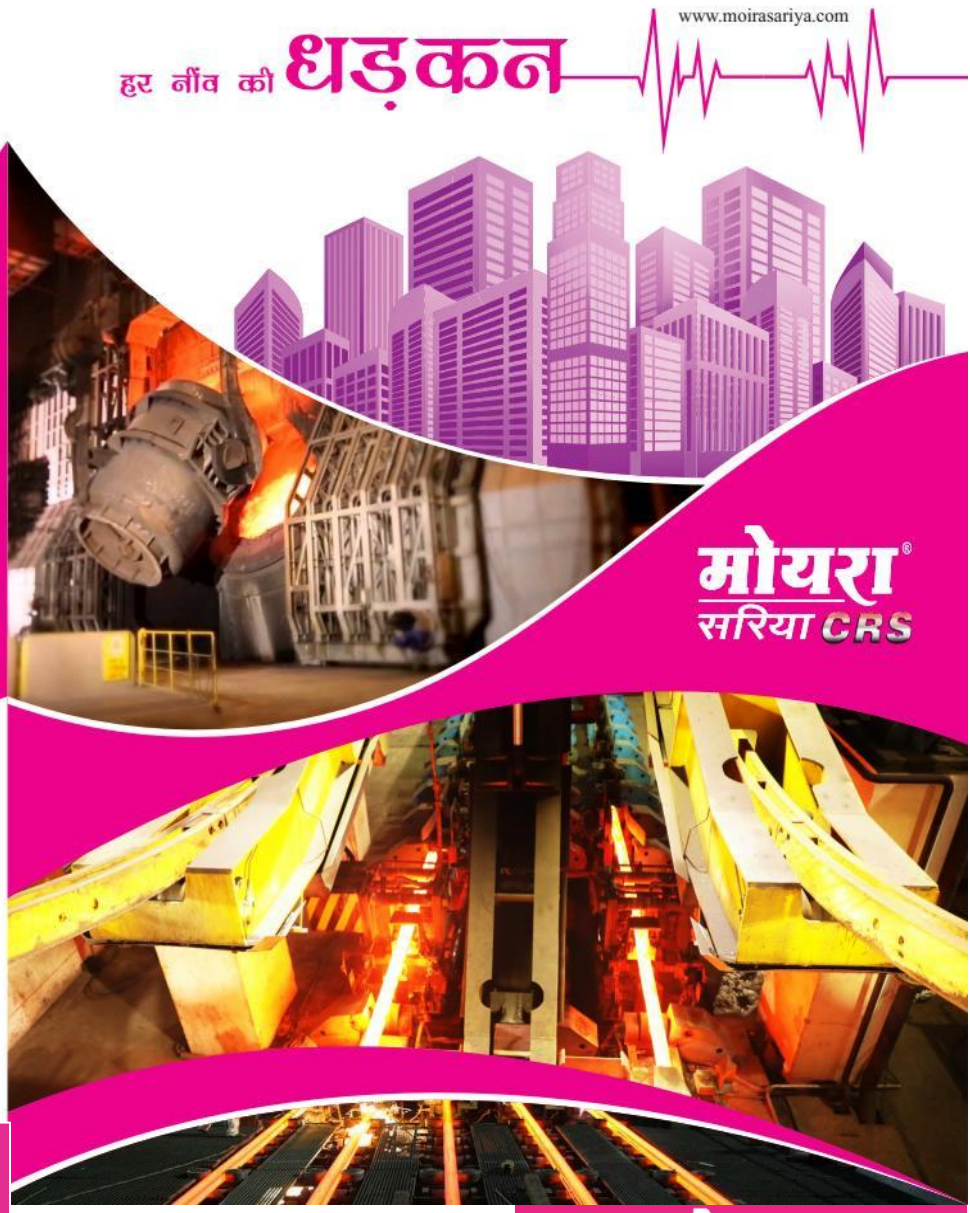
# Decarbonization initiatives from Jaideep Ispat & Alloys Pvt. Ltd.




***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

CEO – Jaideep Ispat & Alloys Pvt. Ltd.

Mr. Avinash Todi

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 -

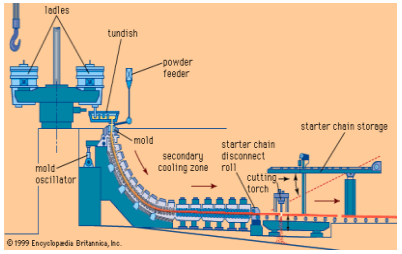
**8mm |10mm|12mm 16mm|20mm|25mm 28mm | 32mm | 40mm**

**New Product -**
**Wire Rod - 5.5mm – 14 mm**
**Zinc coated TMT**

**Scrap Yard**

**Furnace**

**Casting**




**Rolling Mill**

**Dispatch**

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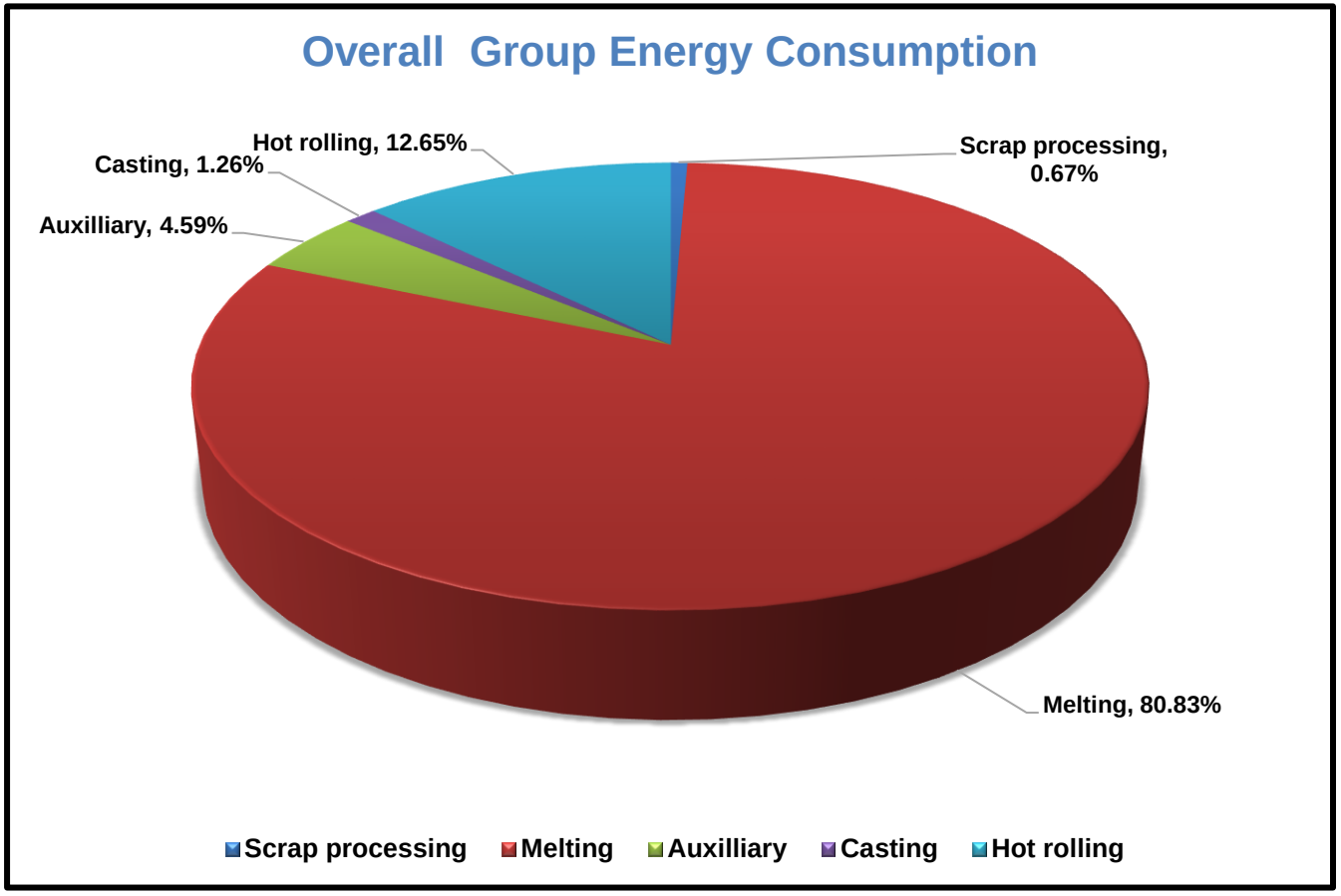
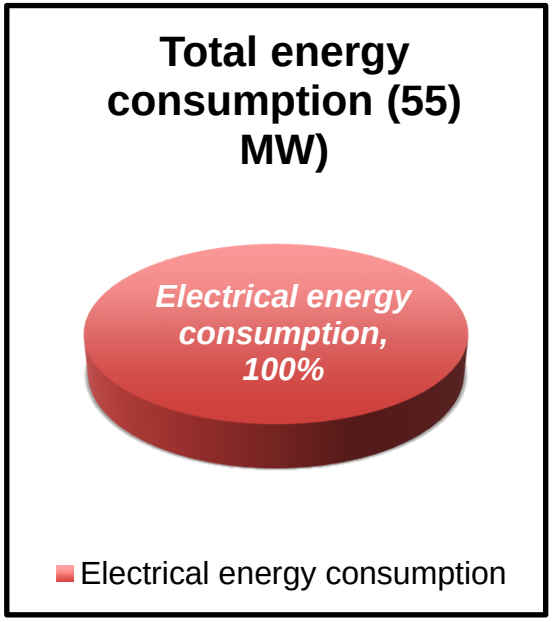
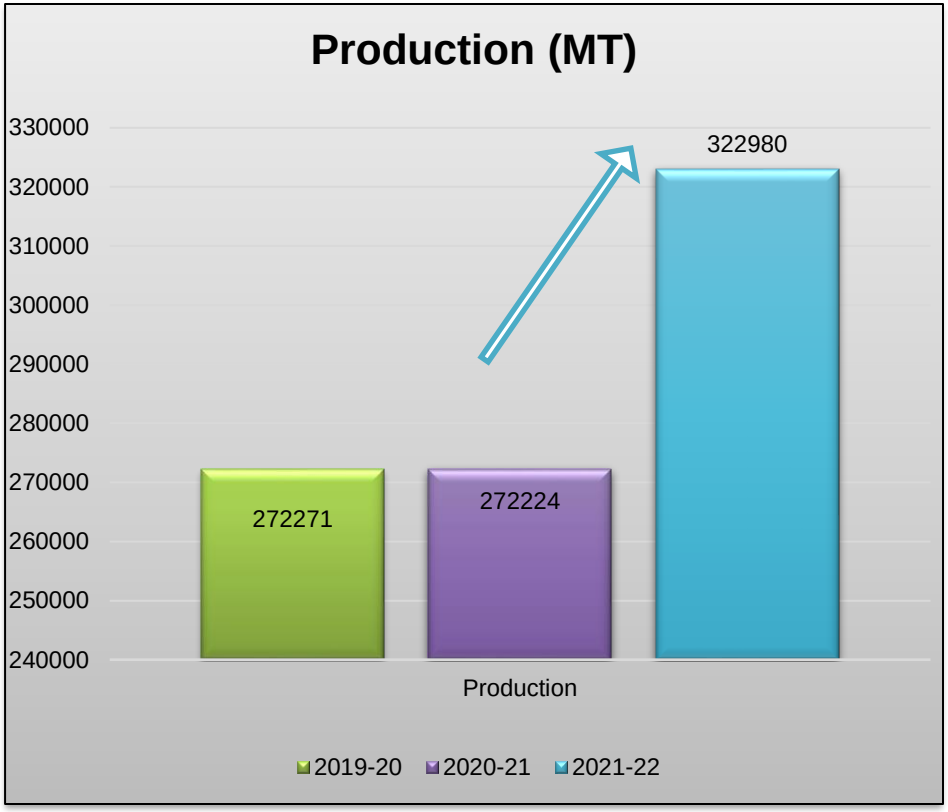
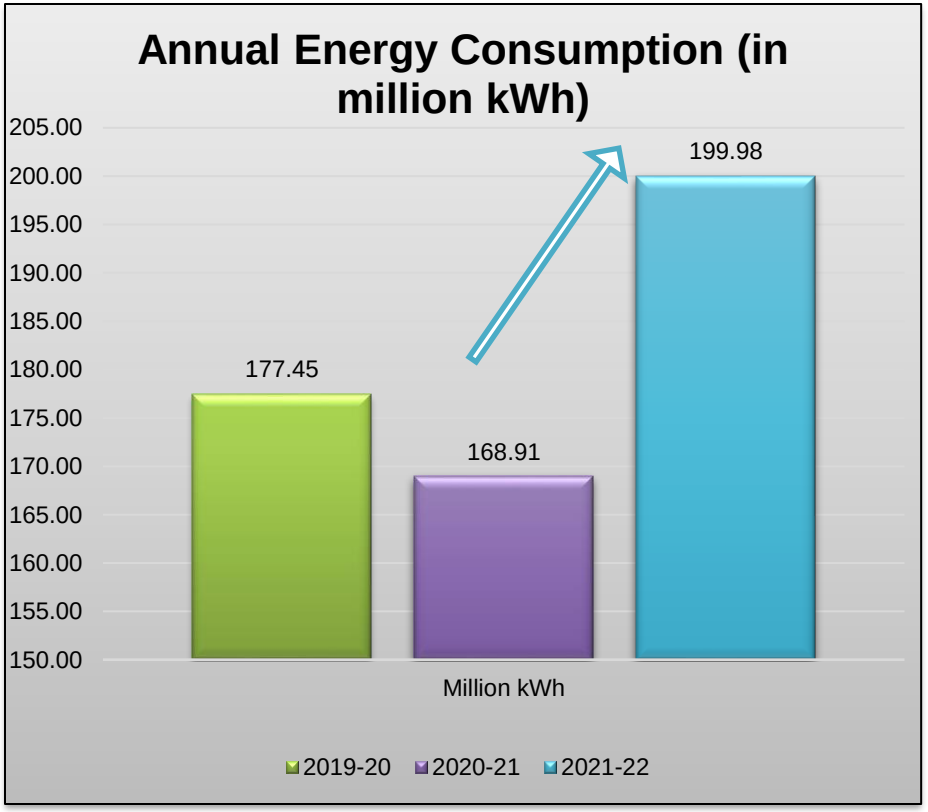
# Energy consumption overview



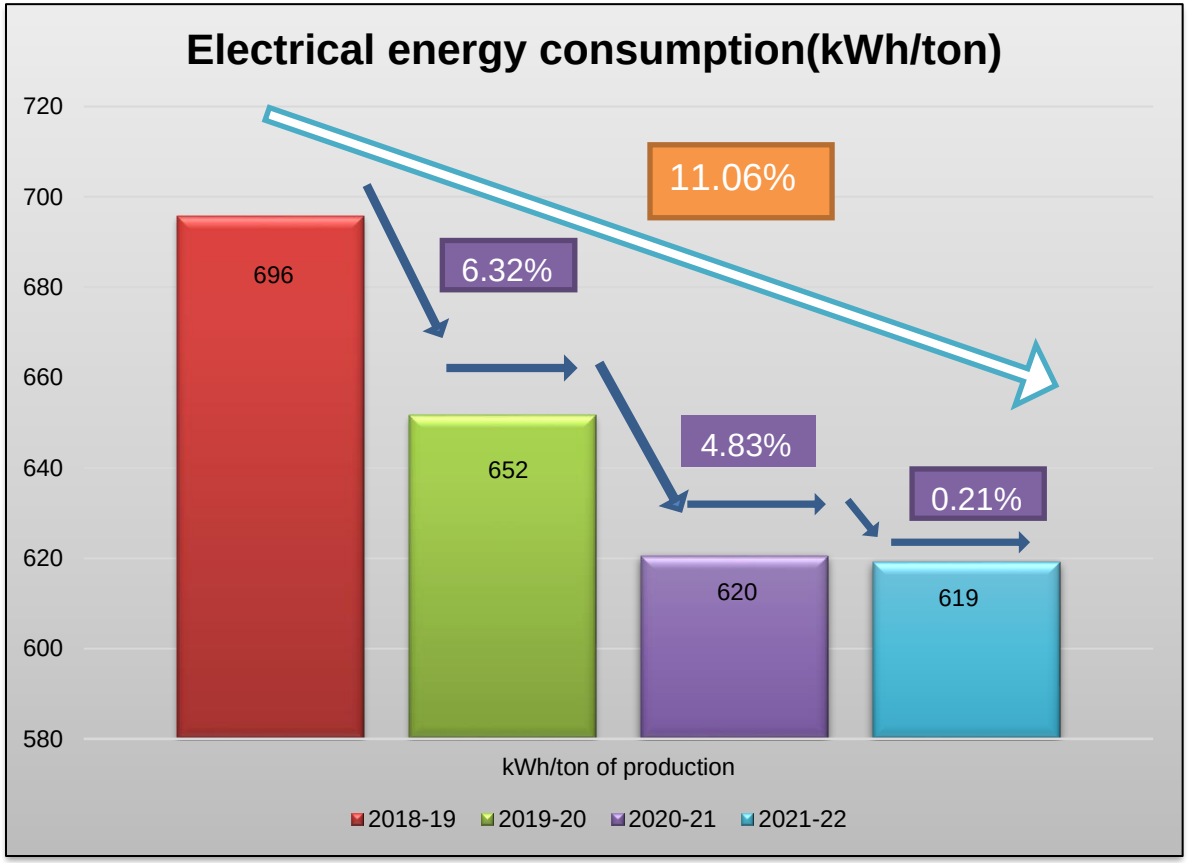



# Energy consumption overview



# Specific energy consumption




| Key Projects implemented |
|---|
| Installation of scrap processing machines |
| Installation of Scrap processing and compacting systems increasing it's yield |
| Load factor enhancement |
| EMS implementation |
| Rolling mill end cut reduction |
| Box shear machine installation |

# Benchmarking

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

- **As per the formula: (in our case)**
- **SEC manufacturer claimed = 624 kWh/ton of production**
- **SEC actual = 619 kWh/ton of production**

<u>Target</u>
SEC = 610 kWh/ton

SEC target will be achieved by focusing on ENCON projects planned

# Encon Projects for FY 2022-2023

| No. | Year | Title of Project | Annual Electrical Saving (kWh) | Total Annual Savings (Rs million) | Investment(Rs millions |
|---|---|---|---|---|---|
| 1 | 2022-2023 | CII Energy Audit | 7000000 | 31.50 | 51.00 |
| 2 | 2022-2023 | Scrap processing yard | 11491200 | 98.37 | 314.30 |
| 3 | 2022-2023 | Installation of new high capacity (16 MW) and high efficiency furnace with dog house | 4844700 | 240.20 | 300.00 |
| 4 | 2022-2023 | Upgrade Rolling mill to straight mill | 748616 | 4.12 | 150.00 |
| 5 | 2022-2023 | Installation of box shear machine | 1200000 | 6 | 75 |
| 6 | 2022-2023 | Installation of shearing machine (1100 ton) | 1200000 | 6 | 60 |
| | | | | | |
| **Total** | | | **28000244** | **393** | **978** |

# Encon Projects for FY 2021-2022

| No | Title of Project | Annual Electrical Saving (kWh) | Total Annual Savings (Rs million) | Investment(Rs millions |
|---|---|---|---|---|
| 1 | Scrap processing yard | 11491200 | 98.37 | 314.30 |
| 2 | Conversion of 2 diesel powered chain excavator to electric driven with electrification ratio of 100% | 778736 | 3.50 | 3.86 |
| 3 | CII Energy Audit | 7000000 | 31.50 | 51.00 |
| 4 | Charge assist system using on platform stationary grabber | 816672 | 3.68 | 3.00 |
| 5 | Rolling mill end cut reduction by 0.5% | 270000 | 1.22 | 2.00 |
| 6 | Load factor enhancement by 3% | 4900032 | 22.05 | 14.00 |
| 7 | Increase furnace power from 12 MW to 14 MW for the same setup | 4083360 | 236.78 | 300.00 |
| 8 | EMS system implementation | 816672 | 3.68 | 2.50 |
| | | | | |
| **Total** | | 30156672 | 401 | 690.7 |

# Scrap Processing Machine -BIRIM MAKINA

BIRIM MAKINA is a shearing machine that cuts large sized scrap into smaller size scrap thus increasing the surface area, removes dust ,increases density and hence improving the melting process subsequently reducing the power consumption.

Processed scrap gets burning loss reduction:
1.5 % - 2 %
Savings : 15 kWh/ton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# 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

# Innovative projects

**Project Title :**
Changes in building design structure (ADM Building)

Savings : 41000 kWh/annum
225000 Rs/annum

**Problem statement :**
Installation of multiple smaller light pipes or reflectors to light up the entire building was was not economical.

**Actions taken:**
A large part of the roof was covered with glass which acted as a reflector for the entire building and this eliminated the need for LED lighting in the daytime.

**Replication potential:**
Can be replicated with modifications to the design of the structure.

# Innovative projects

**Project Title :**
Charge Assist System for melting process

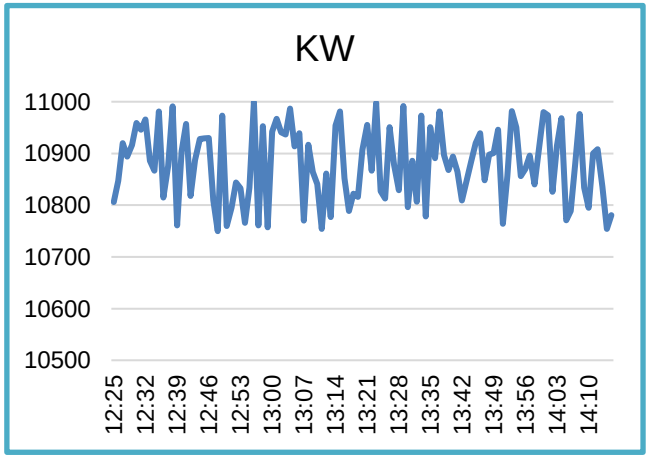
Savings : INR 01.2 million

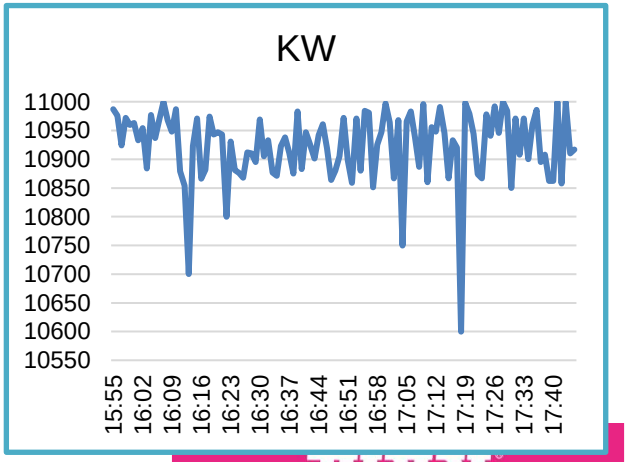
Investment : INR 0.03 million

**Problem statement :**
In the absence of a charging assist system, improper charging patterns were observed that led to inconsistent performance.

**Actions taken:**
Visual Indication system based on voltage,& instantaneous power drawn was made in house and installed.

**Replication potential:**
Can easily be replicated in any induction furnace.



# Innovative projects

**Project Title :**
Control RPM of Furnace coil cooling pump using resistance temperature detector(RTD)

Savings : Rs. 1 million per annum

Investment : Rs. 0.23 million

**Problem statement :**
Running the furnace coil cooling pump at full load even when that cooling is not required was a huge waste of energy and we need to find out a way to minimize energy loss

**Actions taken:**
An intelligent system which automatically controls the RPM of the heat exchanger motor using temperature sensors input is indeed revolutionary.

**Replication potential:**
Easily replicable

# Innovative project

**Project Title :**

Induction furnace power controller for reduction in specific power consumption.

**Project Details & Methodology :**

**The new power controller system includes a load cell which senses the weight of scrap being put in furnace. Depending on the amount of load feedback is being sent to demand manager which then supplies energy only of the amount required to melt the scrap at higher rate for a particular amount of time and then caps the energy supply which is only sufficient for maintaining the temperature of molten metal.**

**Trigger for project implementation:**

- Reduce specific power consumption
- Save greenhouse gas emissions
- Easily replicable

**Replication potential:**

- **Easily replicable**

**Category B**

**First time implementation on national level**

# Results

**SEC reduction (in kWh/MT) =** 10
**MPM =** 380
**Daily running hours =** 1200
**Total daily production (MT) =** 456
**Annual production =** 165072

**Total reduction in units consumption =** 1650720 kWh

**Annual savings = 7758384** INR

**Investment =** 50,00,000 INR

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

# Solar Power Plant - 3.3 MW

# Utilization of Renewable Energy Sources

## 4 MWp Offsite Ground Mounted Solar Power Plant

**Investment Made:**
**147.9 million INR**

**Energy Generated FY 2021-2022 :**
**5.79 million kWh**

Group total capacity = 55 MW

# Utilization of Renewable Energy Sources

## Miyawaki Plantation


**Carbon offset :**

**189000 kg CO2e**

Reference - https://www.encon.eu/en/calculation-co2-offsetting-trees#:~:text=In%20summary%2C%20it%20can%20be,to%2046%20trees%20are%20needed

# 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 3 chain excavator converted to electric from diesel , hence total diesel savings = **204000** litres

- Total Carbon emissions saved per annum (in kg CO2e) = 182769.72 *3
  = 548309.16

## Future Target :

- Target is to further bring the emissions down by 913848.6 kg CO2e by using 5 electric powered chain excavators and completely removing any diesel powered chain excavators.

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**

**Miyawaki forestation = 6000 trees planted**



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

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# Green Supply chain

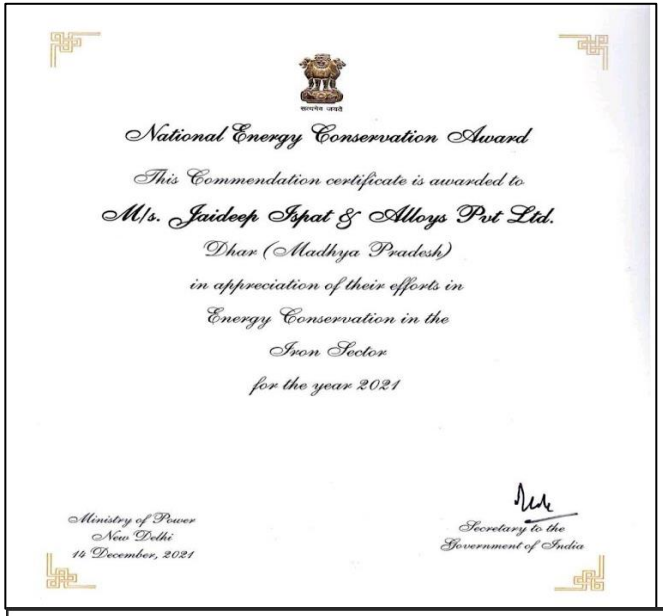
## Objective:

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:

- Turn around time(TAT) optimization
- QC Digitalization
- Mobile quality van
- Taking TMT size (order) details online
- NABL accredited lab

# Awards & Recognition



National Energy Conservation Award

This Commendation certificate is awarded to

M/s. Jaideep Ispat & Alloys Pvt Ltd.

Dhar (Madhya Pradesh)

in appreciation of their efforts in

Energy Conservation in the

Iron Sector

for the year 2021

Ministry of Power
New Delhi
14 December, 2021

Secretary to the
Government of India



CII Centre of Excellence for Competitiveness for SMEs

Certificate of Award

This is to certify that
Jaideep Ispat & Alloys Pvt. Ltd., Dhar
has received the Appreciation award (Large sector)
under Innovations in Energy Efficiency
Category in the 6th Edition of
CII National Energy Efficiency Circle Competition
held on 14-16 July 2022.

Mr Shreekant Somany
Chairman,
CII – Centre of Excellence for Competitiveness for SMEs

Dr Sudhir Kapoor
Chief Jury,
CII National Energy Efficiency Circle Competition

Mr Pikender Pal Singh
Executive Director
Confederation of Indian Industry

Date: 16-07-2022

CII Confederation of Indian Industry

6th edition CII NATIONAL ENERGY EFFICIENCY CIRCLE COMPETITION 14 – 15 – 16 JULY 2022 CII VIRTUAL PLATFORM

6th Edition of CII National Energy Efficiency Circle Competition

Certificate No. EC22/A37



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# Long term Vision on Energy efficiency


*In the long run we are planning to invest more and more in the renewable sector and hydrogen storage.*

**Target :**
**50 MW**
**Solar Power**
**Project**



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Thank You