24th CII-National Award for Excellence in Energy Management 2023

JINDAL STAINLESS

DELIVERING STAINLESS EXCELLENCE SINCE 1970

Jindal Stainless Limited, Hisar

Team :

Parvesh Gupta – (Utility)

Surender Kamboj – (Central Electrical)

Akshat Sharma – (ESG)

About the Organisation

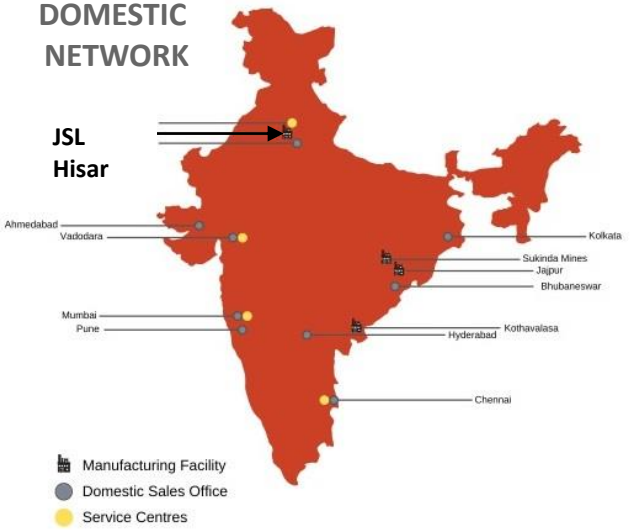
- A first generation entrepreneur & industrialist, Shri O P Jindal founded the group in 1970. Transforming his vision into reality, the group today is a leading industrial conglomerate with an annual turnover of US $25B*.
- Jindal Stainless is one of the largest stainless steel conglomerates in India and ranks amongst the top 10 stainless steel conglomerates in the world with annual crude steel capacity of 1.8 MTPA.
- JSL was Set up in 1970 by its founder & Chairman Late Sh O.P. Jindal. Stainless steel production started in 1979, with setting of first AOD converter in the country.
- It is also the world 's largest producer of steel strips for razor blades and India's largest producer of coin serving the needs of Indian and International mints.
- ISO 50001:2018, ISO-9001:2015, ISO-14001:2015, OHSAS 45001:2018, Aerospace AS 9100,AD, PED, CPD certified company.

" WHERE OTHERS SEE WALLS, I SEE DOORS
Late Sh. O. P. Jindal
Founder & Futurist – Jindal Group

ISO50001 ENERGY MANAGEMENT

45001 9001 IMS 14001

DOMESTIC NETWORK



PRODUCTS

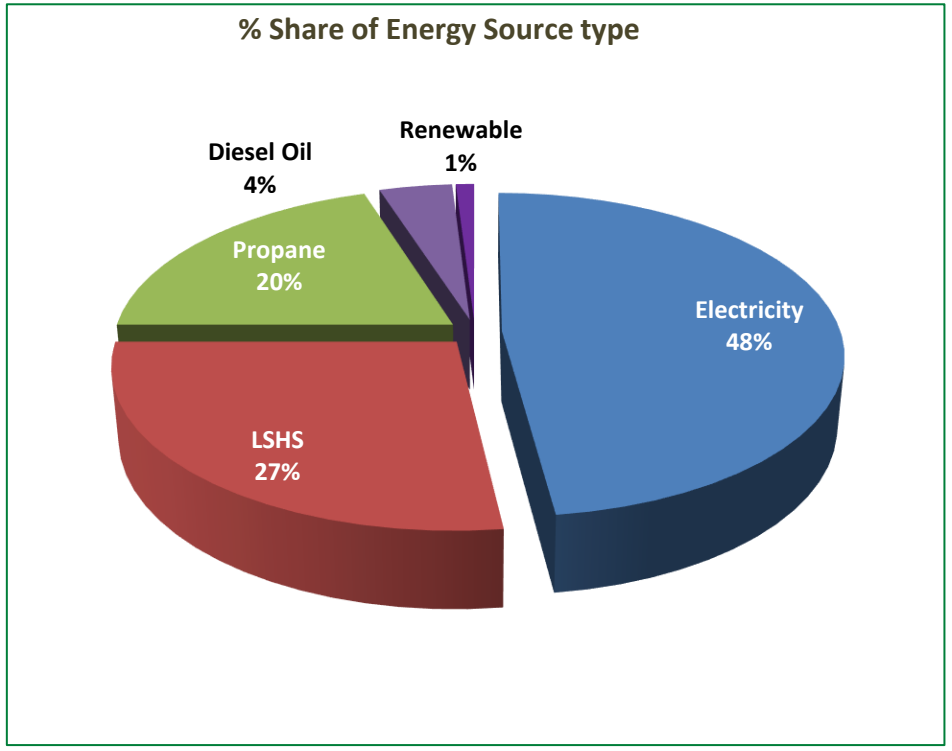
COLD ROLLING CAPACITY-3,75,000 MT

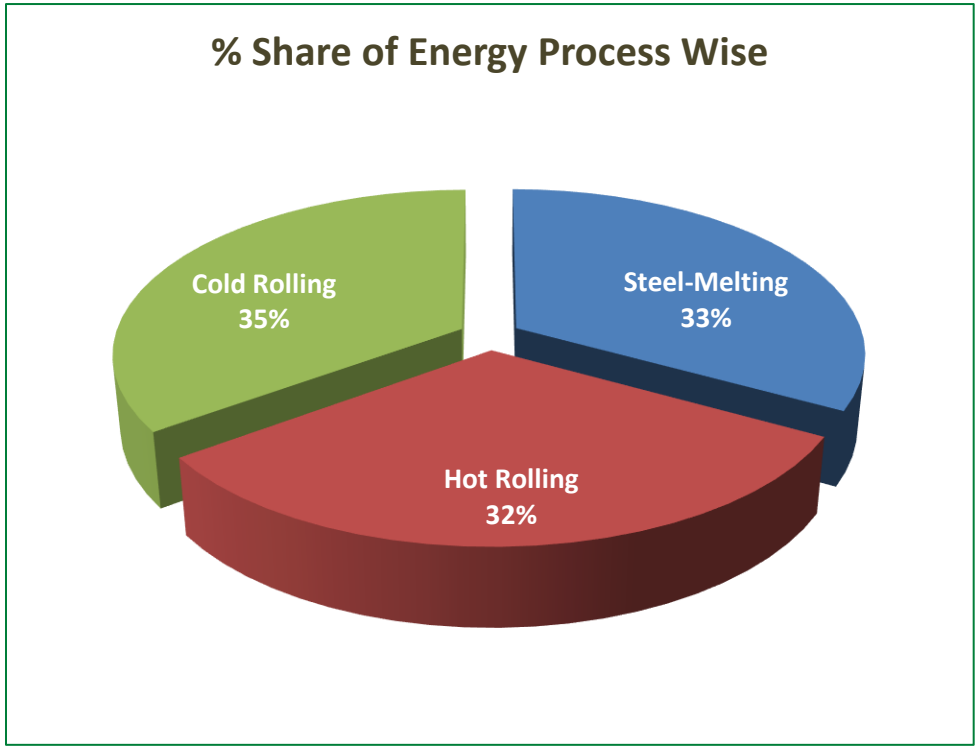
HOT ROLLING CAPACITY-7,20,000 MT

JSL Hisar INSTALLED CAPACITY

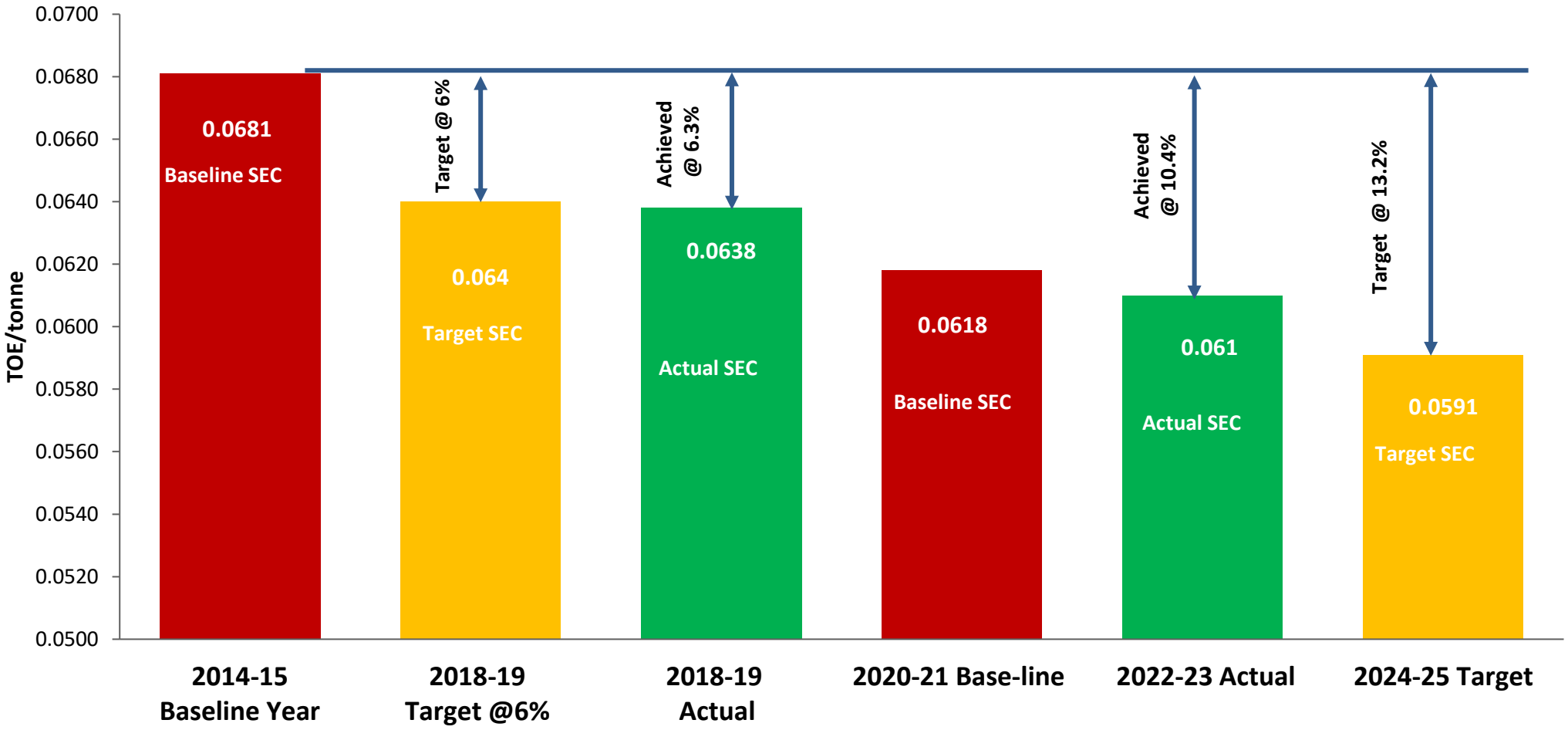
MELTING CAPACITY-8,00,000 MT

Energy Mapping

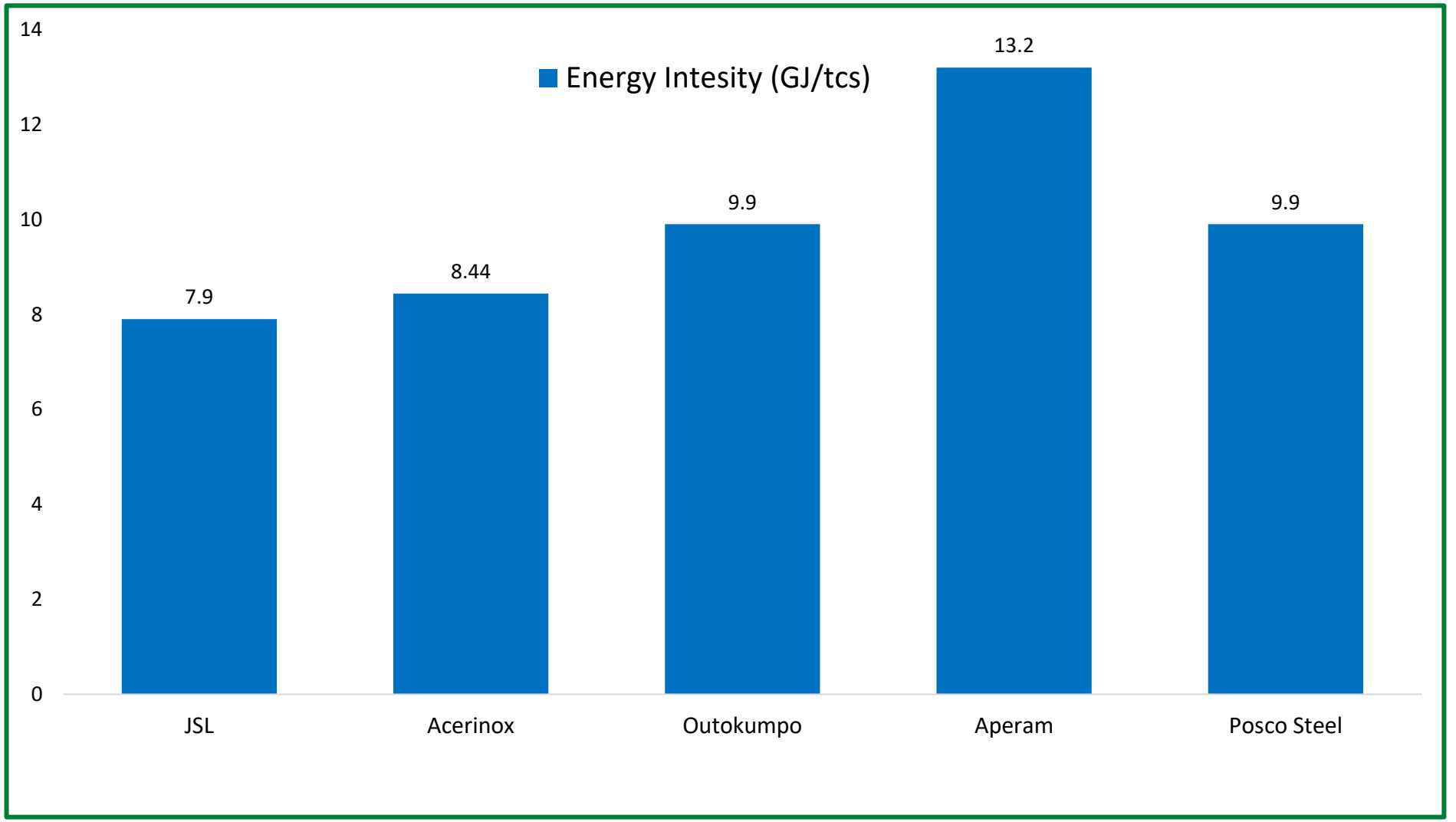




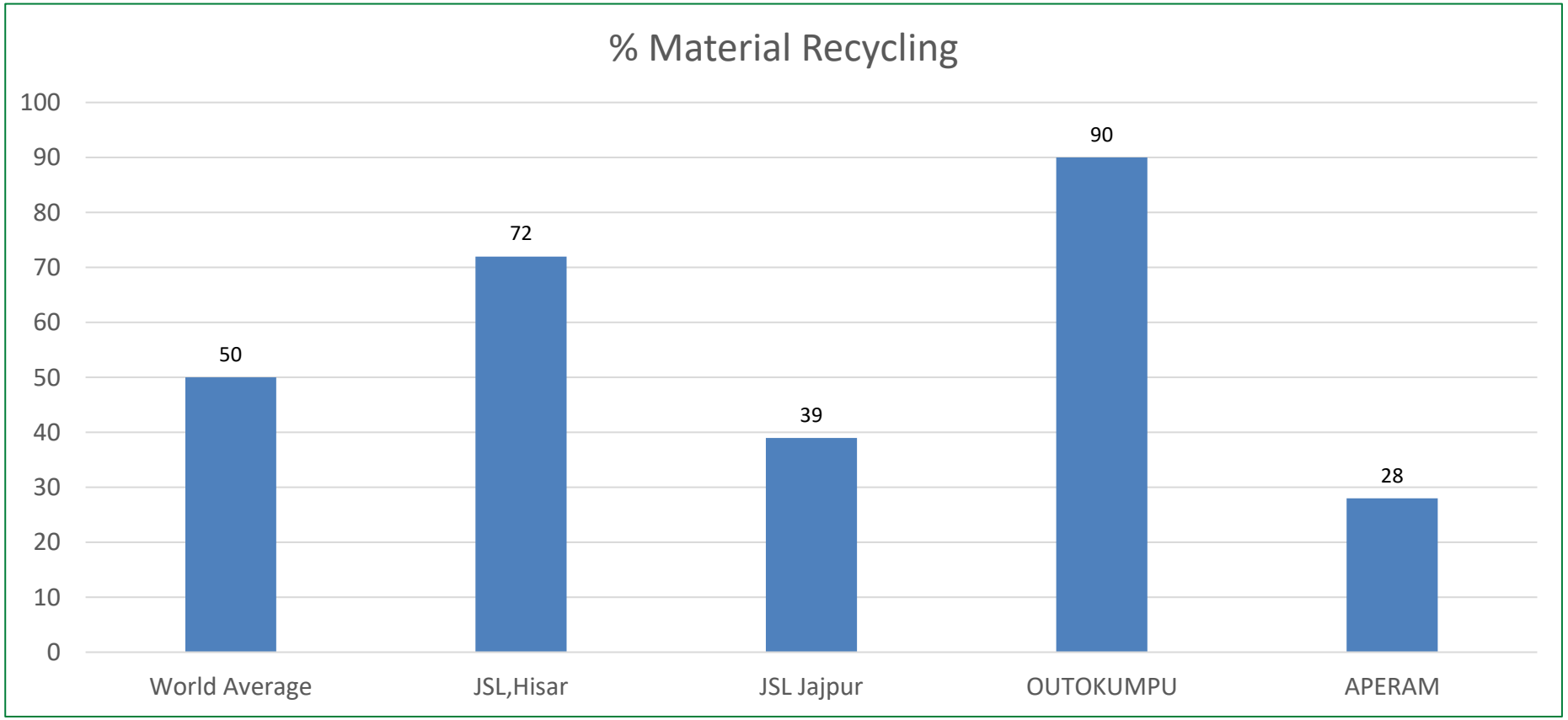
SEC Improvement Trend



Energy Benchmarking with Stainless Peers



Benchmarking with Stainless Peers



Major En-Con Project under-Implementation in FY:2023-24

RE-RTC 100 MW

Oxy-Fuel Burner at Ladle Pre-reheating

Waste Heat Recovery Boiler 2 TPH at AP-4 Line

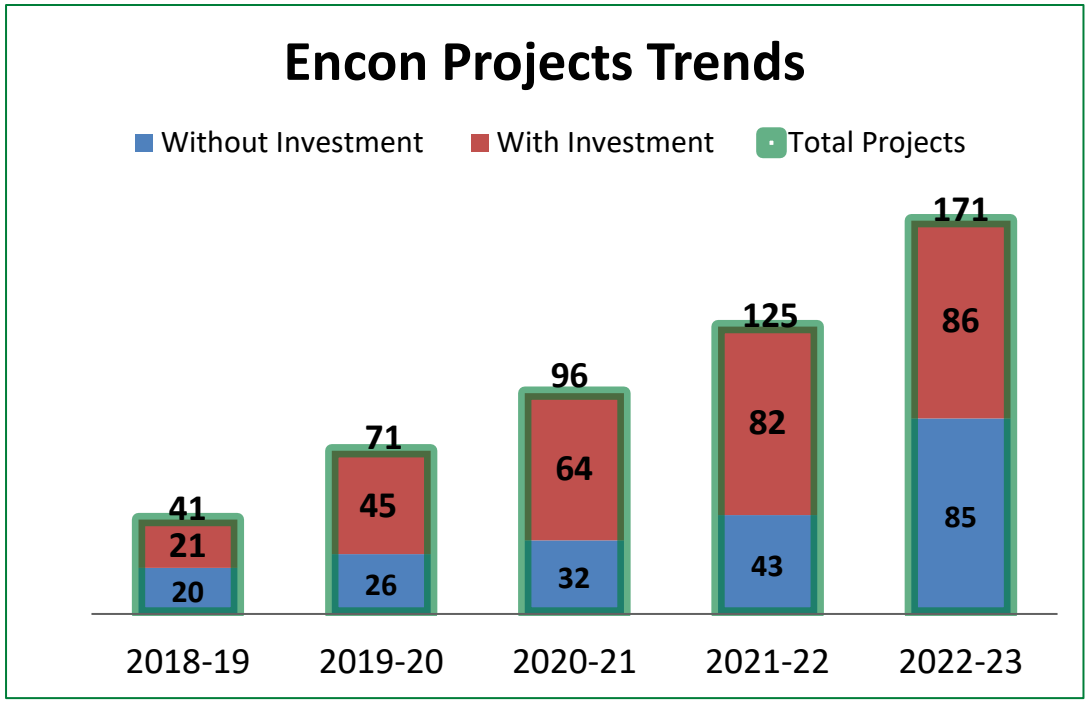
40% percent CO2 reduction by FY 2024

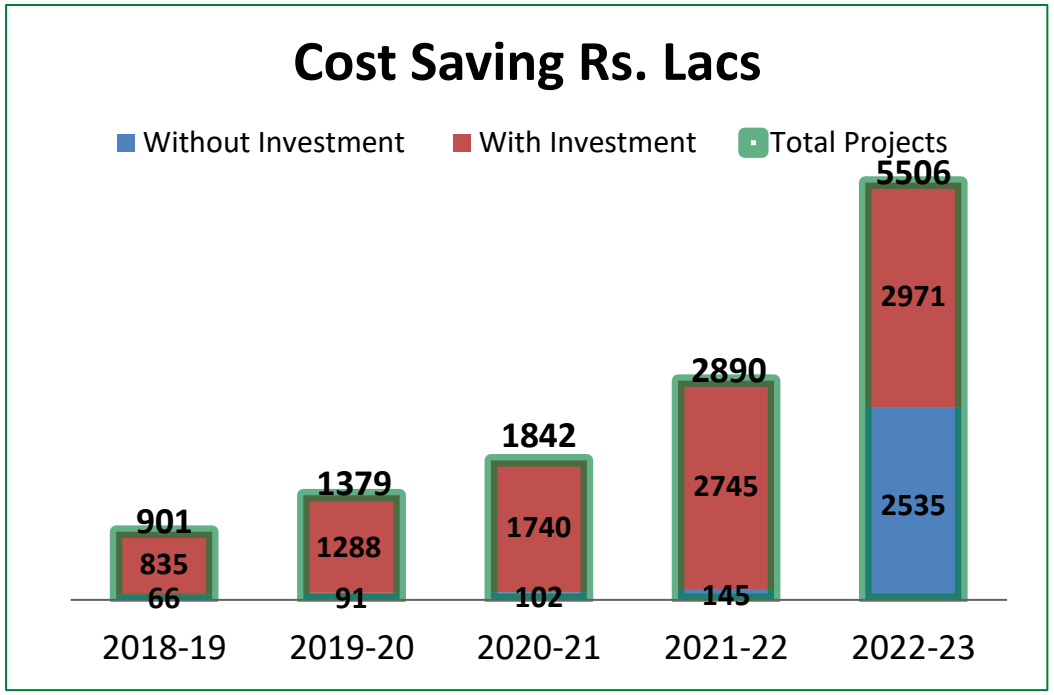
4.8 MW Solar Plant

Green Hydrogen Plant @ 90NM3/Hr

Heat Less Vaporizer @1600Kg/Hr

Energy Conservation Projects Implemented 2018-23





JSL,Hisar has invested more than 37 Cr. INR in various Energy Efficiency and Conservation projects of the last 5 years – saving approx. TOE 7700 per year.

The major projects are listed in the following slides

Major EC Projects Implemented in 2022-23

Sr.	Name of the Energy Saving Project	Investment Made (Rs million) *	Electrical Saving (Million KWh)	Annual Thermal Saving (Mkcal)	Total Annual Savings (Rs million) *	Payback Periods (in Months)
1	Fuel Saving by process optimisation of Bell annealing to reduce cycle time	0.0	0.0	14817	81.50	0.00
2	Process Modification bypassing annealing process of some grades of 300 series with effecting quality	0.0	0.0	12632	92.21	0.00
3	Process-Configuration-Hot charging of slabs in reheating furnace leads to significant energy savings (~15%) along with productivity improvement	0.0	0.0	8653	51.92	0.00
4	To control the venting of Gas oxygen by optimization of Plant.	4.5	5.6	0	39.30	1.37
5	Reduction in Compressed air Consumption in HR by arresting leakage	0.0	0.6	0	4.30	0.00
6	Energy Saving by One pump run Instead of 2 pumps of VBA line at SPD-2	0.3	0.20	0	1.51	2.38
7	Energy saving by optimise running of Fume Exhaust blower wrt to line ready at CRD-2.	0.0	0.15	0	1.13	0.00
8	Steam saving project reducing AP4 degreasing dryer blower speed from 1400 RPM TO 900 RPM in different series at CRD-2.	0.0	0.08	0	0.60	0.00
9	Optimise running of 2 nos of Oil Circulation motor by reducting speed 70% to 30% during mill idle time at CRD-1	0.0	0.05	0	0.39	0.00
10	Energy Saving of One hydraulic pump motor stopped,presently both motors are running at CRD-1	0.0	0.19	0	1.42	0.00
11	Energy Saving by optimise running of pump ,blower w.r.t line/mill running condition	0.4	0.9	0.0	6.5	10.0

Major EC Projects Implemented in 2021-22

Sr.	Name of the Energy Saving Project	Investment Made (Rs million) *	Electrical Saving (Million KWh)	Annual Thermal Saving (Mkcal)	Total Annual Savings (Rs million) *	Payback Periods (in Months)
1	O2 Enrichment in Re-heating Furnace of Hot-strip Mill	15	0.00	722.22	44.30	4
3	Replacement of Old & standard motor with IE3 Motor	25	2.61		19.60	15
4	Installation of Energy Efficient LED Light in ECR/Cellar	5.5	0.71		5.30	12
5	Installation of Energy Efficient pump in HRD & CRD	8	2.45		18.37	5
6	Stopped one 15 KW DOT pump of RM-1 and Old 20 Hi Mill. Earlier two pumps were running.	0	0.10		0.72	0
7	PTF-6 hyd. Motor now running only during any hydraulic operation.Earlier it was running continuously.	0	0.05		0.40	0
8	PTF-8 cooling blower-4 stopped for 0.4 mm annealing. Earlier all four were running.	0	0.03		0.25	0
9	AC Drive installed at Degreasing Line hot air blower for speed optimization (35Hz).Earlier was running at full speed at 50Hz.	0.12	0.04		0.27	5
10	Reduction of fuel Consumption in Flat & JBS ROLLING (Strip Mill)	0	0.00	26.67	1.06	0
11	Running of only one 75 kw pump in summer and one no. Of 55 kw pump in winter in place of two no.of 55 kw pumps running continuously.	0	0.10		0.73	0
12	To optimise power consumption by providing the VFD at pump	0.67	0.38	0.00	2.83	3

Major EC Projects Implemented in 2020-21

Sr.	Name of the Energy Saving Project	Investment Made (Rs million) *	Electrical Saving (Million KWh)	Annual Thermal Saving (Mkcal)	Total Annual Savings (Rs million) *	Payback Periods (in Months)
1	Reduction in Heat Loss by revamp the walking beam Furnace	22.4	0.0	3126.2	29.8	9.0
2	Power Saving by effective utilisation of Comp. Air in CRD	1.5	0.8	0.0	6.3	2.9
3	Reduction of specific power cons by Installation & commissioning of centrifugal compressor of 5500Nm3/hr in HRD	7.2	0.5	0.0	4.0	21.4
4	Replacement of old and inefficient parallel puming system by energy efficiency LRF Cooling at SMS 1.	0.4	0.1	0.0	1.0	5.0
5	Replacement of old and inefficient parallel puming system by energy efficiency pump & separation the secondary pipe lines for bloom & slab caster separately.	0.6	0.1	0.0	0.9	8.0
6	To optimise power consumption by providing the damper at furnace air knife blower-3.	0.0	0.1	0.0	0.7	0.0
7	Automation to optimise running of LRF ID fanby providing ON feedback to MCD.	0.0	0.1	0.0	0.6	0.0
8	Drive installed at Sundwig Ventilation blower.	0.1	0.1	0.0	0.6	1.3
9	Reduction in energy consumption by installing the energy efficient pumps in place of old Canal water pumps at SMS 1 Canal Pump House.	0.3	0.0	0.0	0.3	13.3
10	Replacement of old and inefficient parallel puming system by energy efficiency for DG Set Rain Water Pump	0.2	0.0	0.0	0.3	9.1
11	Replacement of old and inefficient parallel puming system by energy efficiency for Fakira Pump	0.2	0.0	0.0	0.2	10.0
12	Replacement of old and inefficient parallel puming system by energy efficiency for DG Set Waste Water Pump	0.2	0.0	0.0	0.2	10.0
13	Replacement of old and inefficient parallel puming system by energy efficiency for SMS 2 Sewage PIT	0.2	0.0	0.0	0.2	10.0
14	Replacement of Conventional Ceiling fan with BLDC Fan	0.1	0.0	0.0	0.1	19.1

Purging of Ammonia Cracker Dryer with Nitrogen gas in place of Cracked Ammonia

Ammonia Cracker Plant

Used to cracked the raw ammonia into Hydrogen & Nitrogen when passed in a furnace through retort in the presence of Nickel catalyst at a temp of more than 1000 Degree C temperature .

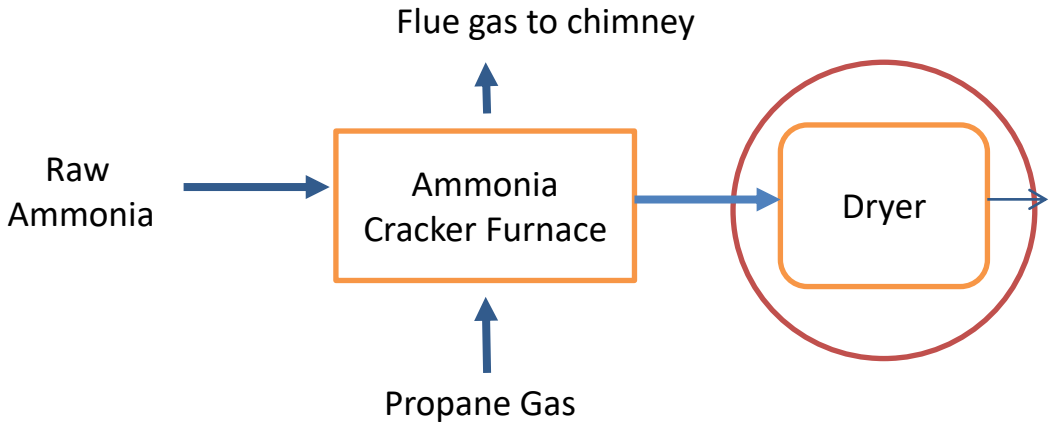
Cracked ammonia ie Hydrogen (75%) & Nitrogen (25%) is used in Bright Annealing Lines in steel plant for brightness in the steel

Major observation

Gas Used for purging in Dryer was cracked ammonia which was costly

Propane gas was used as fuel to achieve the required temperature ie temp more than 850 Deg c for producing cracking ammonia gas

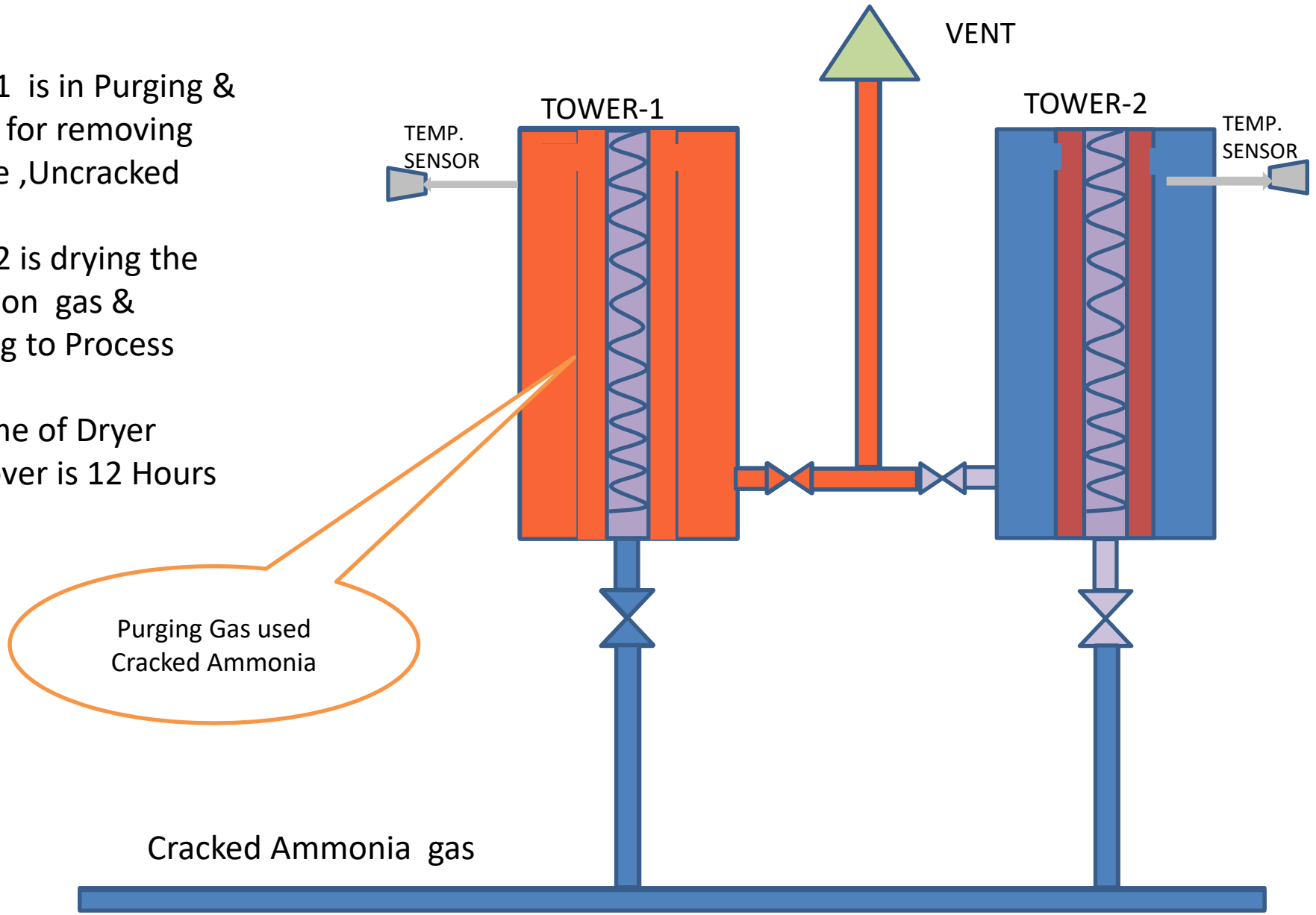
Availability of Nitrogen Gas as byproduct of Oxygen Plant



CRACKER AMMONIA PROCESS FLOW DIG

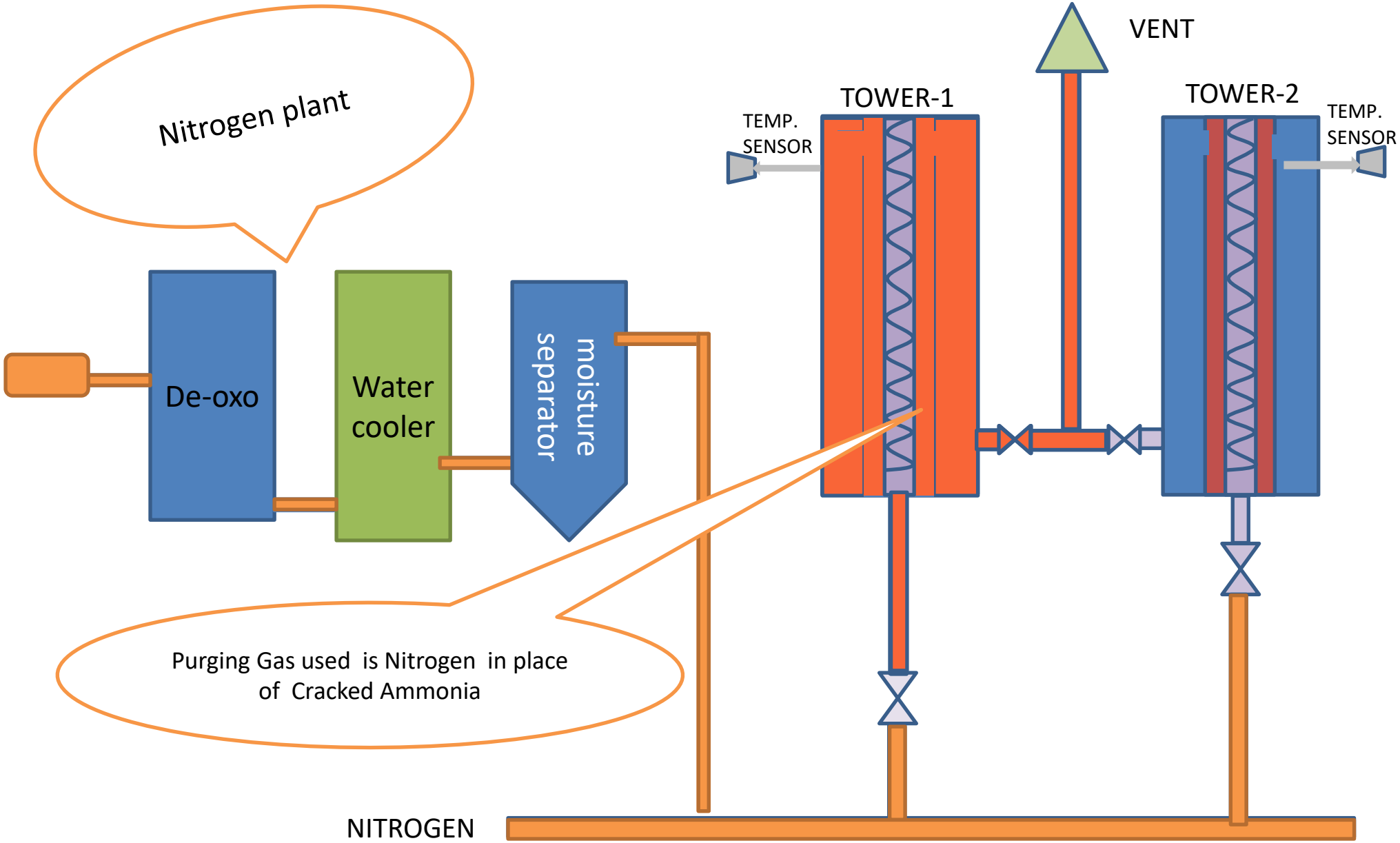
Project 1 : Before

Tower #1 is in Purging & used for for removing Moisture ,Uncracked Gas .
Tower #2 is drying the production gas & supplying to Process Lines
Cycle time of Dryer changeover is 12 Hours



Before Modification

Project 1 : After

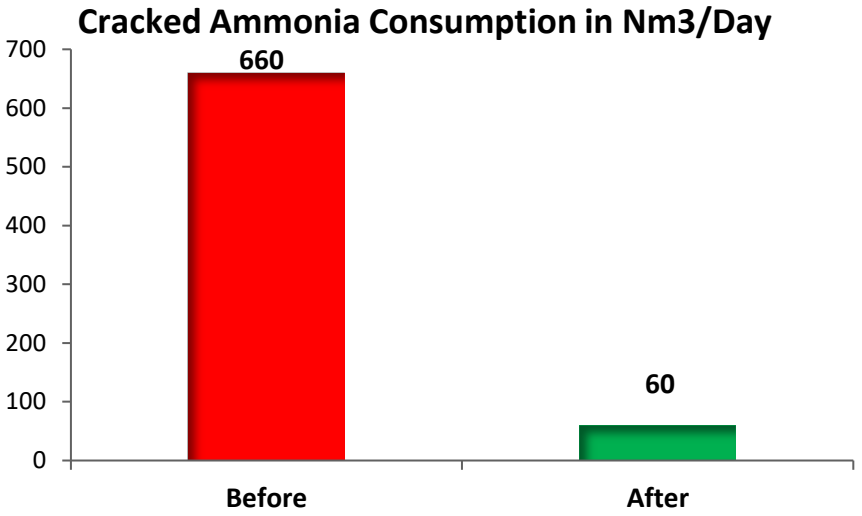


After Modification

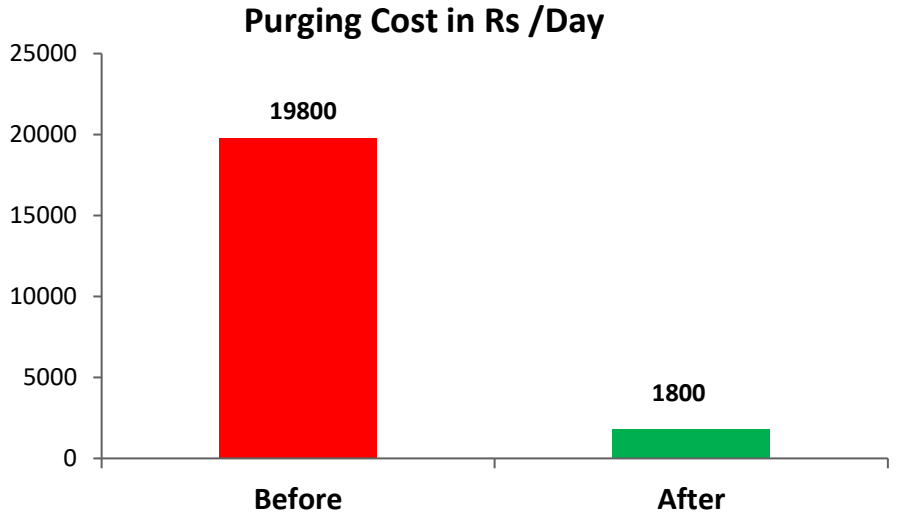
Project 1 : Benefits Achieved

TANGIBLE BENEFITS :-

Annual Ammonia Saving (NM3)	NM3/annum	219000
Total Fuel Saving	MT/annum	19
Total Fuel (Propane) Saving @ 60000/ton	INR Lacs/annum	13
Ammonia Saving in Lacs	INR Lacs/annum	53
Total Saving	**INR Lac/annum**	**65**
Total CO2 reduction	**tCO2**	**57**



Note:- We've total 8 No. of Ammonia Cracker Plants , so we have horizontal deployed

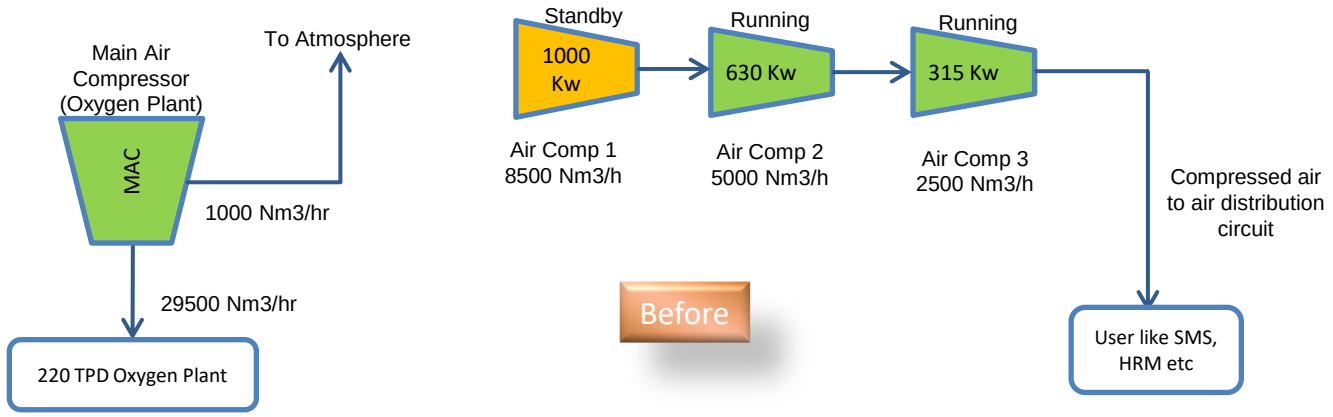


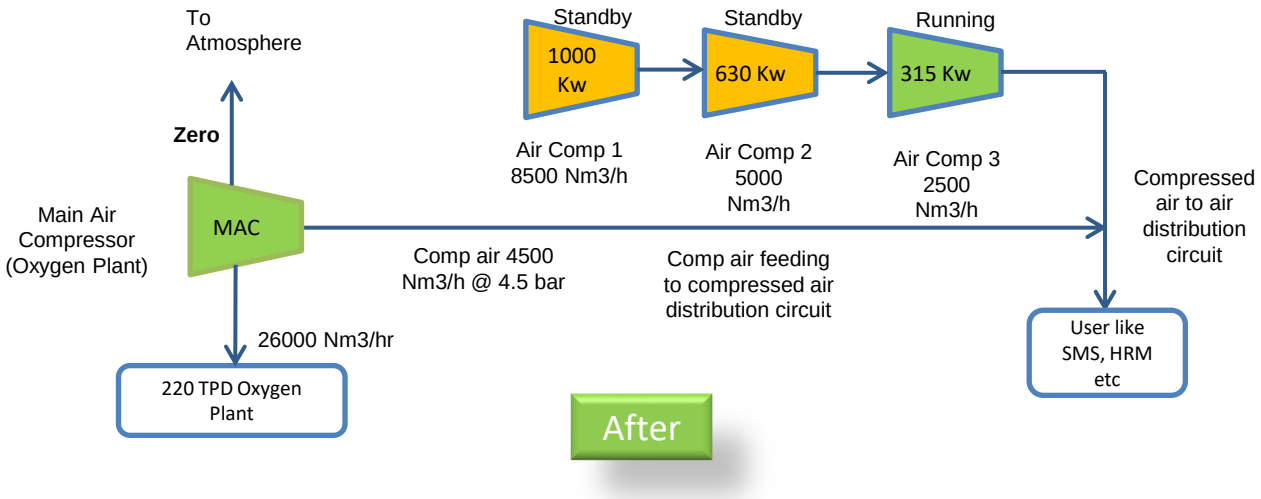
Total Investment of 80₹ Lac

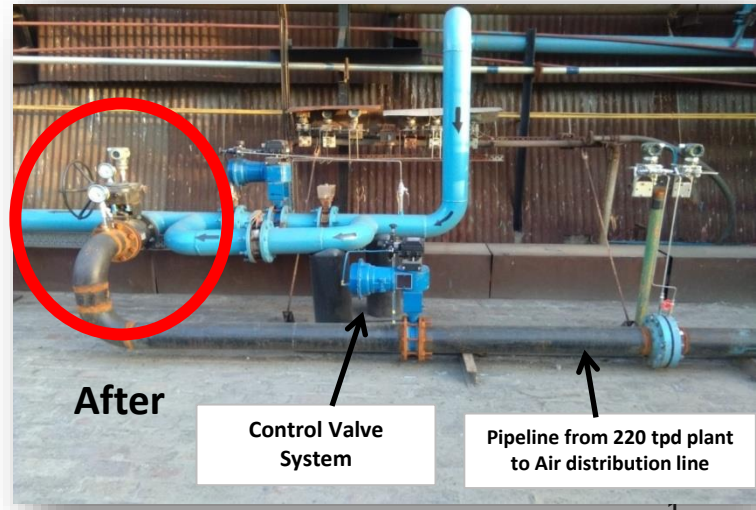
Cost Savings = INR 520 lakh/ year

Reduction in CO2 Emission-456 TCO2/Year.

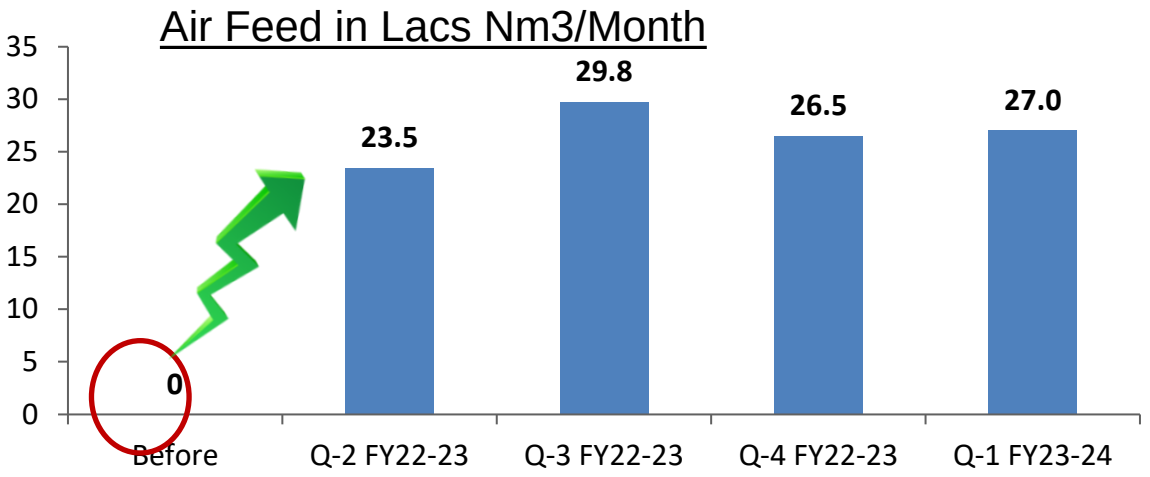
Prj-2 : - Waste to Wealth by Synchronizing & Utilization of Compressed Air from O2 Plant .

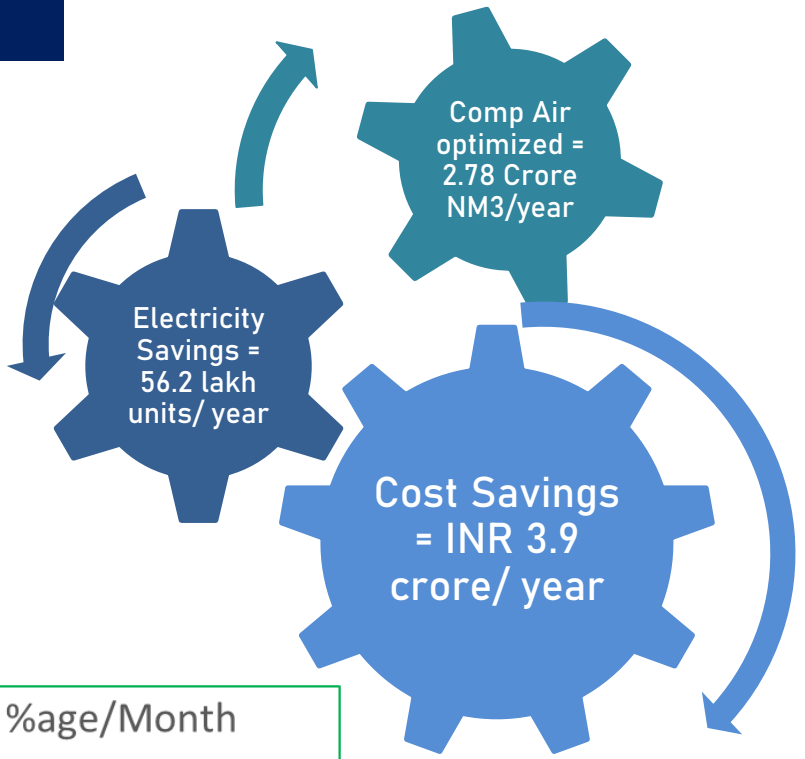


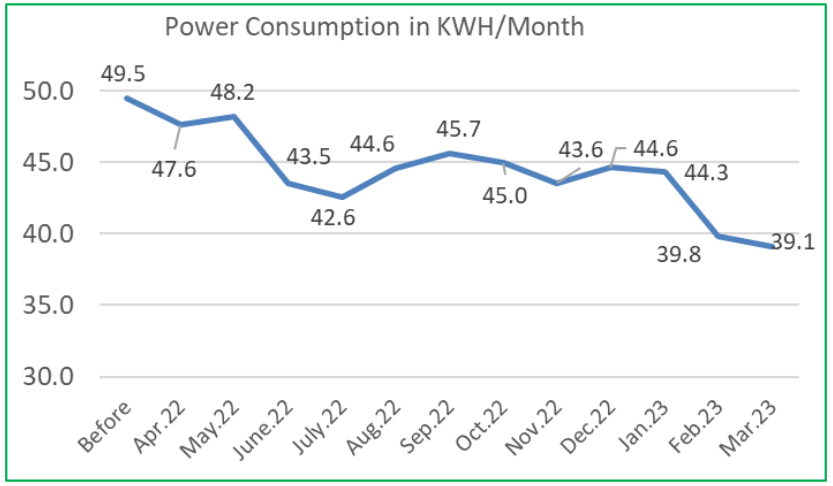


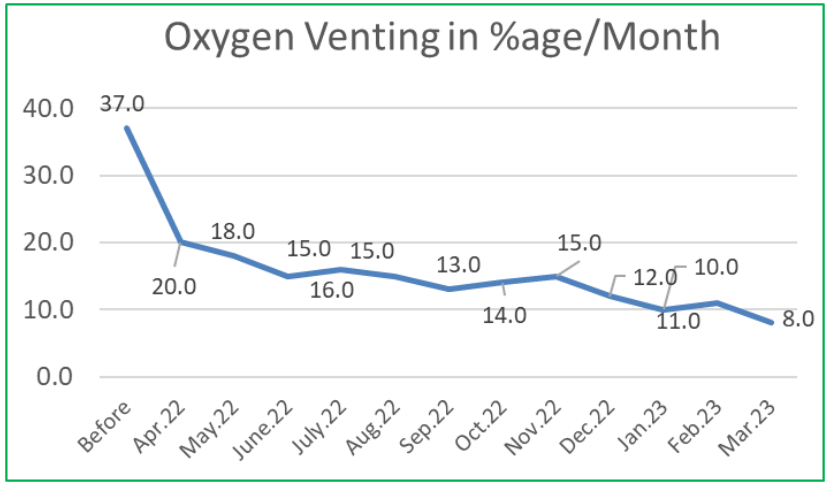


Results Achieved

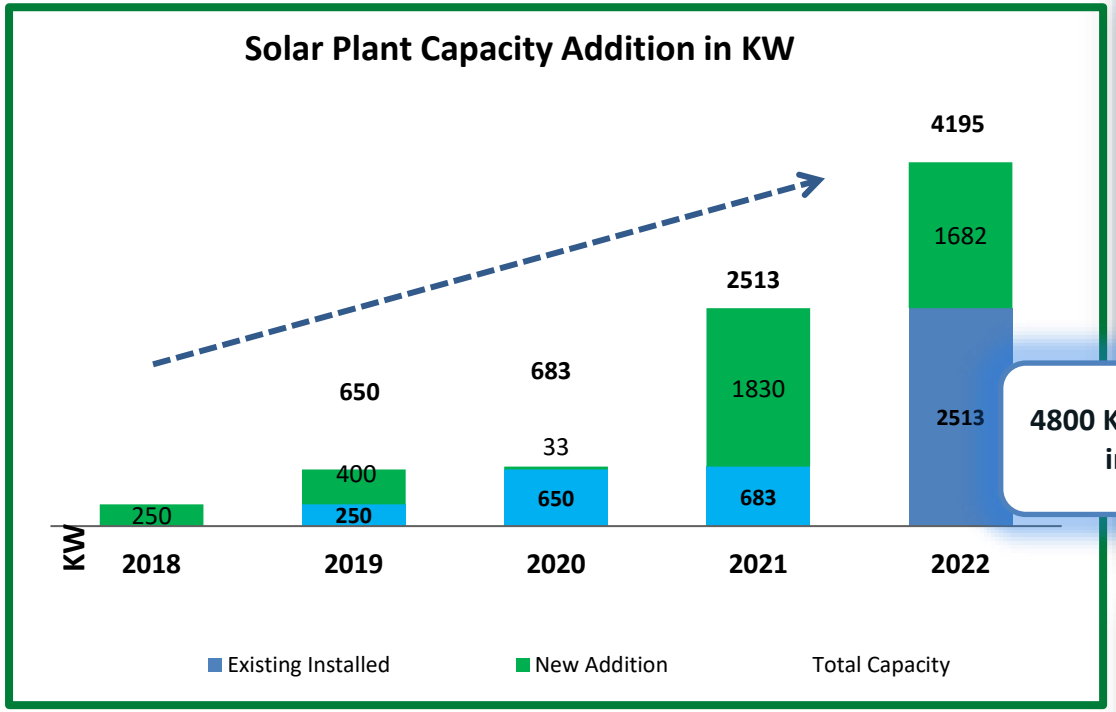








Renewable Energy Intervention



4800 Kwp Planned in 2023

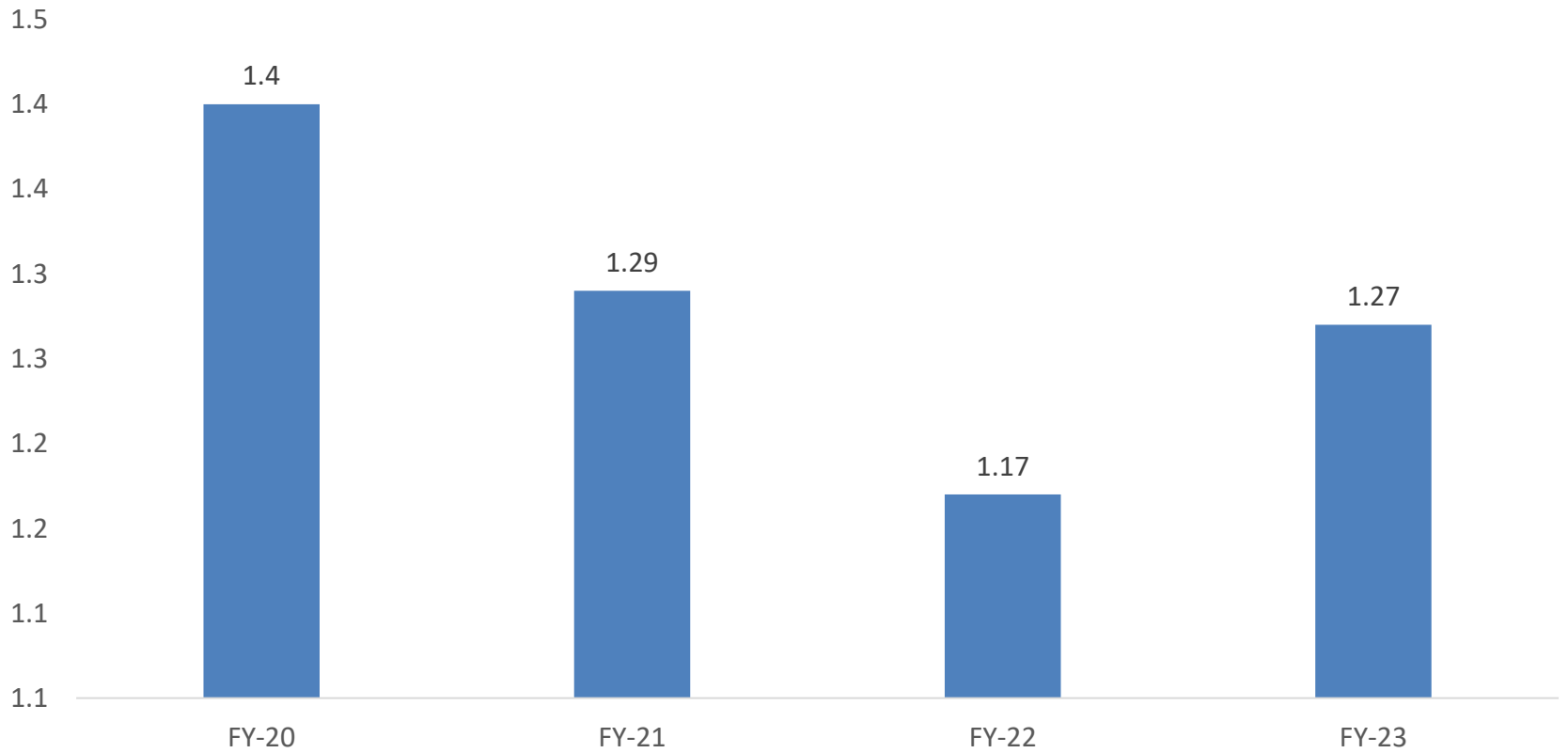
Output:

Generation of 5.35 Million Unit per annum

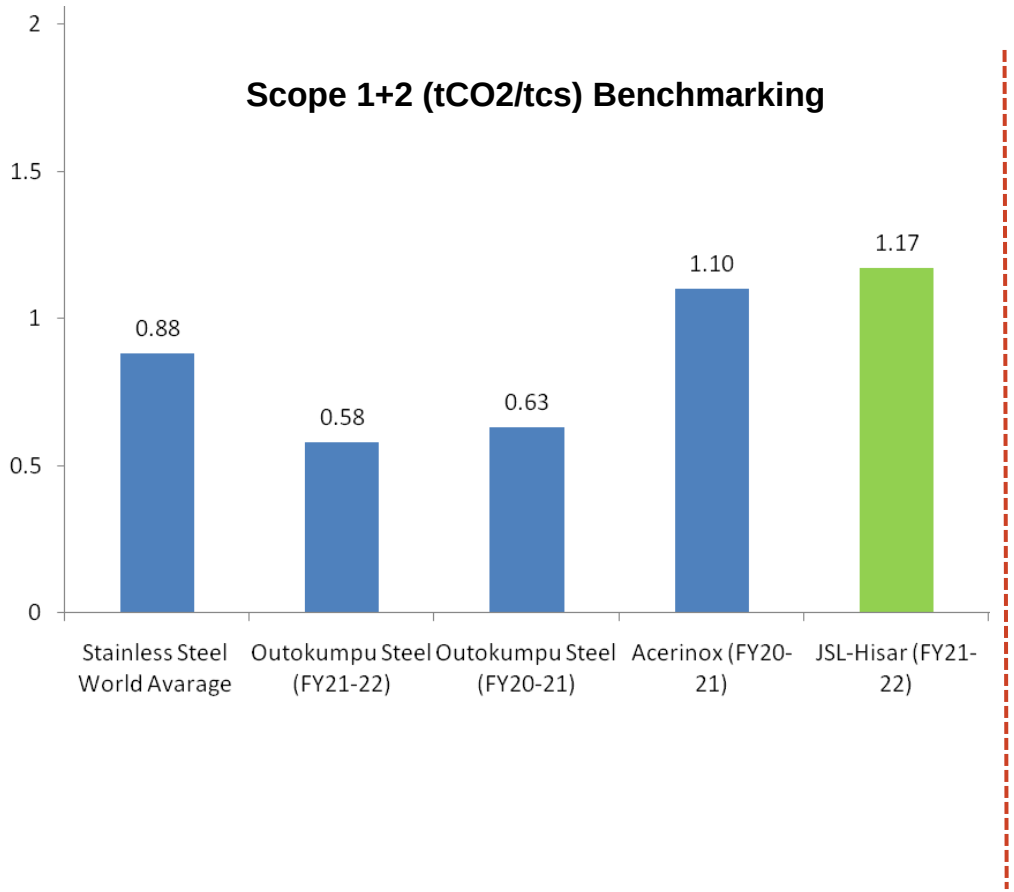
Impact:

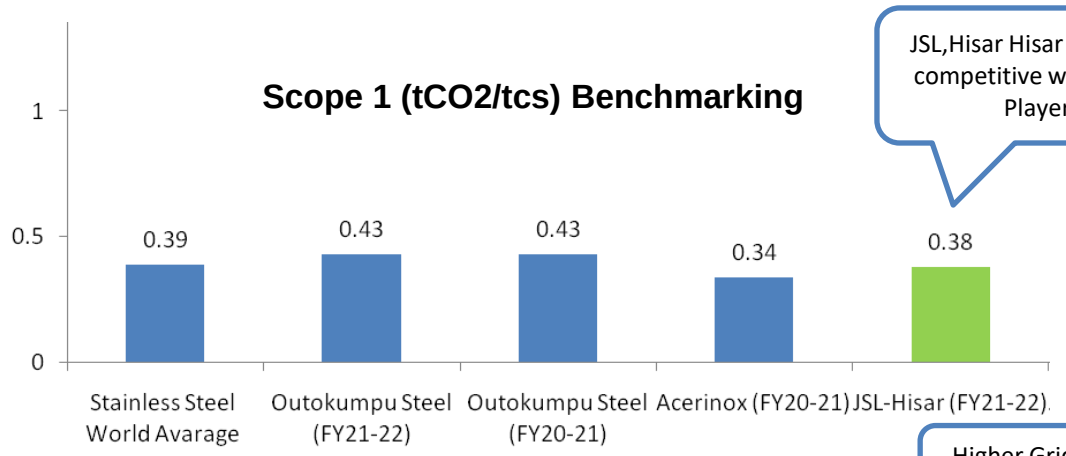
Offset: 4392 Ton of Co2 per annum

GHG Inventorisation

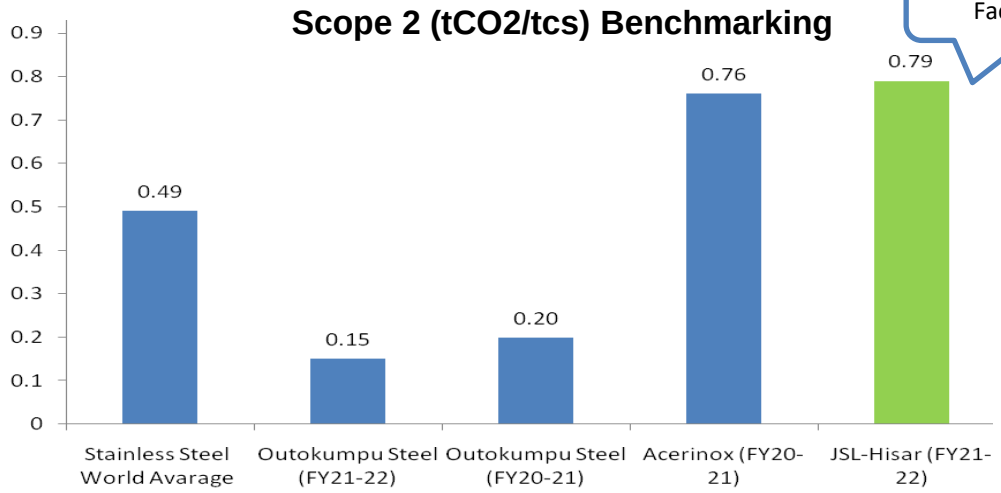


Emission Benchmarking with Stainless Peers



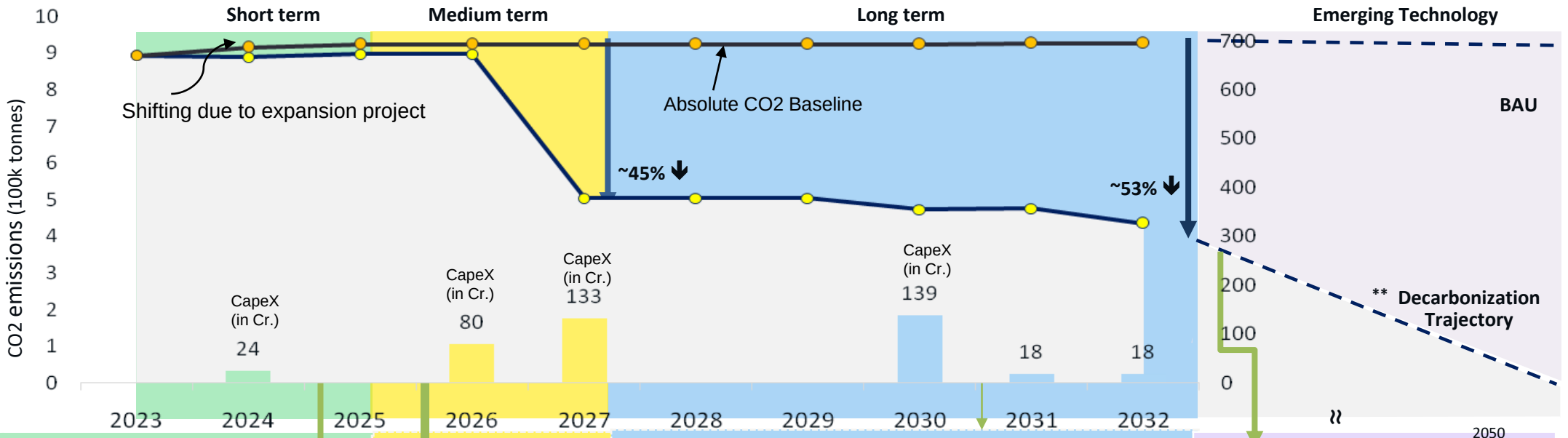


JSL,Hisar Hisar scope-1 is competitive with Global Players



Higher Grid Emission Factor in India

Decarbonization Roadmap 2032



1. Annealing optimization
2. Bio-coal Substitution in EAF
3. Hot Charging of Slabs
4. Bio Mass fuel Boiler
5. Energy efficient motors
6. Digital Twin – LRF
7. Oxyfuel burners in RHF
8. Electric Forklifts

9 EM bottom stirring

10 Ladle Preheating Oxyfuel

11 Organic cycle WHR– RHF

12 RE RTC

13 NG substitution

14 Internal coil transfer by EV truck

15 H2 recovery in HBA line

16 WHR from EAF + AOD1

17 WHR from AOD2

18 H2 substitution

19 CCUS – SMS

100% H2 Substitution

Biomass/Biogas usage at scale

Molten oxide electrolysis

Large scale CCU/S

Energy Policy & Energy Cell

JSL JINDAL STAINLESS

ENERGY POLICY

We at Jindal Stainless Limited, Hisar are committed towards Energy conservation through efficient utilization of various form of Energy in a cost-effective manner.

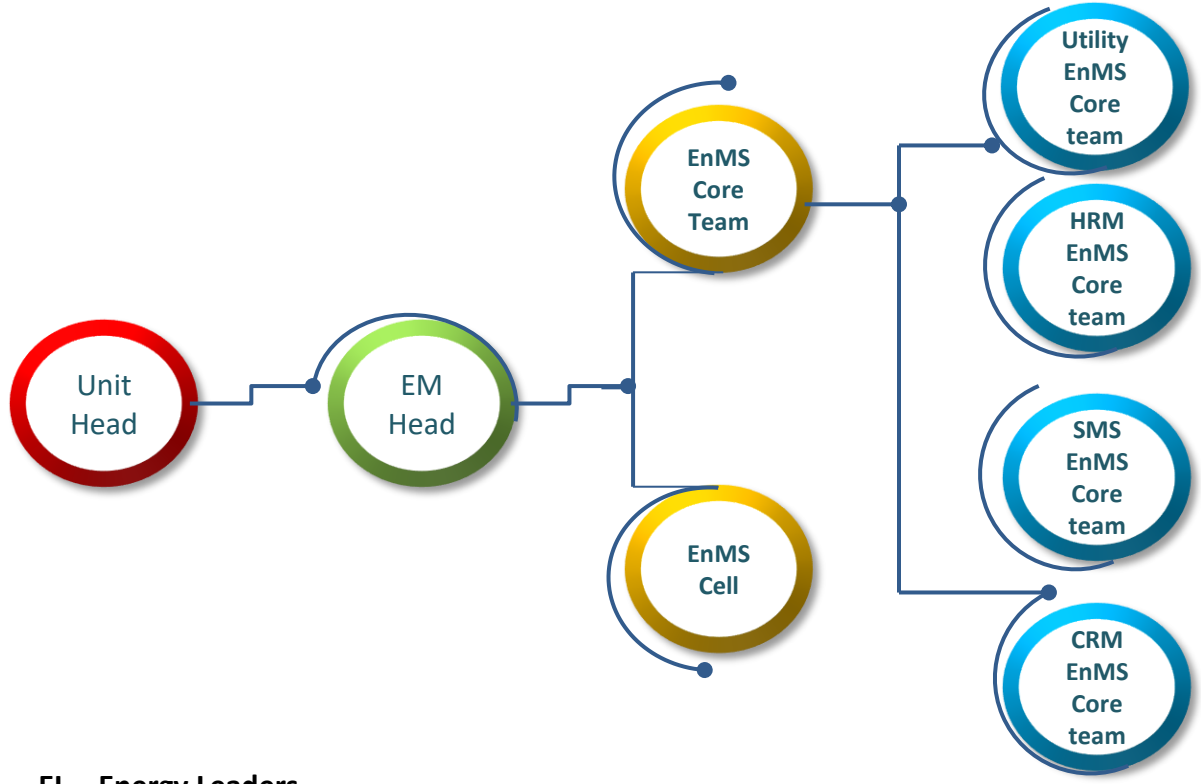
For achieving this, we devote ourselves to:

- Promote use of energy efficient processes, equipment, device and system in the manufacturing of steel and sustain continuous reduction is specific energy consumption year-on-year
- Maintain sound and efficient energy management system to continuously improve and raise performance bar.
- Monitor and improve the energy usage in all process
- Constantly identify the areas of improvement of energy performance and the EnMS and work for its implementation
- Support the procurement of energy efficient products and services that impact energy performance;
- Support design activities that consider energy performance improvement.
- Commitment to ensure the availability of information and of necessary resources to achieve objectives and targets;
- Benchmarking with the global best in the industry.
- Create awareness for efficient use of energy & its conservation and make energy conservation integral to our work culture & personal habit.
- Adherence to all applicable statutory requirements and other requirements related to energy efficiency, energy use and energy consumption.

This will be achieved by dedicated team work and active participation & commitment from employees at all levels. Since, it is an ongoing process; we here at JSL, Hisar try to continuously achieve the best and further keep on improving.

DATE: April 1, 2023

J. SOOD
Director & Chief Operating Officer



EL – Energy Leaders
CEM – Certified Energy Manager

***Note**

- **We have BEE Certified 3 Energy Auditor & 4 Energy Manager.**
- **Also we have 24 Certified Internal Energy Auditor as per ISO 50001.**

Energy Management System (EnMS)

ISO 50001:2018 Certificate

TÜV NORD

CERTIFICATE

Management system as per
ISO 50001 : 2018

The Certification Body TÜV INDIA hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

JINDAL STAINLESS (HISAR) LIMITED
(HR and CR Division)
O.P, Jindal Marg, Hisar - 125 005,
Haryana,
India

operates a management system in accordance with the requirements of ISO 50001 : 2018 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope -

Manufacture of Hot Rolled and Cold Rolled Stainless Steel Product.

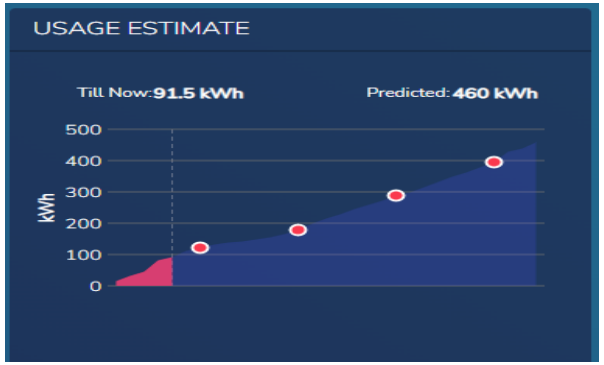
Certificate Registration No. **ENMS 04 00003**
Audit Report No. **Q 9507/2019**

Valid from **25.04.2022**
Valid until **24.04.2025**
Initial certification **25.04.2019**

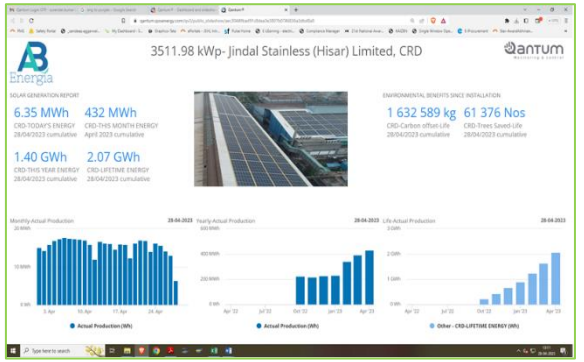
Certification Body
at TÜV INDIA PVT. LTD.

Mumbai, **20.04.2022**

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India cert.helpdesk@tuvindia.co.in

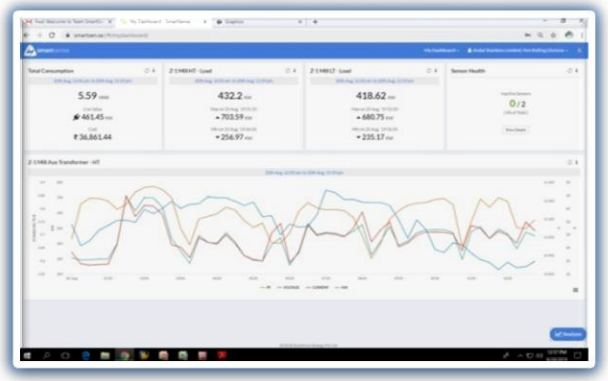


Online EMS Scada System



Solar Energy Generation Trends

Section Wise CO2 Emission Report



Online Loading Monitoring of Transformers & Major Equipments

Capacity Buildup-Program

I. JSL Sponsored Employee to Enroll in **Certified Energy Manager/Auditor** conducted by BEE, Govt. of India

II. JSL Sponsored Energy Team to Enroll in **Post Graduate Professional Development Program in Energy Management & Climate Action organised by CII in collaboration with Thapar University.**

III. JSL nominated employee to attend various online/offline professional course/ Training/Seminar organized by CII,BEE, Hareda, PCRA etc.

IV. Awareness given to employees regarding their contribution to the effectiveness of the EnMS, including achievement of objectives and energy targets and the benefits of improved energy performance;

V. **National Energy Conservation week** is being celebrated every year on 7th to 14th December to bring awareness among the people & motivated about energy conservation. Various events i.e. poster competition, slogan/poem competition, Energy saving pledge organized for JSL Employee, spouse & children

VI. Monthly Training calendar circulated to all employee to attend the training on latest technology, Energy Conservation tips,5S,TPM,KAIZEN etc.

Awareness Session

Energy Saving Pledge

Poster Competition

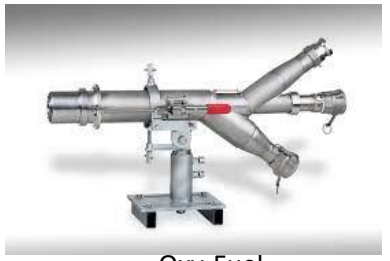
External Energy Training

JSL Way Forward Strategy Vision

Steam generation by Waste-heat recovery-HBA

Addition of 4.8 MWP roof-top solar plant

Conversion of convention Fuel into Green Fuel



Oxy-Fuel Burner in re-heating Furnace- 5 Nos.

In-House Generation of Green-Hydrogen

100 MWp RE-RTC

Electrification of Raw-Material Transfer system

Coke replacement with Bio-Coal in Melting Shop

45% Reduction by 2030 & Carbon-Neutral by 2050

Major Achievements & Awards

Energy Efficiency Award from CII last 5 consecutive year

Platinum Award in "The Energy & Environment Foundation Global Award- 2020, 2021 & 2022

JSL awarded Winner of Golden Peacock Award for Energy Efficiency 2021 & 2022

Winner in CII-EC from last 6 consecutive year

"India-Green Award-2022" in the award category of "The sustainable Energy Achievement Award"

Platinum Award in "Iron & Steel Sector" by SEEM from last 4 consecutive year.


Thank You