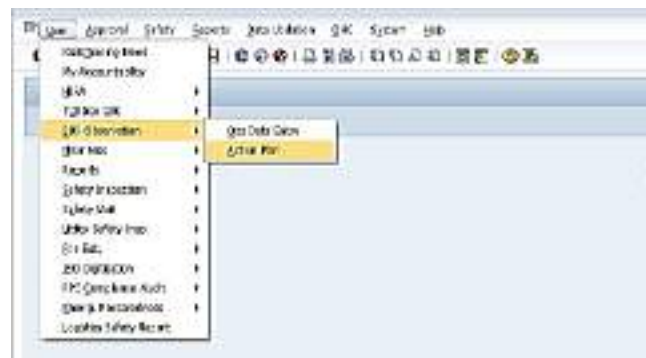
5.5 HIRA Module:

SAP based HIRA module developed for line manager as Safety KRA, each department have cross functional team who prepare HIRA for all departmental activities and the same are used by Site engineers as Tool Box Talk (TBT) safety topic for the working personnel who is going to perform that specific task.



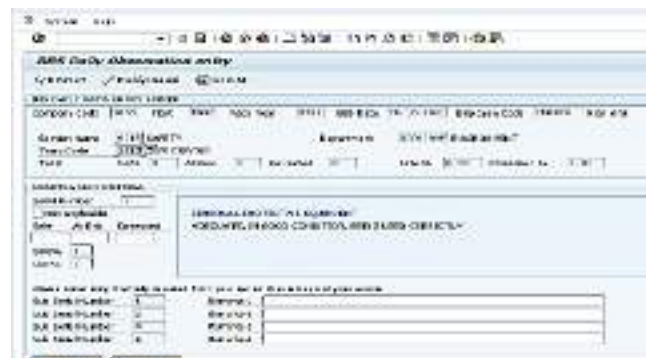
5.6 Toolbox Talk:

SAP based TBT module developed for Line manager as Safety KRA, The Toolbox talks are conducted in supervision of concerned Site engineers & workers of the area. All the job starts only after having TBT, for which TBT topic is taken from HIRA module of specific task.



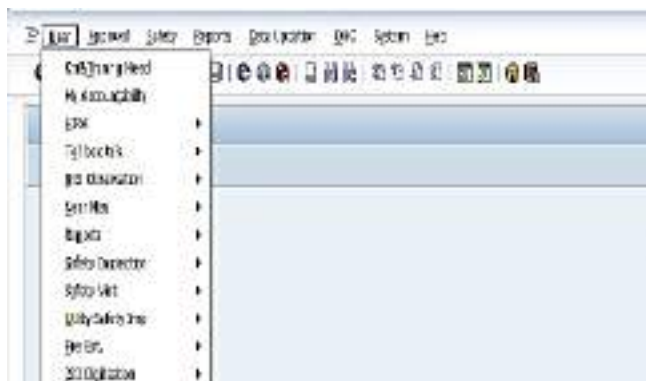
5.7 Behaviour based safety module:

SAP based BBS module developed for line manager as Safety KRA in which site engineer who completed TBT for the working personnel, will observe the behaviour of the same personnel's using BBS checklist to make sure the safe working at site and to observe the physical condition work and work practices followed by workers at site.



5.8 Plant Safety Inspection App:

In conventional system audit, a team of 5-members (Process, electrical, mechanical, instrumentation and safety) were essential for noting down the abnormality observed in digital system. However, in the App all the equipment's are mapped in the system and marking is done at shop-floor and the inspection is being done with respect of that identification marking, so there is no need to visit by all 5 members together. With same time involvement frequency has been multiplied five times leading to creation safe workplace.



5.9 Utility Safety App:

Objective of this system was to provide an effective platform to shop floor engineers to help them maintain safe to use condition of welding machines, pressure vessels, lifting tools tackles, portable tools, mining equipment, transformer, and earth pits. All respected HOD's have assigned the specific responsibility to the employees, it is expected from the employees and the team leader that they should ensure the mapping of all the equipment in the app and ensure is periodical (at least quarterly) inspection.



5.10 Logistic Safety App:

Safety Inspection of all vehicles such as raw material, cement trucks, bulkers, coal vehicles, and finished goods trucks for ensuring the Safe condition of it in terms of Vehicle body, its safety interlocks, all required compliance papers such as PUC, Fitness, Driving license, etc. a App has been developed and being used.

6. Special Efforts & Approaches to OHS and Significant Achievements:

6.1 For Behaviour Based Safety Enforcement – Safety Mirror installed at main Entrance Gate and CCR which says “Do you know who is responsible for your Safety? Open & See.”



6.2 Departmental Safety officer:

Act as catalyst and mentor to promote safety culture within department, Integrate safety in production / maintenance activity, continual improvement in safety through innovation, Site / Sectional in charge is encouraged to be part safety management implementation, 14 Nos. of Departmental Safety Officer (DSO) have been identified in Units, who continuously monitor & report unsafe acts/ conditions in their area. The observations reported by DSO are rectified in time bound manner by concern responsible person for compliance.

Sl. No.	Unit	DSO	Remarks	Date	Location
1	Unit 1	DSO 1	REPAIRS COMPLETED	30.10.2018	SECTION 1
2	Unit 2	DSO 2	REPAIRS COMPLETED	30.10.2018	SECTION 2
3	Unit 3	DSO 3	REPAIRS COMPLETED	30.10.2018	SECTION 3
4	Unit 4	DSO 4	REPAIRS COMPLETED	30.10.2018	SECTION 4
5	Unit 5	DSO 5	REPAIRS COMPLETED	30.10.2018	SECTION 5
6	Unit 6	DSO 6	REPAIRS COMPLETED	30.10.2018	SECTION 6
7	Unit 7	DSO 7	REPAIRS COMPLETED	30.10.2018	SECTION 7
8	Unit 8	DSO 8	REPAIRS COMPLETED	30.10.2018	SECTION 8
9	Unit 9	DSO 9	REPAIRS COMPLETED	30.10.2018	SECTION 9
10	Unit 10	DSO 10	REPAIRS COMPLETED	30.10.2018	SECTION 10
11	Unit 11	DSO 11	REPAIRS COMPLETED	30.10.2018	SECTION 11
12	Unit 12	DSO 12	REPAIRS COMPLETED	30.10.2018	SECTION 12
13	Unit 13	DSO 13	REPAIRS COMPLETED	30.10.2018	SECTION 13
14	Unit 14	DSO 14	REPAIRS COMPLETED	30.10.2018	SECTION 14

6.3 Scaffolding Safety Model & trainings:

Scaffolding models demonstrated at working site including its structural nomenclature. Trainings are also conducted for employees and contractor workers. Those who have attended this training, are only certified for signing scaffold tags.



6.4 Employee suggestion/idea scheme:

It is driven by Human Resource Department for the purpose of providing suggestion in terms of any matter related to work including workplace Safety



6.5 Mandatory Fire fighting & its system trainings and drills are conducted with hands on Practices of Fire Fighting Equipment for Employees and contractor workers on scheduled basis.



Demo on oil fire and its control by Fire fighting Team

6.6 Incident Sharing: Employees & Contractor Workers are being shared incidents in various forums like notice board, daily TBT, Apex & Plant Safety committee meeting, monthly safety gate meeting, shop floor & classroom training through email, etc.



6.7 Enhancing Emergency Preparedness: Based on approved On site emergency plan, booklet consisting of in-depth role & responsibility of emergency coordinators prepared and distributed to all emergency team coordinators, staff, and workers to make them aware to handle emergency.



6.8 Safety interaction with DSO: In a step towards inculcating safety culture in site engineers, they are encouraged to have discussion & session with DSO on various Safety Topics. This step has made them thorough with all safety system and procedure applicable for JKLC integrated unit. Training session is conducted to all Safety topics like PTW, HIRA, BBS WAH, LOTOTO, lifting work, excavation, confined & scaffolding Safety, etc.

7. Improvement in Safety Management System through Digitalization:

7.1 OHS awareness through learning & Sharing:

KIOSK System installed at JKLC RABH and CCR building for showing Safety related Videos, clips, Messages, Pictures. This display system is also used for showing unsafe act/condition observed during safety plant visit/tour and for conducting On the Spot quizzes for staff & contractor workers. The winners of quiz competition are appreciated at monthly safety gate meeting.



7.2 Digital Permit to Work System: Mandatory Work Permit Training is conducted to all Permit Users, Signatories & Permit Receivers. Authorization to permit issuer and receiver is being given only after training on work permit system, which is valid for 2 years/ any modifications on it.

7.3 Permit to work Display Dashboard: A portal developed for real time all PTW job displayed at online JKLC portal through Intranet. Benefit: Ease in identification of all critical job locations on single dashboard , Improvement in permit compliance monitoring, etc.



7.4 Installed Surveillance system: A system developed for display of roadblocks in JKLC Durg unit through installed surveillance camera. Benefit: Quick view & easy communication of closed / blocked road & its monitoring at all levels , Fire Crew can easily plan their route for emergency handling , Effective job planning by Maint. / Project taking into consideration of closed road, etc.



7.5 SAP based Digital LOTO System: In house developed LOTOTO online portal which is linked with SAP system and this digital LOTOTO system implemented with the principle of one person one lock one key. The term lockout tagout (LOTOTO) refers to a safety procedure that ensures that dangerous machines and energy sources are properly shut off and not unexpectedly started up before the completion of maintenance or servicing work.

Job ID	Job Code	Component Name	WFO	Discontinued	Created By	Job Start/End	Status
1	000001	REPAIRING OF 11KV SWITCHGEAR	WFO	DISCONTINUED	10/01/2018	10/01/2018	Completed
2	000002	REPAIRING OF 11KV SWITCHGEAR	WFO	DISCONTINUED	10/01/2018	10/01/2018	Completed
3	000003	REPAIRING OF 11KV SWITCHGEAR	WFO	DISCONTINUED	10/01/2018	10/01/2018	Completed
4	000004	REPAIRING OF 11KV SWITCHGEAR	WFO	DISCONTINUED	10/01/2018	10/01/2018	Completed

Benefits: Auto message generation facility to get prompt information of it and to protect person being exposed due to unexpectedly started up before the completion of maintenance or servicing work.



7.6 EY-Compliance software: For monitoring of all statutory license like PESO, Factory license, PCB, etc. an in-house portal has been developed where all licence details with validity are uploaded for easy monitoring. Benefits: easy accessibility of all statutory license in a single place, easy monitoring of validity due date of various license, etc.



7.7 IOT of hydrant system under initiative industry 4.0 developed.

Benefits:

- Auto message generation facility activated,
- Alert for the low hydrant pressure to key personnel,
- Alert for low water level in priming and main water tank
- Alert for hydrant pump auto start (Main and jockey pump)
- Report of hydrant line pressure, pump start frequency and total running hour
- Digital history report for pump running and action taken
- Centralised Fire alarm and detection system commissioned and working successfully



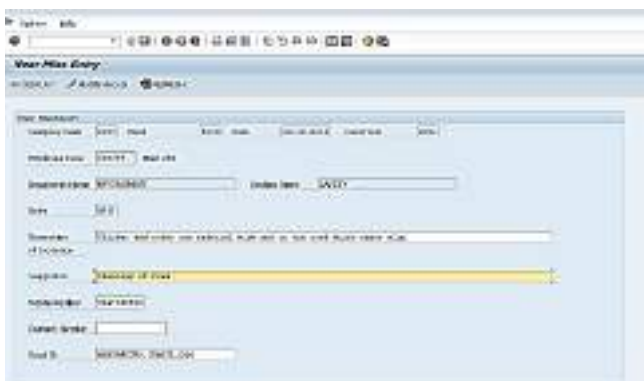
7.8 Visual inspection using Drone: To eliminate the risk of fall from height, while checking structure stability at height & to prevent from electrocution at switch yard, company is using drone facility for visual inspection maintaining safe distance at all switch yard equipments and high rise area where always have potential to fall.



7.9 Online Interlock Bypass Portal: Online Portal developed for Interlock Bypass system. Benefits: Online approval based on requirement by the requisitioner, easy monitoring of all bypassed interlocks in click of button, section wise data available in the portal, how many times interlock is bypassed can be reviewed, etc.



7.10 Digital Near Miss Reporting Portal: All near miss / unsafe acts/ unsafe conditions can be reported in an online portal by anyone (Employee/staff/contractor worker) from any location of JKLC with access to PC. Benefits: Near miss can be reported from any corner of JKLC instantly, Area In-charge can sub-delegate the near miss to the job in charge in online portal itself, Auto-generate mail to Area-In charge & HOD for every near miss reported, Easy analysis of all near misses as per period select in a click of button, Easy Compliance monitoring of reported near misses etc.



7.11 JKLC have installed Biometric control system which has been adopted to prevent unauthorised access in Load centres.



7.12 Insulating paint coating instead of rubber mats at all the Load centres (Main receiving substations / Electrical substation) where all the plant operating high tension and low tension electrical panels are placed.



7.13 Fire retardant coating, fire wall barrier and fire board system installed at all load centres to avoid fire propagation and limiting the rise & spread of fire. FIRE WALL BARRIER



7.14 DMS-MOC:

Management of Change (MOC) which is an integral element of safety management system is done and uploaded through online DMS software. When suggested change as per user department is requested then Technical Service (TS)/Engineering Service (ES) department studies the feasibility of the proposed scheme taking data from the online DMS portal. All the stages of Management of Change i.e.

feasibility study is done and finally scheme for change is issued and uploaded through this portal. **Benefits:** Status of scheme with development report i.e. in which stage the scheme can be viewed online. Easy monitoring of all the MOC requested and implement online centralized record keeping of all data with respect to MOC.



7.15 JKLC Durg e-Learning I-Page Portal: Developed with various topics including Safety e-learning & Case-studies. This portal has immensely helped employees to upgrade their self with the latest technology at par with market standard. Completion of courses are appreciated & being monitored by management.



8 Conclusion:

The JK Lakshmi Cement Durg unit is always driven by the principle of Best Safety standards. Upholding "Commitment to excellence" as a core business value. JKLC is committed towards safety of its employees, contractors, communities, and all stakeholders. The JKLC cement durg integrated unit is round the clock under operation and possesses significant health & safety hazards like dust, fire, height electrical etc. JKLC has fire protection and prevention systems are in place to tackle any mishap and for rescue purpose. The regular Safety walk, the talk, interaction, demonstration, safety observation tour and training of all stakeholders including contractor personnel are the key elements to achieve the highest safety standard, towards the journey of achieving commitment to excellence.

As a result of robust safety system, The JKLC cement Durg Unit has completed 2280 accident free days which is equivalent of 06 years 03 months, this record shows the commitment & highest standard of Safety Practices being followed by Management, Employees, Contractor Workers & all Stakeholders.

NSCI Safety Awards 2021



Ravi Kumar Mishra, Manager (Safety) along with others receiving the Award

ITC LIMITED

Packaging and Printing Business (PPB), Haridwar, Uttarakhand

(Manufacturing Sector – Group E – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)

*Vipul Arora, Unit Head, ITC Ltd., Haridwar
E-mail: Vipul.Arora@itc.in***1. Background of the Factory**

ITC's Packaging and Printing Business (PPB) is a leading provider of superior value-added packaging for the multiple industries. It has been catering to the packaging requirements of leading players across several industry segments viz. Food & Beverage, Personal Care, Home Care, Footwear, Consumer Electronics, Pharmaceuticals amongst several others.

The business has established itself as a one-stop shop offering a wide range of sophisticated and innovative packaging solutions. Besides, it continues to provide strategic support to ITC's internal businesses by facilitating faster turnaround for new launches, design changes and ensuring security of supplies and delivering superior quality at competitive cost. State-of the art technology, in-house R&D and innovation centre, State-of the art technology, in-house R&D and innovation centre, world class management systems and a highly trained and skilled workforce position ITC PPB as the first choice supplier for value-added and sustainable packaging.

ITC's PPB has four manufacturing facilities located strategically to cater to all regions of the country viz. Haridwar, Uttarakhand (North); Tiruvottiyur, Tamil Nadu (South); Munger, Bihar (East) and Nadiad, Gujarat (West).



Fig. Packaging and Printing Business Plant, ITC Haridwar

ITC's PPB plant at Haridwar is a state-of-the art facility equipped with the best technologies from around the world. It started operations in 2007 and is currently spread over 25 acres delivering consistent value for its 200+ customers including several across 15+ states in India and even to customers abroad. The unit converts about 25000 tons of packaging material every year ranging across paper, paperboard, films and laminates into value-added packaging solutions.

The unit has won several awards reaffirming our commitment to sustainable, innovative & safe

packaging like Dow Innovative Packaging Award 2019, Printing Company of the Year by Print Week 2019 and several Worldstar and Asiastar awards for excellence in packaging. The unit is also certified with British Retail Consortium (BRC-IoP) standard for manufacturing of safe food grade packaging.

The unit offers a bouquet of innovative products which not only meet the functional & aesthetic requirements in packaging but also accelerate the shift towards sustainable packaging through in-house innovation for a plastic free, recyclable & compostable solution like Bioseal & Oxyblock.

At PPB- Haridwar, in line with the ITC's organizational goal of "Responsible Competitiveness", we embed sustainability, health & safety as the core of our business strategy. Our focus remains on extreme competitiveness but in a manner that builds the environmental, economic & social capital strengthening the business for future.

2. Commitment of the Top Management to EHS

The Environment Health & Safety (EHS) goals for the organization are set by the board and then the corporate plan is prepared to work towards these goals. The divisional plan for each business is cascaded subsequent to the corporate plan. The annual EHS plan for the unit is then finally prepared in line with Corporate/Divisional plan. The EHS objectives and targets are derived from internal and external impacts, quantified and then appropriate outcome indicators are selected which are consistent with the overall EHS Policy.

ITC & PPB's senior management are committed to inculcating EHS aspects in all planning and decision making. The organization as a whole reports its EHS targets and achievements through its sustainability report prepared on the basis of the latest Global Reporting Initiative Standards (GRI). The same can easily be accessed by all from its website.

Also, the Senior Management has provided directives for environmental governance and policy for Environment and ensured adequate resources. Continual improvements in environment have been possible by the process of regular review of aspect-impact, providing for Operational Controls and Management Programs with objectives and targets for all functions and levels.

The COVID-19 pandemic impacted every nation on the globe at a scale & depth never experienced before. In response, governments, businesses, healthcare providers and individuals came together to adapt to the new normal. Committed to ITC's credo of putting "Nation First", PPB Haridwar with support & initiative from its senior management contributed to the objectives of health & safety of its employees and the communities in distress around the plant site.

3. Employees' Participation and Involvement in EHS Matters

As per ITC's EHS guidelines and the Factories Act, 1948 & Rules framed there-under, our unit has constituted EHS committees with equal participation of Management and unionized workmen.

Central EHS Committee Meeting: This committee comprises of equal representation from management, employees & service providers and is chaired by the Factory Head. This committee shoulders the responsibility of implementation of overall EHS policy at the unit level and meets once every quarter. We not only ensure the advance information regarding the meetings to all concerned but also monitor the regular attendance of all involved. The minutes of such meetings are circulated to all concerned and are also posted in the notice boards for general awareness.

Similarly, at the individual department level, Departmental EHS meetings are conducted under the chair of Head of Department (HoD) where the respective Area in-charge along with the unionized workforce of the area meet to discuss the EHS related issues of the department and the prompt implementation of previously raised concerns.

The employees' participation and involvement in EHS matters at Haridwar unit is not limited to the statutory and organizational policy mandated meetings but also the direct and active engagement of all stakeholders in the plant. In alignment with this proactive engagement of stakeholders with our EHS objectives, a HAZARD SPOTTING scheme was envisaged where all employees are encouraged to identify hazards in the factory area and submit in a physical format or upload digitally on an app through the scanning of QR code, for necessary corrective & preventive action. Furthermore, any visitor to the plant can also upload any hazard found anywhere in the unit. The status of hazard spotting is discussed in the review meetings and corrective/preventive actions are verified & validated.

In order to inculcate and nurture the ITC's core value of focusing on the triple bottom line, the unit devised a Suggestion Scheme called "MERI FACTORY MERA IDEA" which is a very strong and healthy mechanism

by which employees put forward their suggestions either in the field of EHS, productivity, quality, and other areas. These suggestions are reviewed once in a month and feasible suggestions are assigned to responsible persons. All viable suggestions are recognised by providing with the contributors a token of appreciation during "Samvaad" (monthly communication session with workers). All other suggestions are also duly acknowledged so that each contributor feels engaged and motivated to contribute to unit's EHS objectives proactively.

In another initiative to keep the employees engaged with the EHS goals of the unit, QUIZZES are organized for all employees to enhance their active participation. In order to encourage participation, various quiz programs are conducted even during special occasions like Road safety week, National Safety Day Celebration, Fire Services Week Celebration, and World Environment Day Celebration etc. and prizes



Fig. Top & Bottom Token of appreciation to EHS Quiz winners & Meri Factory Mera Idea winners during Samvaad

Besides, the environmental aspect of EHS, the health & safety aspects are equally nourished under the Health awareness Program undergoing at our Haridwar unit. The Health awareness program is organized & conducted for employees, managers, contractors and transport workers by our Factory Medical Officer and outsourced trainer periodically which covers topics like – AIDS, Dengue, Malaria, Basic First Aid, and Ergonomics, etc

EHS posters received from NSC are displayed across shop floor for better communication to all which includes EHS policy, Fire Organization Chart, Fire Action, List of important numbers, etc. PPB Haridwar recognizes the responsibility of keeping all operational

stakeholders' safe & secure at all times. Hence, contract workmen training also happens twice a week and is evaluated after every 4 months through questionnaire in local language, and the winners are rewarded.

Lastly, regular video/film screenings are also done during the Samvaad session, Safety trainings, etc



Fig. EHS Training for all managers, employees and contract workforce regarding the importance of PPEs, etc.

4. Implementation of the Recommendations of Studies, Audits, Committees, etc.

The Haridwar Unit has a thorough and comprehensive safety audit systems in place to keep ourselves engaged on the path of continuous improvement in making our plant even more safe, workforce healthy and products environment friendly.

We conduct internal audits twice a year under the framework of ISO 14001/45001 for Environment and Occupational Health & Safety (OHS). For the same, the management representative (MR) informs all HoD's by circulating the Audit plan and schedule in advance. The audit coverage summary sheet is circulated along with the responsibility and target date and discussed in ISO MR Review meetings. Once the audit points are closed by dept. the internal auditor ties up with the department concerned, to validate the effectiveness of the closed the audit findings.

Similarly, we also conduct an internal EHS Audit of the unit twice every month in line with ITC Corporate EHS guidelines. This is carried out by the cross-functional team of Department manager & Engineering member. The audit plan is scheduled on ITC's digital platform tool called as inspection. The audit findings are summarized and complied with before corporate audit

The Haridwar plant also undergoes a Fire audit conducted by the security team on a monthly basis.

Also, there is a cross unit audit on a quarterly basis.

Finally, a Corporate EHS team conducts audit once every year. These are carried out by a team of qualified and trained auditors. The audit scores are given against corporate EHS guidelines. The action plan is reviewed in the Central Safety Committee Meeting and reported back to Corp EHS once in a Quarter.

Some of the implemented recommendations from audits & committees are presented for representational purpose here:

1. Platforms, railings & appropriate flooring to avoid trip hazards over and above the OEM provided safeguards for change of blower at printing presses & maintenance on Foil stamping machine.
2. Replacement of all electrical extension boards with permanent sockets
3. Dedicated CO2 flooding system on Sheet Fed Gravure machine.
4. Modification in suction mechanisms of printing machine in order to remove more Volatile Organic Compound (VOC) emissions.
5. Provision of door interlocking on cooling tower doors.
6. Installation of additional guards on Extrusion Lamination Machine for enhanced safety
7. Down extension of air ducts inside flexible machine area to ensure comfortable temperatures for the workforce operating in the area.
8. Installation of light sensors on corrugated sheet laminator machine in order to eliminate chances of finger entrapment through the empty area of feeder
9. Design and installation of new ergonomic granule unloading system in Blown film machine.
10. Installation of safe & ergonomic new unwinder in Window patching and liner machine, thus eliminating manual handling and loading process of heavy rolls.
11. Installation of new pile turner machine with advanced vibration and airing facility to eliminate manual pile making activity
12. Installation of automatic blanket cutter, thus eliminating the hectic manual work
13. Installation of two new automatic die cutting machines with a facility of in-line blanking, thus limiting the manual strapping activity
14. Installation of jib crane on lamination machine for easy roll loading/unloading

15. Usage of non-sparking tools in gravure printing machines and ink handling areas for scraping off dried ink over Stainless Steel flooring and for opening of ink tanks to avoid generation of any sparks due to metal-metal friction.

5. Special Efforts and Approaches to EHS and Significant Achievements (Tangible and Non-Tangible)

PPB Haridwar has invested in some of the most advanced and state of the art systems to keep the workplace safe & secure in line with our EHS objectives and aspirations of continuous improvements.

- Installation of CO₂ flooding system on printing machine:



Fig. Automatic CO₂ fire suppression system on all rotogravure printing machines. In case of any incident involving CO₂ release, the machine power automatically shuts down and also activates Fire Alarm Control Panel (FACP) system of the factory.

- Installation of Smart Static Neutralizer on Printing Machines:



Fig. Unit has installed smart static neutralizers on all rotogravure printing machines to reduce the potential risk of fire hazard due to static electricity. These smart neutralizers generate dynamic amounts of ions to neutralize any generated static charge on the running web.



- Reduction in GHG Emissions:



Fig. Unit has undergone the fuel change for thermic heaters and boilers from High Speed Diesel (HSD) to a much cleaner fuel-'propane' to reduce GHG emissions

- Installation of Energy Efficient Equipment:



Fig. Unit has changed axial fans for all Air Handling Units (AHUs) to BLDC fans leading to reduction in the energy consumption in AHUs by about 43%



- Implementation of special design cutter to eliminate cut injury.



Fig. Unit has designed and provided special type of cutters on shop-floor to the personnel for cutting purpose in order to eliminate cut injuries at the unit.

6. EHS Management, its Linkages with Key Result Areas and Outcomes

The CEO of the business is accountable for establishing, implementing, reviewing and sustaining the EHS Management Systems and HSE Policy of ITC Limited across the Business:

- The CEO assigns responsibilities and accountability to Factory Manager at Factory level
- Factory Manager heads the Unit EHS Organisation and is accountable for establishing, implementing, reviewing and sustaining the EHS Management System and HSE Policy of ITC Limited in the factory.
- The Factory Manager in turn assigns EHS responsibilities, as a written document at all the levels which include following:
 - o Each and Every department Level
 - o Central EHS Committee members
 - o Emergency team members

EHS is a part of the Key Result Areas (KRA) for all Line Managers in ITC. EHS is driven by line Managers and supported by EHS department. As per the QMS/ EMS/ OHSAS/ SA8000 systems and ITC's EHS guidelines, detailed procedures for operations and work in each department have been framed for implementation of EHS objectives.

The line managers are allotted definite roles and responsibilities on EHS. During the beginning of each financial year, the roles and responsibilities are shared with the line managers and agreed. According to the assigned responsibilities, the line manager frames the action plan for execution of EHS activities like the following:

- Employees participation in safety suggestions
- Conduct Hazard spotting tour in the department
- Assess risks & suggest mitigate plan as part of the Risk assessment team
- Assess environmental impacts and suggest mitigation plan as a part of Environmental impact assessment team
- Ensure corrective actions to mitigate unacceptable risks and significant environmental impacts
- Communicate EHS objectives to the department workers
- Ensure periodic inspection of machine guards, Hand Tools, House Keeping, etc. and maintain records

7. Use of Advanced Digital Technology (AI, AR/VR, Robotics, Drones, etc.) to Enhance Safety

PPB Haridwar has embarked upon a digital journey aligned with the ITC Chairman's vision of ITC Next Strategy. EHS as a domain has not remained untouched with the same. We have a setup a end-to-end digital platform where all employees are encouraged to identify hazards and suggestion in the factory area. The identified hazards/suggestions then are sent to the respective in-charges for corrective & preventive action over the same platform. Post the completion of the actions required to eliminate the hazard, the same is updated on the platform and the person who identified the hazard is also notified of the closure.



Fig. Snapshot of the EHS dashboard portal

All reported hazards and suggestions can be seen on the Dashboard and are finally reviewed by the EHS manager. The status of hazard spotting is discussed in the apex review meetings & corrective actions are taken & verified accordingly.

PPB Haridwar plant has also undertaken the setting up of a 800KWp Solar Power Plant to meet the ambitious renewable energy objectives under the Sustainability 2.0 framework of ITC which envisages 100% electrical energy from renewable sources and 50% reduction in Greenhouse Gas (GHG) emissions from 2018-19 baseline levels by 2030.

We at Haridwar plant continuously strive to create value for all stakeholders aligned with the ITC's foundational value of

Nation First. Under ITC's Mission SunehraKal we have also started scientifically managing the domestic waste of the society and community with the ownership of the community to minimize the landfill, to provide a clean and hygienic condition in and around community, to ensure 100% source segregation and treating waste as resource.

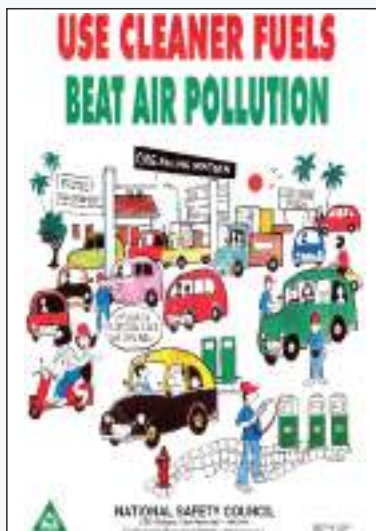
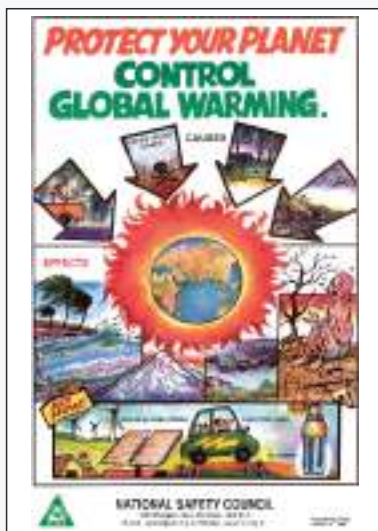
PPB Haridwar plant has always been a pioneer in meeting the organization's EHS objectives and continues to keep itself energized. We are determined to remain engaged persistently in developing customer focussed products, delivering world-class performance & creating value for all stakeholders towards the broader vision of "Sab Saath Badhein"

NSCI Safety Award 2021



Vipul Arora, Unit Head and his team receiving the Award

NSC's SAFETY POSTERS



For more details, please visit <https://nsc.org.in> or write to safetypromotion@nsc.org.in

INDIAN INSTITUTE OF TECHNOLOGY, HYDERABAD (PROJECT) SHAPOORJI PALLONJI AND CO. PVT. LTD.

(Construction Sector – Group A – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)

Raju Boddu, Project Director & Antaryami Dash, HSE In-Charge, SPCPL - IIT Hyderabad Project
E-mail: JOSE.KUMAR@shapoorji.com

1. Background of the Construction project:

Shapoorji Pallonji is a name which has become synonymous with trust, safety & quality in India as well as internationally. Since its inception in 1865, the company have been committed to creating structures and providing solutions that have a lasting impact on society, using what it know best in engineering. The company firmly believe that smart engineering can bring the world closer and make this planet a better place to live in. Over the years the Shapoorji Pallonji Group has evolved and grown exponentially to become a huge conglomerate with multiple business segments. With a rich legacy, a progressive outlook and a consistently superior track record, the Group remains committed towards excellence. The company is privately owned by Mistry Family.

Shapoorji Pallonji and Company Pvt. Ltd. (SPCPL) operates in 6 major business areas with 13 group companies and a strong employee base of over 35,000 people from across 40+ nationalities and a group turnover of US \$ 4.2 Billion. Shapoorji Pallonji Group has evolved and grown exponentially to become a huge conglomerate with multiple business segments with a progressive outlook and a thoroughly professional approach. The Group today has a strong presence in India and internationally including the Middle East and Africa. With a rich legacy of 156+ years and a consistently superior track record, the Shapoorji

Pallonji Group remains committed towards excellence in each domain of its operations. The company business interests cover construction (including residential, commercial, industrial and infrastructure), real estate, infrastructure (comprising coal mining, power, ports and roads), bio-fuels and agriculture, consumer products, electro-mechanical and MEP services, facades and interiors, engineering, textiles, business automation and shipping and logistics.

At SPCPL, Environment, Health & Safety (EHS) is considered a core value of business. Systems and procedures have been established for implementing the requisites at all stages of construction and are accredited to the International Standards ISO 9001:2015 ISO 14001:2015 and ISO 45001:2018. SPCPL is committed to maintain stringent safety & quality standards, adherence to time schedules across all projects.

2. Indian Institute of Technology, Hyderabad Project

The Project Campus Development of IIT-H Phase 2 (Package 3b), which was awarded to SPCPL on 1st Aug 2019, the total campus area of IITH is 576 acres. This organic campus is divided into clusters of buildings, in which the construction is divided phase wise, started on 2011. The campus is one of India's best examples of energy efficient, carbon neutral and sustainable architecture. The design grew local weather conditions and outmost care to enhance learning.

The Project & few salient features.

Project	Campus development for IIT Hyderabad Phase - II Package 3 B
Project Type	Item Rate
Name of the Client	IIT Hyderabad
Client's Representative at Site	Mr. Ravindra Babu.
SP E&C's Representative	Mr. Raju Boddu
Project Architect	GMP, CCBA, ARCOP
Project Management Consultant	Tata Consulting Engineers Ltd
Structural Consultant	J+W, Strudcom, TPC (Technical Project Consultants)
MEP Consultant	Maple, Swami Consulting services, EMEA, Stellar India, MJ Engineering consultants.
Contracting Model	General Contract
Pricing Model	Item Rate
Major Scope of Work	Civil, MEP, Finishes, Road and Infra
Duration of Contract in Months	36
Date of Commencement	01-Aug-19
Contractual Date of Completion	31-Jul-22
Expected Date of Completion	30-Jul-23

Student Hostels & Dining (Ground + 10 floors) Total 8 blocks.



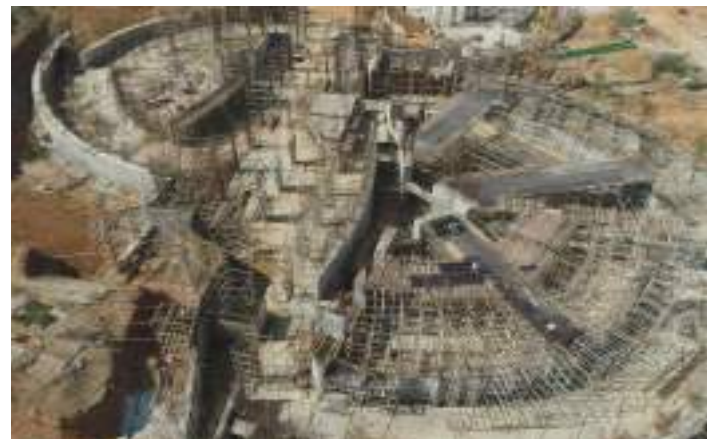
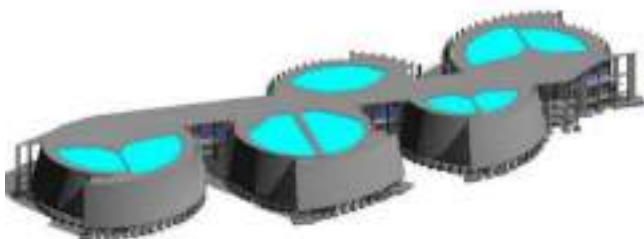
Academic Quad Ground floor + 6 floors + Terrace (G+6+T)



Academic Quad - Ground floor + 4 floors + Terrace (G+4+T)



Lecture Hall. (Lower GF + Upper Ground floor (G+1) Floor height – 6 m (average) BUA – 15,763 Sqm, Lower floor – 8 lecture halls (1984 seats), Upper floor – 7 lecture halls (1184 seats), 800-seater amphitheatre cum Lecture Hall.



Department of Design

(External Finish – Form finished concrete, Coffers Slabs for Auditorium at two levels, Skylight with Polycarbonate sheet, curved beams, or structures, Architectural Staircase Outside building)



3. Commitment of Top Management towards Health, Safety & Environment:

Mr. Shapoorji Pallonji Mistry, owner of SPCPL said that "Safety is beyond the budget and beyond the balance sheet" and Shapoorji Pallonji strongly believe that the company's long-term business success depends on its ability to continuously improve the quality of services while protecting the people and the environment.



NASCON – National Safety Conference is an annual meet to discuss the HSE performances of the company. Chaired by the Owner & Executive Managing Director



Bi – Annual RESCON - Regional Safety conference is a bi-annual meet at regional level to review the performance, challenge, and innovative ideas of the projects. The full day meeting is chaired by the business head of the region.

Few top management commitments in HSE.

- Policy on QHSE, Policy on Occupational Health and well-being, Policy on drug and alcohol.
- HSE Reward and recognition (Safe worker of the month, Safe staff of the month, Safe sub-contractor of the month, Best site in HSE – Annual reward.
- Quarterly Inter – regional HSE tour by Regional Head.
- Quarterly Intra – regional HSE tour by Project Head.
- Project Manager & functional heads are accountable for their EHS performance, and it is linked to personal Key Performance Indicators (Promotion & Performance appraisal)
- Policy on serious injuries and policy on award and reward.
- Monthly HSE lecture by Regional Head and project Head.
- Weekly Project In-charge HSE Walk.

HSE Lecture by Regional Head.



Safety Champions badges.



4. Employees' participation and involvement in SHE matters.

SPCPL – HSEMS systems and procedures are designed such that every employee, workmen, sub-contractor, stakeholders, and every interested party shall participate in HSE matters to involve and participate in HSE matters. Setting HSE objectives and targets along with management program are the part of all functional department key resulting area. Employees participations are ensured by many ways examples are mentioned below.

- Monthly HSE campaigns

- Monthly Safety Sabha. (Songs, poem, Debates & Skits)
- HSE Suggestion Box.
- Health Awareness.
- Drama on Safety.
- Film on safety and Video screening.
- HSE Poster displaying.
- PPE Exhibition.(External Finish – Form finished concrete, Coffor Slabs for Auditorium at two levels, Skylight with Polycarbonate sheet, curved beams, or structures, Architectural Staircase Outside building)

Special Campaigns	Period
Road Safety week	Jan - 2020
Campaign on Swatch Bharat	Feb - 2020
National safety day/ week	Mar - 2020
Fire prevention	Apr - 2020
No tobacco day	May- 2020
International yoga day	Jun- 2020
Campaign on SAFE 'Stay Away From Electricity'	Jul - 2020
Campaign on Watch the Height.	Aug - 2020
Campaign on 'ESWER'	Sept. - 2020
Campaign on 'Ask Never Assume'.	Oct -2020
Campaign on 'Occupational Health'.	Nov -2020
Campaign on ' ROMESH' Respect, Own & Manage EHS	Dec -2020

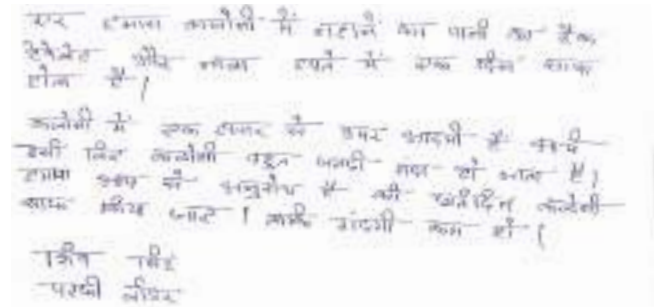
Safety Sabha



Implementation of few recommendations by the safety committee.

Month	Issues Discussed	Improvement Suggested	Evidence Picture
Aug-20	After Concrete, site team dumping the excess concrete directly on soil.	Excess concrete shall be used to make vertical post, sleepers, pathway etc.	
Sep-20	On IIT service roads, our drives / operators not maintaining safe speed.	Traffic barrier shall be placed in various location to control the speed.	

HSE Suggestion



Mass meeting and Motivational Program



HSE Committee Meeting



5. Implementation of the recommendations of studies, audits, committees, etc.

Following types of studies / audits are being conducted in our establishment.

1. Monthly Legal (HR & HSE) compliance audit by third party.
2. Inter-regional HSE Audit (Quarterly by other regional head's)
3. Quarterly IMS Audit. (Internal)
4. Half yearly IMS surveillance audit (certification) BVQ
5. Monthly HSE Committee inspection /site walk.

Month	Issues Discussed	Improvement Suggested	Evidence Picture
Oct-20	Exclusion zone not barricaded/maintained at MSH4 building.	Barricade shall be provided around the building periphery.	
Nov-20	Mud spreading on IIT service roads from CS building due to vehicle movement.	Tyre wash point shall be constructed on entry and exit points at CS building	
Dec-20	Discussed on drunk and drive shall be avoided	Every Monday and day after any holiday, all drivers and operators must go through BP checking and breath Alcohol detection.	

6. Special efforts and approaches to SHE and significant achievements (tangible and non-tangible)

Few of the special efforts and approaches and its significant achievements.

- One day safety officer.**– All execution staff & supportive staff are given a chance to work as safety officer and thus helped to percolate HSE culture at site.
- Hazard spotting and reward**– Scheme of SPROUT (Spotting, Pointing, and removing the Oddity by Uniting with Team) helped significantly participate the stakeholders in spot and remove the risk at site.
- Project in charge HSE Walk & HSE lecture.** – In 2020 calendar year, there were 430 HSE observation identified by the Project director during the 'Project In charge Safety Walk held in every week helped the site significantly improve the HSE standard.
- Preservation of top-soil** – Top-soil collected from every location where excavation works are in progress and stored in an identified area with demarcation to prevent soil contamination and which can be used in future.
- Tie up with snake society.** Snakes play an integral role in maintaining balance in the ecosystem. we made tie with local snake society whenever our staff/workmen, if they notice snake in workplace, it is advised to site team not to kill the snake, instructed them to pass the information to the site HSE / Admin, to call the snake society personal to catch it.
- Ultrasonic thickness checking of concrete pipeline.** Concrete pipe thickness inspection carries out by digital metal thickness tool to avoid mishap at site while executing the work.
- Yearly HSE scheduler** – Day-to-Day HSE schedule

that includes audit, Inspection and HSE trainings which are programmed and displayed at site.

- Cable router hook** - Electrical cables are routed through insulated S hooks & cable ties, to establish the Engineering control over the risk of serious injury due to electrocution.

One day safety officer observations



Snake catcher society



PVC cable router



Preserved topsoil



7. SHE management, its linkages with Key Result Areas and outcomes.

1. Empowered HSE organogram with 1:50 HSE staff and workmen ratio.
2. Objective and target in HSE & HSE Management programs
3. Policy on serious injury and linking with appraisal system.



8. Use of advanced digital technology (AI, AR/VR, Robotics, Drone etc.) to enhance safety.

- **Technology Driven HSE – IOT (Internet of Things):-** Installed IOT system in all TC to ensure none of the safety devices are bypassed by operators.
- **Mobile App – SPACE:** - To escalate HSE observation online at the spot it itself.
- **Digitally Representation of SP Forest:** - Total 52 trees planted in SP – Forest and all are given unique identifications that can be seen in google maps.
- **CCTV Camera for Monitoring:** -High resolution cameras are installed all around the site to monitor safety and security of the site.
- **Wealth out of Waste:** -Making of Paver block and stand post for barricades by using waste concrete (recycling).
- **Occupational health screening:** -Periodical specialized and focused health screening of workmen who exposed to noise & Dust. (Spirometry and audiometry tests.)
- **RACSHA** – Remote Audit, Confirmation and Simulated HSE inspection Agenda(RACSHA – रक्षा) is developed with a purpose to identify the HSE

related areas of improvements and suggest remedial measures. It also be used to evaluate the compliance of our HSE Management System (HSEMS) as well as to identify the best practices being followed at the audit location which in turn will be shared with other locations. It also facilitates rating of the location as Five, Four or Three Star.

- **PRAN** – Monthly HSE Alert circulation. Prevent Repeat Accidents Necessarily and save the lives of our workforce (PRAN - प्रान) Its a case study of common nature is circulated to the sites
- every month and related control measures / precautions will be implemented / maintained throughout the month as a campaign in addition to regular HSE inspection, checking and monitoring.

Mobile App – SPACE



SP Forest digital address



PRAN Case study

Case Study 3 – Vehicular Movement

Incident: A mini dumper was on the way to workshop at a site within a running factory with its helper sitting beside the driver. When mini dumper reached near the vehicle maintenance shop, a tapper of subcontractor came from opposite direction, crossed the lane and hit the mini dumper on front right side. Due to impact of the collision, helper fell down on the road and sustained severe abdominal and wrist injuries. The mini dumper came between the tapper and side retaining wall and was dragged for approximately 8-10 m. Driver of mini dumper also sustained injury on the right shoulder in the process. The road was having a sharp turn and slope at that point.



Risk Causes:

- ✓ Lack of control of driver on the tapper
- ✓ Failure of brake of the tapper
- ✓ Sharp turn with a vertical gradient in the road
- ✓ Insufficient warning signs, speed breaker not present
- ✓ Trailing of the helper in mini dumper
- ✓ Non-availability of self stopper in the mini dumper
- ✓ Inadequacy of mini dumper due to old and outdated technology

Recommendations / Control Measures / Actions:

- ✓ Identification of dangerous / accident prone locations
- ✓ Training of all drivers
- ✓ Visual warning signs in accident prone areas and painting of all speed breakers for better visibility
- ✓ Daily checking of brake, horn and light of all vehicles
- ✓ No person shall be allowed to travel in mini dumper
- ✓ Medical check-up of all drivers and operators for vision, hearing
- ✓ Ensure that no driver drives under the influence of alcohol by checking with breathing analyzer
- ✓ Avoid use of non-standard / improvised vehicles

Road Safety Tips to Remember:

- ✓ Wear your seat belt
- ✓ Put the mobile phone away
- ✓ Stick to the speed limit
- ✓ Check your blind spot
- ✓ Don't drive into other's blind spot
- ✓ Don't drink & drive
- ✓ Sleep, then drive
- ✓ Turn on your headlights
- ✓ Follow warning signs / boards
- ✓ Check heads of the tyre, brake and wiper during monsoon

References:

- BOCW Act, Part III, Chapter VI, point 48 : Vehicular Traffic
- The Motor Vehicles (Amendment) Act 2019: Complete Act
- HSE Process No. SP – 0 – 2.2 / 11 – 38 : Operation of Dumpers

Hug your Kids at Home, but Belt them in moving Car!

Prevent Repetition of Accidents Necessarily

PRAN SMT, the LIFE

Document No: SP/40/PRAN3
Issue Date: 02 August 2020

RACSHA – Audit

Shapoorji Pallonji And Company Private Limited

Remote Audit, Confirmation and Simulated HSE Inspection Agenda (RACSHA - TAP) - Report

Section of the Project	HSE Requirements	Compliance	Remarks	Findings	Disposition
Project Site Name	100 Days	100 Days	Compliance	100 Days	100 Days
Project ID	100 Days	100 Days	Compliance	100 Days	100 Days
Project ID	100 Days	100 Days	Compliance	100 Days	100 Days

Findings Summary:

- 1. Overall HSE Score: 78.35%
- 2. Overall HSE Score: 78.35%
- 3. Overall HSE Score: 78.35%

Findings Details:

Section of the Project	HSE Requirements	Compliance	Remarks	Findings	Disposition
Project Site Name	100 Days	100 Days	Compliance	100 Days	100 Days
Project ID	100 Days	100 Days	Compliance	100 Days	100 Days
Project ID	100 Days	100 Days	Compliance	100 Days	100 Days

NSCI Safety Award 2021



Mr. Laxman Agarwal – Regional Head (Hyderabad) third from right and Mr. Raju Boddu (Project Director IIT Hyderabad SPCPL) second from right receiving the NSCI Golden award from Shri Arvind Doshi, Vice-Chairman (Employer), NSC on 4th June 2022, accompanied by Mr. Alok Shrivastava – Corporate HSE Head, SPCPL (extreme left) and H. Jose Kumar, HSE Coordinator – Hyderabad region second from left.

DELHI INTERNATIONAL AIRPORT LTD., GMR GROUP, NEW DELHI (PROJECT) LARSEN & TOUBRO LTD.

(Construction Sector – Group B – Sarvashreshtha Suraksha Puraskar – 2021 Award Winner)

A. Chandra Sekhara Rao, Head - EHS
 E-mail: acsr@Inteccc.com

1. Background of the construction project.

Indira Gandhi International Airport (IGIA) is the airport, spread over an area of 5,106 acres (2,066 ha) is situated in Palam, 15 km (9.3 mi) south-west of the New Delhi Railway Station and 16 km (9.9 mi) from New Delhi city centre. Named after Indira Gandhi, the former Prime Minister of India, it is the busiest airport of India in terms of passenger traffic since 2009. It is also the busiest airport in the country in terms of cargo traffic, overtaking Mumbai during late 2015. As of now, it is the 17th busiest airport in the world and 6th busiest airport in Asia by passenger traffic handling nearly 70 million passengers. It is the world's busiest airport for Airbus A320 aircraft. The under-construction expansion program will increase the airport's capacity to handle 100 million passengers by 2030.

To match with the requirements of a steady growth of air traffic at the Indira Gandhi International Airport, expansion works along with rehabilitation works are proposed to be undertaken in the PHASE 3A development of the airport. These works are on EPC contract basis by the Delhi International Airport Limited (DIAL) and contracted to Larsen & Toubro Limited (L&T). The works involved using basic concept design from AECOM to further develop the concept design and detailed design of the terminal. Airside detailed design was also completed as part of the Engineering.

The proposed scope of work includes –

Reconstruction of Domestic Apron

- The existing domestic Apron has been constructed to only facilitate the remote bussing operations and as such are disorganized and do not allow for the building of contact stands. Accordingly, on the existing footprint, the new T1 Apron with total 82 numbers Code C and MARS stands is to be constructed, along with the new T1 terminal.
- While these construction works are ongoing, the operational requirement of minimum 33 functional Apron stands will be adhered to.

Runway/taxiway Works

- Regarding runway works, the new 4th Runway will be constructed, and existing Runway 09-27 will be rehabilitated. The enhancement in the taxiway system includes new parallel taxiways to Runways 09-27 and 10-28 along the apron including link

taxiways between the runway & parallel taxiways and, two isolation bays.

- To complete the runway related works, there will be phased closing of operations on runways. The operational requirement of minimum 3 operational runways will be adhered to.

Eastern Cross Taxiway

- In addition, the 2.5 km long Eastern Cross Taxiways system is to be constructed for facilitation of traffic flow between the northern and southern airfield facilities. A compliant ground grading is to be developed over the extents of the scope of works for the runway with RESA on both ends, runway and parallel taxiway with strips, perimeter road adjacent to the operational boundary wall and the Apron, Ancillary buildings on the North and Landside approach road.
- To maintain the gradient for suitable taxiing of aircraft over the ECT, there is a bridge being constructed on the central spine road and an underpass within the Radisson Road extent.

Major Items of work in landside works are identified for the following 5 different roads, viz:

- Improvements to the access to T1 ARRIVAL and T1 DEPARTURE, which includes
 - Widening of existing entry ramp to T1 DEPARTURE including the forecourt structure,
 - Demolition of existing exit ramp and provision of new realigned exit ramp and
 - Improvements to existing traffic circulation roads, including the kerb side roads to T1 ARRIVAL and T1 DEPARTURE.
- Widening of Northern Access Road to 2 x 5 lane configuration from the existing 2 x 3 lanes (~1.7km) including new 4-lane right turning flyover at Aerocity Metro station junction.
- Widening of Central Spine Road (~1.3 km) from existing 2x4 lanes to 2x6 lane configuration.
- Construction of new Parallel Access Road of 2x2 lane configurations (~3.5km), parallel to the Central Spine Road and Northern Access Road from cargo terminal, including proposed 2-lane southern side flyover across Northern Access Road to go towards cargo terminal. 2-lane flyover on northern side,

including its approaches at this location, has already been constructed by PWD and cargo terminal exit carriageway will be tied in with this existing approach.

- Improvement of Radisson Road after the Toll Plaza (~1.1km), including an underpass across the Eastern Cross Taxiway (ECT)
- Again, all these works are to be completed while keeping the major road arteries to T3 & T1 intact thereby inducing multiple stages.

L&T has undertaken the complete design, engineering, supply, construction, installation, testing, and commissioning for the entire scope of work. L&T ensures that the sequence of various activities during the Execution of Works are so arranged to minimize inconvenience in an operational airport environment. Therefore, the Contractor is required to undertake construction phasing in a manner so as the operational capacity of the Airport must not be impaired. Further, the Contractor is also required to take into consideration the VIP/VVIP movements at the Airport during Execution of Works. There are security restrictions/access issues in the movement of personnel, construction equipment/vehicle and Works inside the airside area and terminal buildings whether during VIP/VVIP movements, low visibility period or otherwise, which are considered by the Contractor while planning and execution of the Works.



2. Commitment of the top management to EHS

At DIAL Project the Top Management demonstrates management leadership and commitment through active participation in Environment, Health and Safety (EHS) activities to achieve the mission "Zero Harm". The management facilitates implementation of the EHS Policy and closely monitors with the respective Section In-charges as required. The Project Head is responsible for implementation of IMS in the projects and closely monitors the overall project EHS performance. Some of the significant measures to have demonstrated the commitment towards EHS are

EHS Policy: EHS Policy articulated by the Project Top Management conveys the commitment to provide a safe and healthy workplace for all the employees and plan the operations in a manner that protects the environment and community through structured approach. EHS Policy displayed at various locations for awareness.

Monthly EHS Committee meeting: Monthly EHS committee meeting is conducted at our project, headed by PD (Project Director) which includes section in charges, Department Heads, subcontractors, and workmen representatives for reviewing the EHS implementation status and issues during the operations.

Monthly EHS Review meeting: Monthly EHS review meeting is being conducted from head office, headed by EHS Head – RREC which includes Project EHS Head and EHS Representatives for reviewing the Project EHS implementation, EHS Digital implementation status and issues during the operations.

Visible Leadership and Involvement of Senior Management in EHS: The Project Head through his communications and decisions has clearly made it evident that Safety and Quality shall not be compromised at any point. His strong commitment towards the organizations policy and his guidance has enabled us to have a balanced focus in all perspectives. At DIAL the system is top-bottom driven, the TFL team and project management are dedicated towards executing the job adhering to our commitment made. January Month is celebrated as Safety month in L&T Construction. Safety month Celebrations demonstrate the involvement of leadership in EHS.

Safety First Culture: EHS always becomes the first in the agenda of every meeting and business affairs including progress reports to client, monthly progress review meeting (PRM), Subcontractors (S/c) meeting etc., Various Implementation and issues on EHS are discussed in the meetings for appropriate action.

EHS Awards: In our project to promoting a positive EHS culture at site, Top management initiated an

award system on monthly basis for staff, supervisors and workforce, award which includes for near miss reporting, housekeeping, Environment compliance and Covid-19 warrior. From HQ level, to promote and enhance the safety culture, an HR initiative "LIFE Awards" is in place. The various project across the IC is evaluated under various categories – Platinum, Gold, Silver, and Bronze.

Trainings by Senior Managers: This brown field environment is very different and challenging, and our work demands people to adjust to this environment ASAP. Senior managers are delivering various training sessions to create awareness and enhance consciousness, commitment, and dedication towards EHS among the workforce on various topics incl. Airside safety & work procedures, excavation SOP, defensive driving, scaffolding, COVID measures, etc.

Excellent project establishment: The management had established workmen habitat facility with all necessary amenities – kitchen, toilets, bathrooms, double decker beds, grocery shops, barber shop, canteen, paved roads, security cameras, STP, RO system, etc. A well-established medical center with 24/7 medical officer and paramedic staffs, ambulances and first aider is available. The project has also set up dedicated on point control room for monitoring of sites through CCTV/PTZ and deployed quick response team to respond to any emergencies related with medical, security, utility damage, etc.

3. Employees' participation and involvement in EHS Matters

At DIAL project, employees are involved at various levels in EHS matters. Some of the significant forums where employee participation can be witnessed are -

Project EHS Committee: Project EHS Committee is formed with the representatives from all sections, Project Director being the Chairman and EHS In-charge being the secretary of the committee. This committee including sub-contractor & workmen representatives discusses and decides on matters related to promoting EHS in the sites including review of implementation of project EHS plan, project EHS inspection & accident/ dangerous occurrence investigation report. The agenda of meeting also include consultations on any external and internal issues. These points are continuously reviewed and tracked.

Risk Assessment Workshops: Workmen and supervisors are involved in risk assessment sessions for any critical activity. The proposed work is discussed with them, the finalized scheme and plan is briefed, and their suggestions are invited. The various hazards are identified, and suitable control measures are determined for implementation.

EHS Promotional & Awareness Activities & Campaigns (Positive Motivation): Every Year, first month i.e., January is celebrated as Safety Month throughout L&T jobsites in India and abroad. It signifies & spreads the message of "Safety First Culture" among all our employees, subcontractors & workmen. Purpose is to involve the workforce in EHS management and enhance their participation. This is done through various activities on EHS like essay competitions, poster competition, quiz competition, skit competition, song competition, Health checkup camps, appreciation rewards etc. Particularly everyone at project gets involved in safety month celebration. Annual EHS award is given to the best project in terms of EHS to honor Project manager and their team.

EHS Walkdown: Weekly EHS walk down being conducted on weekly basis with the subcontractor staff, supervisors, and workforce, EHS observation found on the walk down will be shared to all sub-contractors' representatives for further improvements at project site.

4. Implementation of the recommendations of studies, audits, committees, etc.

- Recommendations and suggestions play an important role in stimulating improvements in the effectiveness of EHS implementation at grass root level. There are various ways through which recommendations and suggestions can be obtained for further improvements – audit, walk down, inspections, committee, etc. In our project, EHS audit is conducted at various levels – client conducts EHS audit every half yearly based on the project approved plans and contractual requirements, IMS Audit are conducted by head office every half yearly by certified internal auditors to check the effectiveness of implementation of IMS procedures, third-party audit is also conducted to check the effectiveness of EHS implementations and internal procedures. The appropriate and timely implementation of such recommendations agreed by management is an important part of realizing the effective implementation of EHS management system.

5. Special efforts and approaches to SHE and significant achievements (tangible and non-tangible).

At DIAL Project, workplace safety is given due importance at all levels. There is continuous thrust given from client as well as L&T Management to enhance EHS performance. The top management drives the EHS implementation by demonstrating it through their actions – every meeting starts with EHS performance review and discussion of safety concerns, participate in EHS walk downs and EHS promotional

events, inspire the workforce by distributing motivational awards, etc. DIAL being a brown field job in the busiest operational airport, there existed several executional and operational challenges in front of us. Hence, immense focus was given on workforce training and development to help them understand and cope up with the restricted and stringent work environment requirements. Also, we had a huge strength of workforce when COVID happened in 2020 and since then the top management had given enormous focus on the implementation of COVID measures and adherence to the government guidelines, all infrastructure and resources required for effective management of COVID situation was taken by the top management. Dedicated review meetings and webinar are being conducted to review the implementation status.

Some of the most significant EHS achievements at DIAL project are –

- Successfully completed 50 Million Safe Man hours without any LTI.
- Bagged the International Safety Award from British Safety Council, UK in the year 2022 and 2021.
- Won the Health & Safety Achievement Award from Royal Society for Prevention Accident (RoSPA), Gold Category, UK in 2021 & 2022.
- Won the Chairman Commendation Award and Achievement award for Health, Safety and Environment performance from Construction Industry Development Council (CIDC), New Delhi in 2021.
- Judged as winner - LIFE Awards among L&T Construction TIIC projects in 2021 and 2020.
- Successful handover and completion of key milestones without any incident.

6. EHS Management, its linkages with Key Result Areas and outcomes.

Every year, Strategic Objectives, Targets and Key Performance Indicators (KPI) for the Organization is set by the Corporate office taking into account the company's mission & vision with the ultimate goal to achieve a 'Zero Harm Vision' on all projects with world class EHS systems. All EHS related activities, plans and programs are aligned with the above objective for sustaining a daily achievement of 'Zero Harm Vision' with defined key performance indicators measuring these activities. Corporate office also provides the necessary policy framework, infrastructure, resources, budgetary support and other amenities for achieving the above set goal.

Personal EHS KPIs for all staffs: Health, Safety & Welfare Target and objectives are linked with KPI's of all project personnel including Project Head with a weight-age of 10% and aligned to the annual performance evaluation process. To achieve the strategic Targets & Objectives set by Corporate Office, the Project Heads and Section In-charge can formulate the micro-Targets & Objectives for their respective sites/ project under the Personal EHS Plan Scheme.

Sub-Contractor evaluation: The EHS objective & targets inputs are considered while the EHS evaluation of the sub-contractor performance.

Project Key Performance Indicator: Safety performance of the job site is assessed by a team comprising of different section in charges which quantifies the performance based on standard scoring sheet. The performance is assessed in each area of the project for different assessment elements. It helps to identify the critical area for improvement. Further ratings are tracked over a period of time to take continual improvement.



Appreciation Certificate for 25 Million Safe Man-hours

Recognition & rewards: Management understands that the active participation and involvement of all project personnel including workers is essential for setting & achieve the EHS objectives and targets; a four-pronged approach is adopted:

- Encouraging active participation at all levels of the implementation,
- Adopt modern methods that are eco-friendly,
- Consume less effort, recognize positive contributors and reward them,
- Identify laggards and train them to bring them on board.

7. Use of advanced digital technology (AI, AR/VR, Robotics, drones etc.) to enhance safety

We have adopted innovative approach / measures in Health, Safety and Environment, we are using latest technology and updating Environment, Health, and Safety system to ensure the reduction of risks involved in the workplace also which creates a positive work culture towards Safety Health and Environment. The innovative measures taken at our site are mentioned below:

Digital Initiatives:

Ib4u: Inspect Before Use

Ib4u is a Digital initiative Mobile application taken to conduct all kind of inspections at workplace, Once enrolled the Vehicles, Equipment's, Power tools, and Fire Extinguishers Etc, we can create bar code for the same. Using the barcode, we can scan and conduct monthly inspections also we can check the status of inspection details then and there. Also, there is a provision to store all the documents related to equipment's, vehicles etc in the application itself to verify as and when required. The inspection reports will be extracted online in the application through computer.

Benefits through the Ib4u Application:

- Less paperwork
- Less time Consumption
- Better tracking & Tracing of Inspection History
- Easy accessibility of Data
- Smoothening of inspection process



RTR: Reverse the Risk

RTR is a mobile application it's an online tool for Daily EHS verification at Workplace. Before commencing any activity at site, site engineer will raise activity specific RTR checklist to concern EHSO for safety Verification, also the application has pictorial safe work methods (SWM) for 35 activities for easy understanding of hazards involved in the activities and its control measures.

Benefits through the Ib4u Application:

- Daily safety checks by site engineers cross verified by EHSOs.
- Pictorial Safe Work Methods (SWM) for 35 activities.
- Activity wise Hazards and its mitigation measures.
- Checking safety precautions taken at different locations without being physically there.
- Reduced cycle time of checking and approval.
- Transparency in safety precautions taken at different locations of a site to the management.

SPARSH: Standard Precautions using augment Reality for Safety and Health

Our establishment has a ten EHS Golden rules based on the lesson learnt. All the people in the site premises shall follow the EHS golden rules without fail. We have displayed the SPARSH poster at prominent locations at our project for easy access to train and learn about the EHS Golden rules by simply scanning the barcode in the poster with SPARSH app.

Benefits of SPARSH App:

- User Engagement
- Any Staff can train workforce on EHS Golden rules anytime using SPARSH App
- Creates Unique real experience
- Easy understandable





Airside VR Training Module

In our project we have developed a module related with Airside Safety Procedures while working inside an operational airport. The module gives a digital enabled immersive safety training/awareness experience about the working environment at airside and the various rules and regulations to be adhered while working inside an operational airport.



WISA – Workforce Induction & Skill Application:

WISA is a digital application for Workforce screening and EHS Induction and skill application, where all the screening and EHS induction process up to Issuance of ID with QR code will be done through the application.

Benefits of WISA App:

- Time saving in Induction Process
- Less Paperwork
- Digital enrolment of Workers
- Easy availability of worker History
- View workmen information (Basic Details, Emergency Contact Numbers etc)
- Raise Observation
- Training Data's

GPRS, CAT Survey and Google earth for Excavation work:

As it was a brown field airport project, there is a presence of lot underground utilities in the project area utilities includes sensible cables (Radar, Airfield Ground Lighting, OFC etc.,) Power cables, Gas pipelines, sewages etc.

To avoid damage to the underground utilities we are doing GPR Survey before conducting any excavation to find the presence of utilities and Cable Avoidance Tool (CAT) survey before each excavation and Google earth an app for identifying the root of cables identified through GPRS for better understanding.

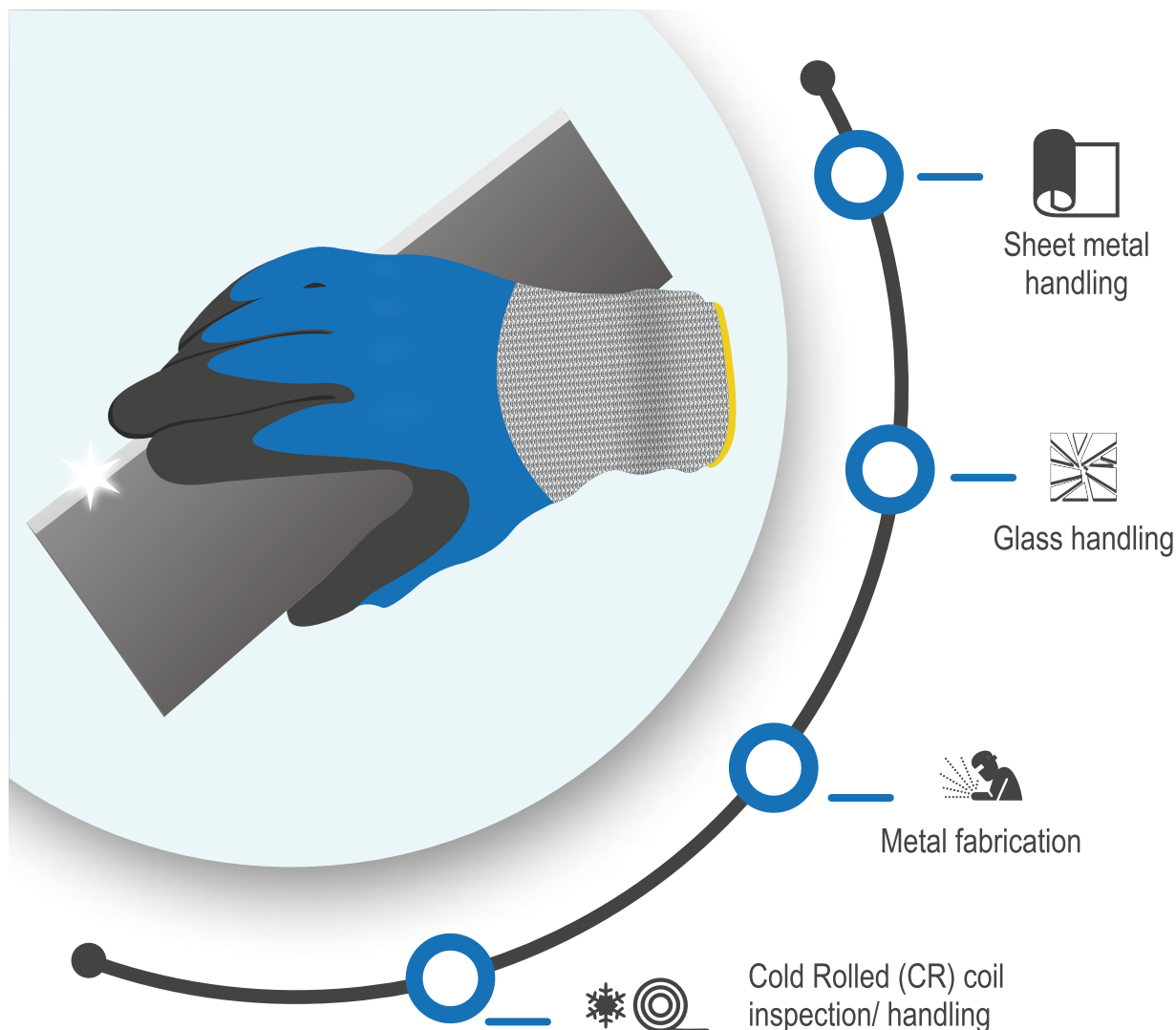
Benefits of GPRS, CAT Survey and Google earth for Excavation work:

- To avoid damage of Underground utilities and Injuries.
- To avoid hamper in airport and other operations.
- To track the underground utilities without difficulty.

NSCI Safety Award 2021



K V Praveen (EVP & Head – DIAL) and his team receiving the Award



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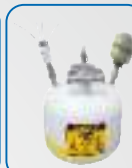


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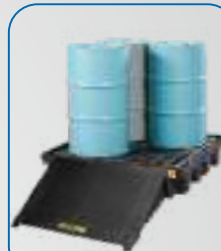
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