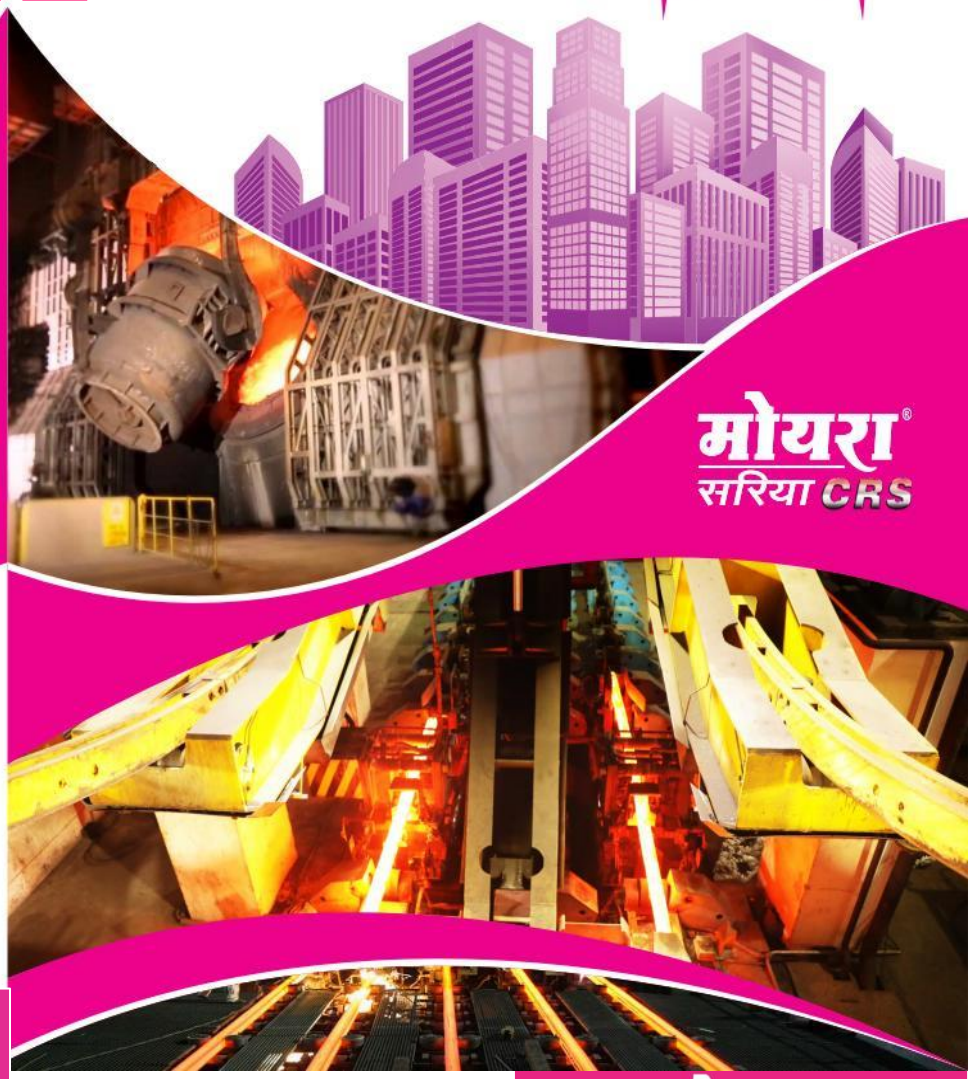
22nd National award for Energy Excellence 2021

www.moirasariya.com

हर नींव की धड़कन



Presenters :

Mr. O.P Malviya - CGM

Mr. Dinesh Bharti -CGM

Mr. Kapil Jat - GM

Jaideep Ispat & Alloys Pvt. Ltd..

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Company profile

Moira CRS Sariya is the leading TMT bar supplier in Central India with its wide network of more than 550+ dealers and 250+ exclusive dealers spread across the region. It is the flagship brand of Jaideep Ispat & Alloys Pvt. Ltd., one of the top TMT bar .manufacturers in India. to 40mm dimension in **Fe-500 CRS, Fe-500 D CRS, Fe-550 CRS, and Fe-550 D CRS grades.**

TMT Size Available -

8mm |10mm|12mm 16mm|20mm|25mm 28mm | 32mm | 40mm

New Product -
Wire Rod - 5.5mm - 8 mm
Zinc coated TMT

Scrap Yard

Furnace

Casting

Rolling Mill

Dispatch

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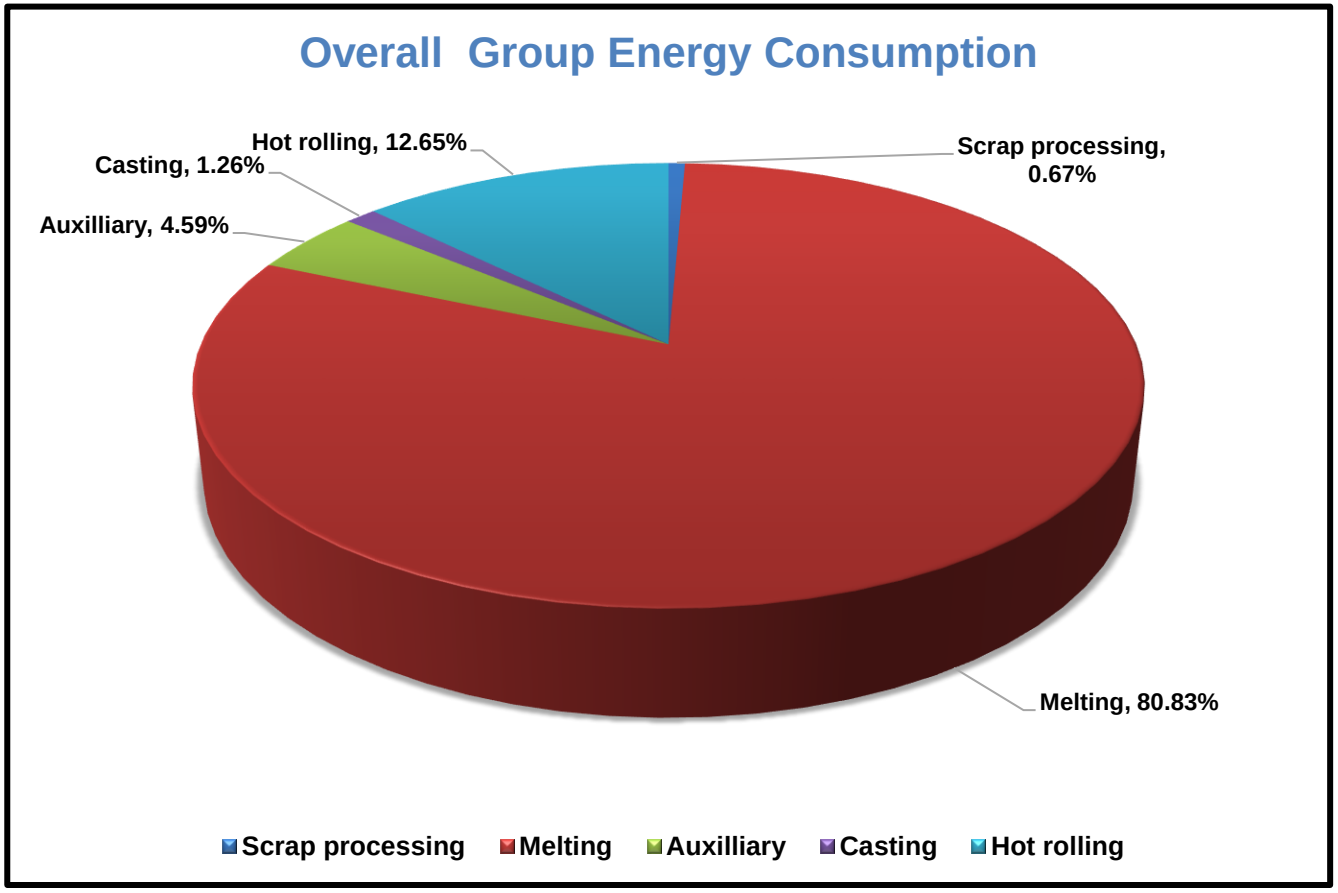
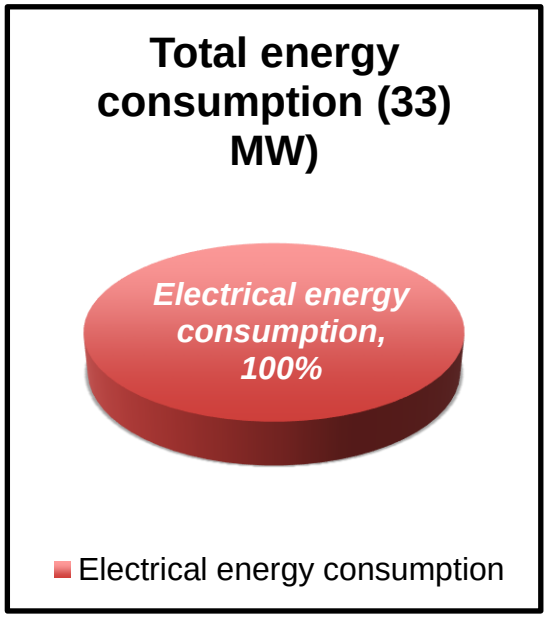
Impact of Covid -19

Production data :
FY 2019-2020 = 272271 MT
FY 2020-2021 = 272224 MT

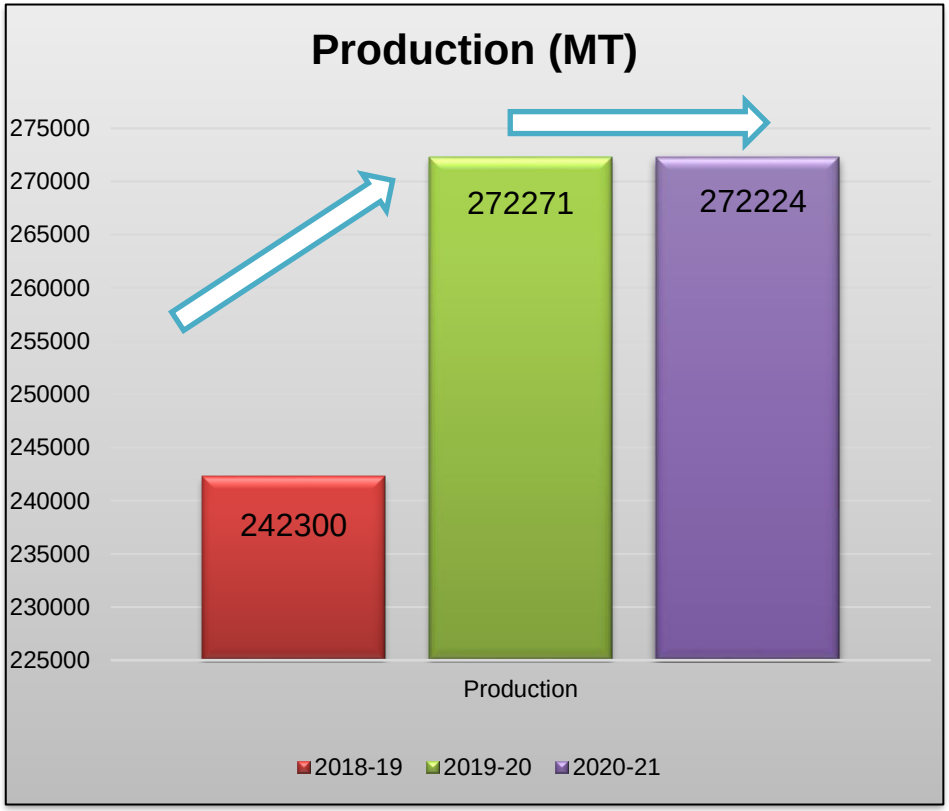
No impact of covid-19 on production

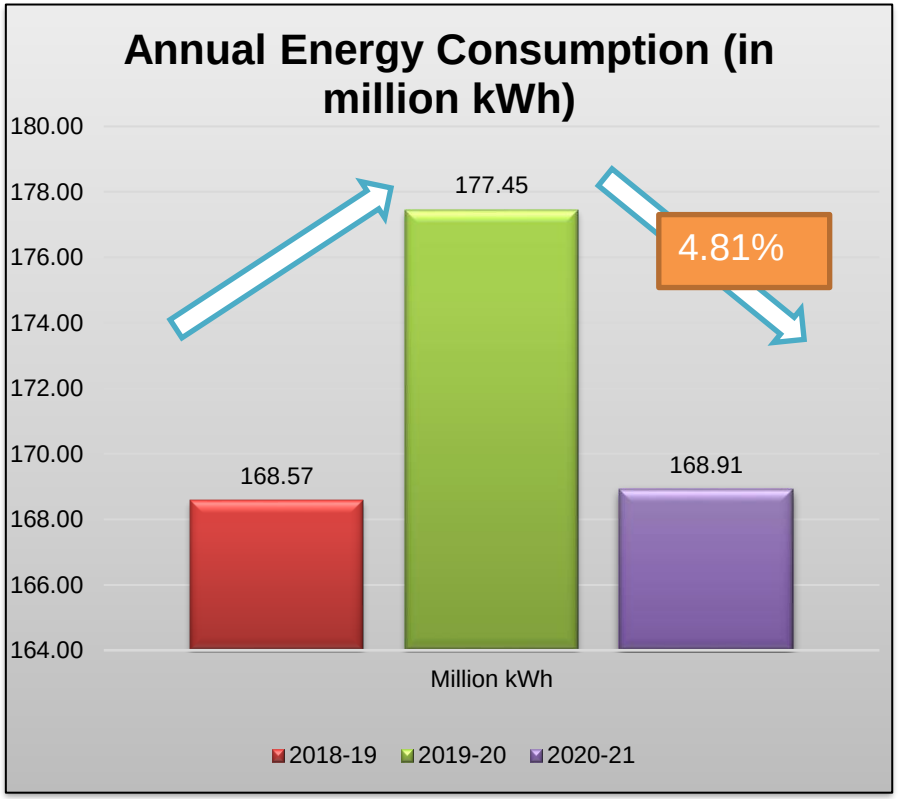
Energy consumption overview



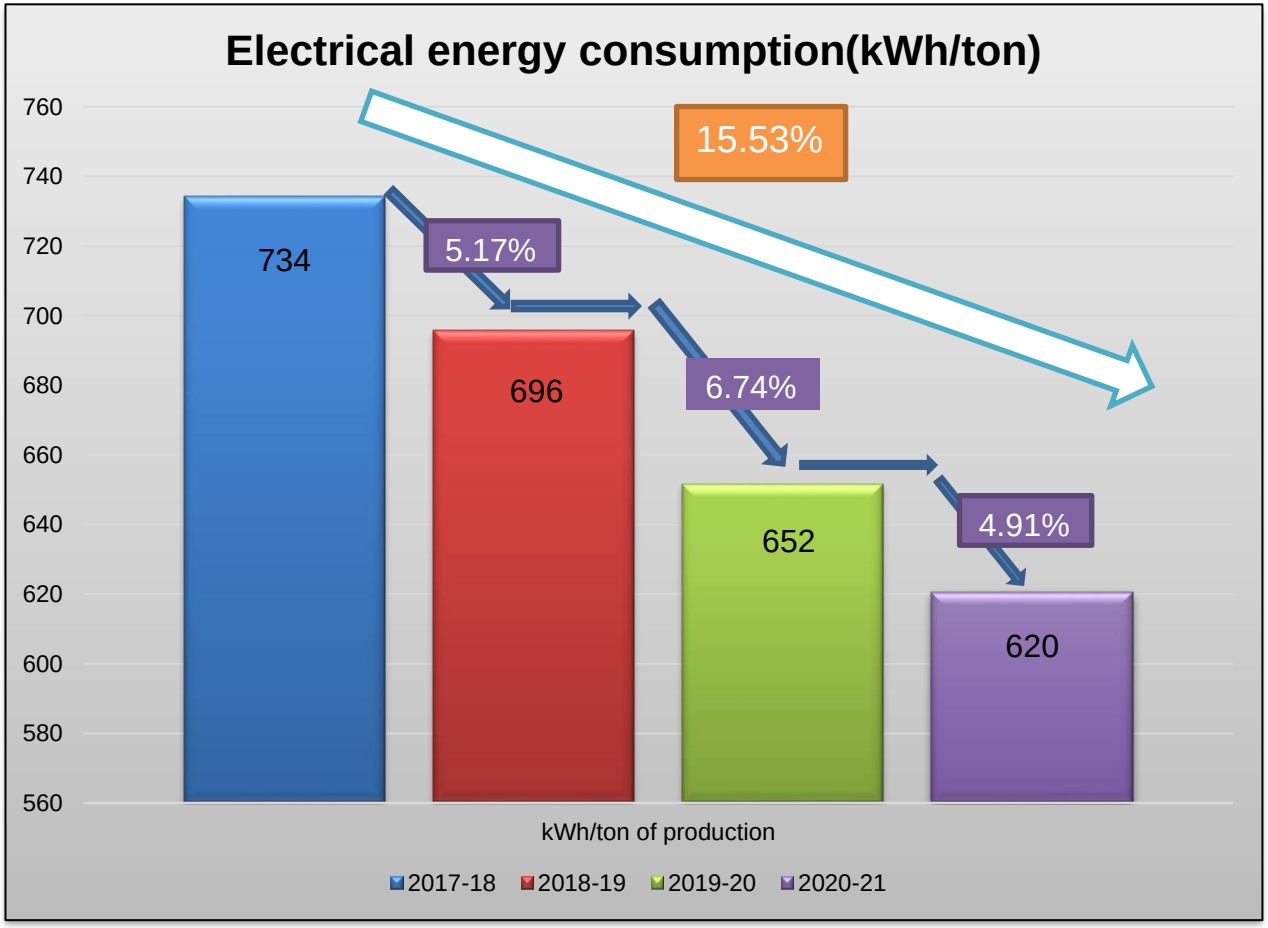


Energy consumption overview





Specific energy consumption



Key Projects implemented
Upgrading capacity of 14 MW DIFOC furnace
Installation of scrap pokers
Installation of energy efficient furnace
Pollution ID fan RPM control
Optimize the operation of bag filters
Installation of scrap processing machines

Benchmarking

Standard <u>Electrotherm</u> formula for calculating SEC is used

- **As per the formula: (in our case)**
- **SEC theoretical = 625 kWh/ton of production**
- **SEC actual = 620 kWh/ton of production**

<u>Target</u>
SEC = 600 kWh/ton

SEC target will be achieved by focusing on ENCON projects planned

Encon Projects Planned for FY 2021-2022

No	Title of Project	Annual Electrical Saving (kWh)	Total Annual Savings (Rs million)	Investment(Rs millions	Payback (Months)
1	Scrap processing yard	11491200	98.37	314.30	38
2	Conversion of 2 diesel powered chain excavator to electric driven with electrification ratio of 100%	778736	3.50	3.86	13
3	CII Energy Audit	7000000	31.50	51.00	19
4	Charge assist system using on platform stationary grabber	816672	3.68	3.00	10
5	Rolling mill end cut reduction by 0.5%	270000	1.22	2.00	20
6	Load factor enhancement by 3%	4900032	22.05	14.00	8
7	Increase furnace power from 14 MW to 18 MW for the same setup	4083360	236.78	300.00	15
8	Reduce temperature drop using microporous insulation	279364	1.26	0.50	5
9	Upgrade Rolling mill to straight mill	748616	4.12	150.00	437
10	Install Intermediate controller for Compressed air system	18181	0.08	0.35	51
11	Replace manual drain valves with level sensor based drain valves	30000	0.14	0.30	27
12	Install transvector nozzle/blowers for cleaning applications	17000	0.08	0.12	19
13	Replace helical gear box with planetary gear box	1236364	5.56	27.00	58
14	EMS system implement through CII	816672	3.68	2.50	8
Total		**32486197**	**412**	**869**	

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Summary of Energy Conservation Projects

Year	No of energy saving projects	Investments (in INR Million)	Electrical savings (Million kWh)	Savings(in Rs Million)	Impact on SEC (Electrical)
FY 2018-2019	8	126	8.15	45	High
FY 2019-2020	12	5.3	1.69	9.3	Medium
FY 2020-2021	18	43	8.23	39	High
Total	38	174	18.1	93.3	

Innovative project

Project Title :

Conversion of diesel powered **chain excavator to electric driven** with electrification ratio of 100%

Project Details & Methodology

- Chain Excavators are regularly used in our industry for sorting scrap
- Existing CH-Ex machines with electric powertrain had huge capital investment costs as well operating costs
- Being diesel powered they had potential to release pollutants in the atmosphere
- We took an old excavator, modified it, installed electric motor and removed diesel engine

Trigger for project implementation:

- Reduce operational costs
- Save greenhouse gas emissions
- Easily replicable

Category C New concept (risks taken/self driven/beyond OEM)

Replication potential:

- **Easily replicable – *Already replicated in our other plants***

Results

Total machine converted = 1
Investment : 19.3 lakhs
Savings : 466650 kWh/annum

Annual Electricity Savings = 466650 * 5.5 = 2566575 INR per annum

Annual Diesel Savings = 200 * 340 = 68000 liters

GHG Emissions = 189516 kg CO2 eq.

Calculations :
*1 litre diesel = 10.96 kWh
200 litres diesel saved per day = 10.96*200=2192 kWh/day
Electric motor consumption - 100 Hp = 74.5 kW*11 Hrs = 820 kWh/day
Therefore daily savings = 2192 - 820 units = 1372 units
Yearly savings = 1372*340 = 466650 units
GHG emissions saved = 200 * 2.787 * 340 = 189516 kg CO2 eq.

*http://www.eauc.org.uk/file_uploads/ucccfs_unit_converter_v1_3_1.xlsx

Utilization of Renewable Energy Sources

S.No.	Renewable Energy Projects	Technology (electrical/thermal/other)	Type of energy	Onsite/Offsite	Energy Saving/Benefit	Investment	% of overall electrical energy
1.	On grid Captive solar plant - 3.24 MW capacity	Electrical	PV - Renewable	Offsite	5.3 million kWh/year	122.9 million	3.14%
2.	Rain Water Harvesting	Other	Hydro	Onsite	1260 KL/year capacity	0.2 million	NA
3.	Sewage Treatment plant	Other	Hydro	Onsite	10200 KL/year water is filtered	2.9 million	NA
4.	Rain water harvesting - community side	Other	Hydro	Offsite	350 KL/year water is filtered	3.5 million	NA

Utilization of Renewable Energy Sources

3.24 MWp Offsite Ground Mounted Solar Power Plant

Investment Made:
122.9 million INR

Energy Generated FY 2020-2021 :
5.3 million kWh

Group total capacity = 33 MW

9.8% of connected load powered through renewables

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Waste Utilization and Management

S.No.	Initiatives taken – Zero Waste
1.	Make bricks from slag
2.	Zinc recovery from pollution dust
3.	Rain water harvesting
4.	STP (sewage treatment plant)
5.	TMT bundle locker
6.	Re-melt the launder loss
7.	Re-use the slag by extracting the metal from it

GHG Inventorisation - Emissions

Current Situation on Emission:

- Currently CO2 emission from 68000 litres of diesel was saved when we used electric powered chain excavator instead of going with the diesel one.
- Total Carbon emissions saved per annum (in kg CO2e) = 182769.72

Future Target :

- Target is to further bring the emissions down by 548309.16 kg CO2e by using 3 electric powered chain excavators and completely removing any diesel powered chain excavators.
- Further we plan to convert more such diesel powered earth moving machines to electric powertrain from diesel powertrain.

Reduced CO2 emissions by making steel through secondary route

Annual Co2 emissions saved :

1500 kg CO_2/ton of final product

- State of the art FES system from Thermax
- Total capacity of 130000 cubic metre/hour

PM levels = 25 mg/Nm 3

Reduced CO2 emissions from burning of 700 tons of coal annually by removing reheating mill

Annual Co2 emissions saved : 2002 tons

Reference : https://www.eia.gov/coal/production/quarterly/co2_article/co2.html

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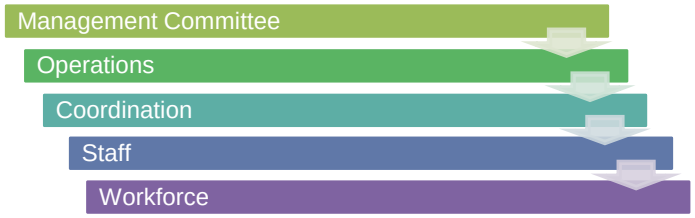
Teamwork, Employee Involvement & Monitoring

- Plant performance report – contains all the necessary KPI for the entire plant
- Reviewed everyday in a meeting chaired by the **plant head** with all the respective section heads as the members
- Approval for any energy conservation projects takes place in this meeting



Training programs organized on the following topics :

- Plant utilities (by CII)
- Roll pass design
- Optimize melting operations
- Casting technology
- PLC programming
- Shock pulse monitoring
- Furnace lining practices
- Breaker & Switchgear maintenance

Date - 8/11/2020 — Rathi Plant Performance Report

	SMS-1 Scrap type	SMS-1 Actual charged	SMS-1 % Charged	SMS-2 Scrap type	SMS-2 Actual Charged	SMS-2 % Charged	Audit issues
Recipe Compliance	Mill	5300	1.39%	Mill	11800	2.72%	Furnace
	Light	15300	4.00%	Light	43500	10.03%	
	Mix	160495	42.00%	Mix	152670	35.20%	
	Essar	2000	0.52%	Essar	2000	0.46%	CCM
	Skull	4000	1.05%	Skull	4000	0.92%	
	Cast Iron	1000	0.26%	Cast Iron	4400	1.01%	
	Shredded	5000	1.31%	Shredded	5000	1.15%	
	Turning	46900	12.27%	Turning	64800	14.94%	Rolling
	Process	5600	1.47%	Process	6000	1.38%	
	Sponge	136500	35.72%	Sponge	139500	32.17%	
Recipe plan issues and non compliance	No issues			No issues			Remarks
Scraps Processing issues and							Furnace
							CCM
							Rolling

Furnace SMS	SMS-1	SMS-2	Rathi Rolling			Caster SMS (CCM)		
Target MPM	285	270						
Furnace KPI	Plan	Actual	Rolling KPI	Plan	Actual	CCM KPI	Plan	Actual
MPM	280	282.44	% Of Hot rolling	95%	97.86	Launder Loss	800	780
MPM	275	282.44	% Of Missroll	0	0.410	Tundish Loss	200	155
BL	-	8.75	Mill Down T	0	0:24:00	End Cut	150	205
Mn Average	9.5	9.58	Mech Down T	0	0:00:00	Front Cut	120	130
Mn Recovery	80	85.6	Elect Down T	0	0:05:00	No Of Sequence	1+14	1+14,1+14
OFF Heat	0	0	Power consumption		107.79	Bypass Due to	0	0.36
Furnace Hold	0	0				Bypass Due to	0	1.77
Mech/ Elect	0	Nil	Roll change time	0	0:00:00	3rd Stand by pass	0	0
Power con.	605	609.81	Pass change time	0	0:00:00	High Speeed	0	0
Load Factor	94.59	Aux.Pow	Maintenance time	0	0:00:00	MPEB Power cut	0	0
L.life(hoats)	20	17	MPEB Power Cut Time	0	0:00:00	Mech/ Elect BD	0	0
L.life(hours)	30	31.62	Furnace Downtime	0	0:00:00	Laddel hold	0	0
Avg. kW	10200	10346	Site change	0	0:00:00	Powder	400	310
Any Accident	0	0	Any Accident	-	0	No of Breakouts	0	0

SMS Caster Quality KPI					Major Breakdown
Reason	Total Time	Missroll Indep.	Missroll Dep.	Billet Bypass	SMS F/C-
Chilli Problem	0:00:00			0	Caster -
Mouth Open	0:00:00			0	
Cracking Problem	0:00:00			0	Rolling -
Piping Problem	0:00:00			0	

IOT systems installed

- *RPA*
- *Digital checklist*
- *Monitoring using RFID*
- *SCADA*

Projects implemented through Kaizens:

- Optimize the Cooling Tower performance
- Arrest compressed air leakage
- Reduce LT voltage in distribution transformer
- Reduce conventional lighting in rolling mill shed with natural day lighting system

Green Supply chain

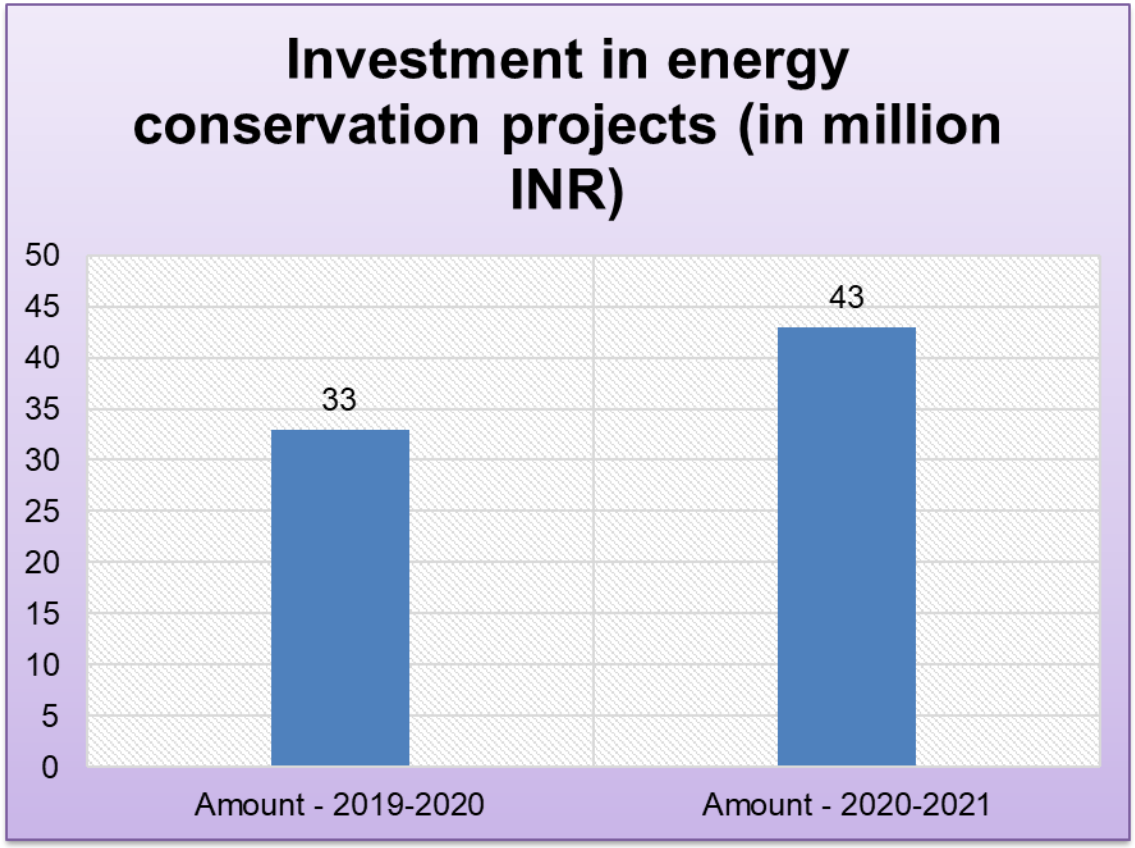
Objective:

The objective of assessing "Green Supply Chain" for participant companies is to understand how the award participant companies are integrating environmental thinking into their supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product

Initiatives:

- Taking TMT size (order) details online
- Online Freight tracking system
- Paperless organization = Approximately 300 checklists per day made digital
- Providing TC in online mode
- Quality Van
- NABL accredited lab

% Budget Contribution towards energy conservation



FY 2021-2022 Implement ISO 50001 through CII

Learnings from CII Energy Award 2020

- Energy management system
- Renewable energy
- New ratings & certifications

Awards & Recognition

TIMES ICON Award 2018

Category Winner – Most Promising company in Steel Industry

CONCOR Award 2016

Container Corporation of India Ltd.
ICD/Pithampur, Western Region
First position – Import

CONCOR Award 2017

Container corporation of India Ltd.
ICD/Pithampur, Western Region
First position – Import

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Long term Vision on Energy efficiency

Target :
50 MW
Solar Power
Project

In the long run we are planning to invest more and more in the renewable sector

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Thank You

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