

JK Cement Works-Nimbahera, Rajasthan



CI Energy Efficiency Award-2023

Presented by :-
Mr. Santhanamariappan S
Mr. Ayush Bansal



Operating Cement Plants :

➤ Integrated Plants –

- Nimbahera, Rajasthan
- Mangrol, Rajasthan
- Gotan, Rajasthan
- Mudhol, Karnataka
- Panna, Madhya Pradesh
- Katni, Madhya Pradesh
- Fujairah, UAE

➤ Cement Grinding Unit –

- Aligarh, UP
- Balasinor, Gujrat
- Jhajjar, Haryana
- Hamirpur (UP)



Plant location-
Nimbahera – Dist. Chittorgarh,
Rajasthan

Commercial Production- May-1975

Capacity-

Clinker- 3.2 MTPA

Cement- 4.9 MTPA

CPP- 22 MW

WHR- 13.2 MW

Solar- 5.1 MW

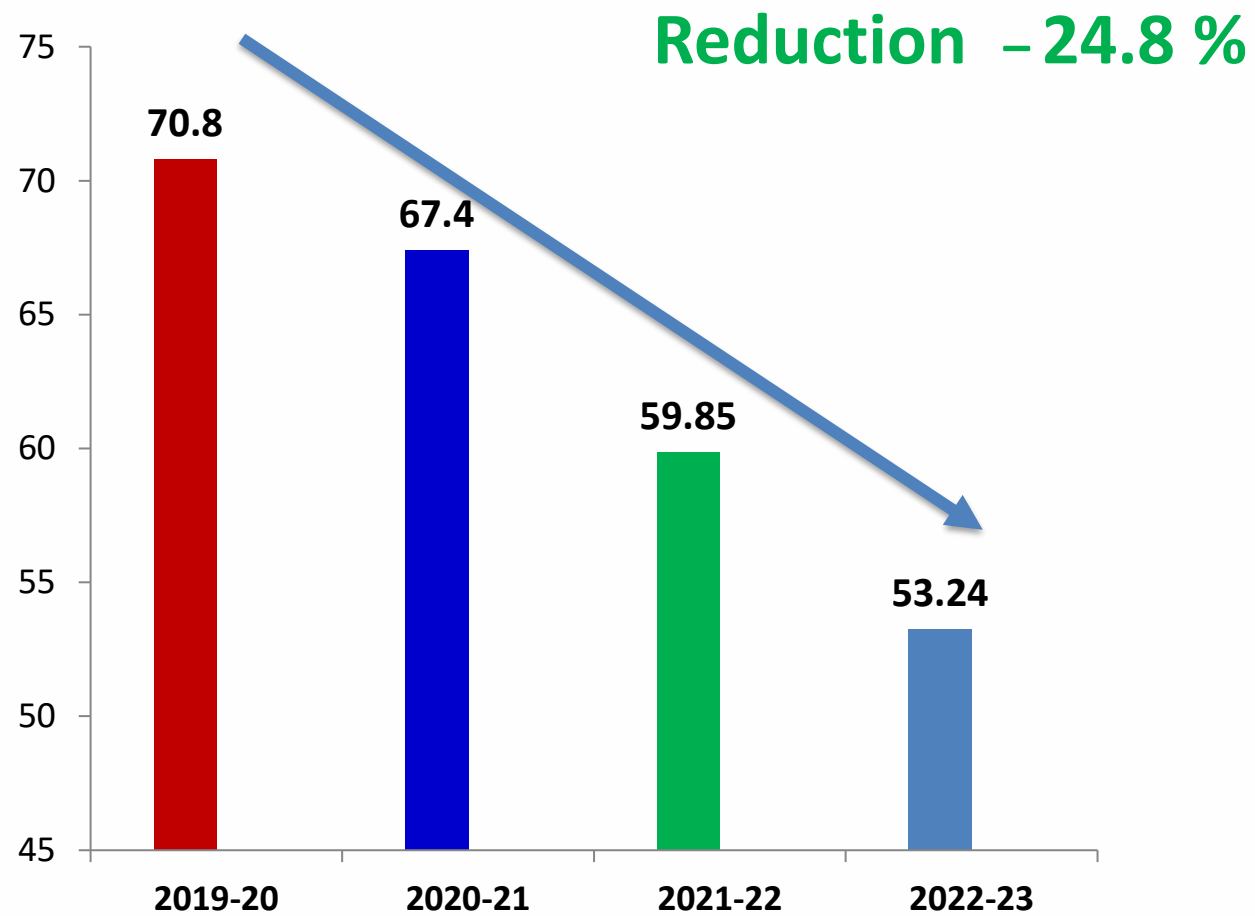
Maximum Temp : 48°C

Minimum Temp : 5°C

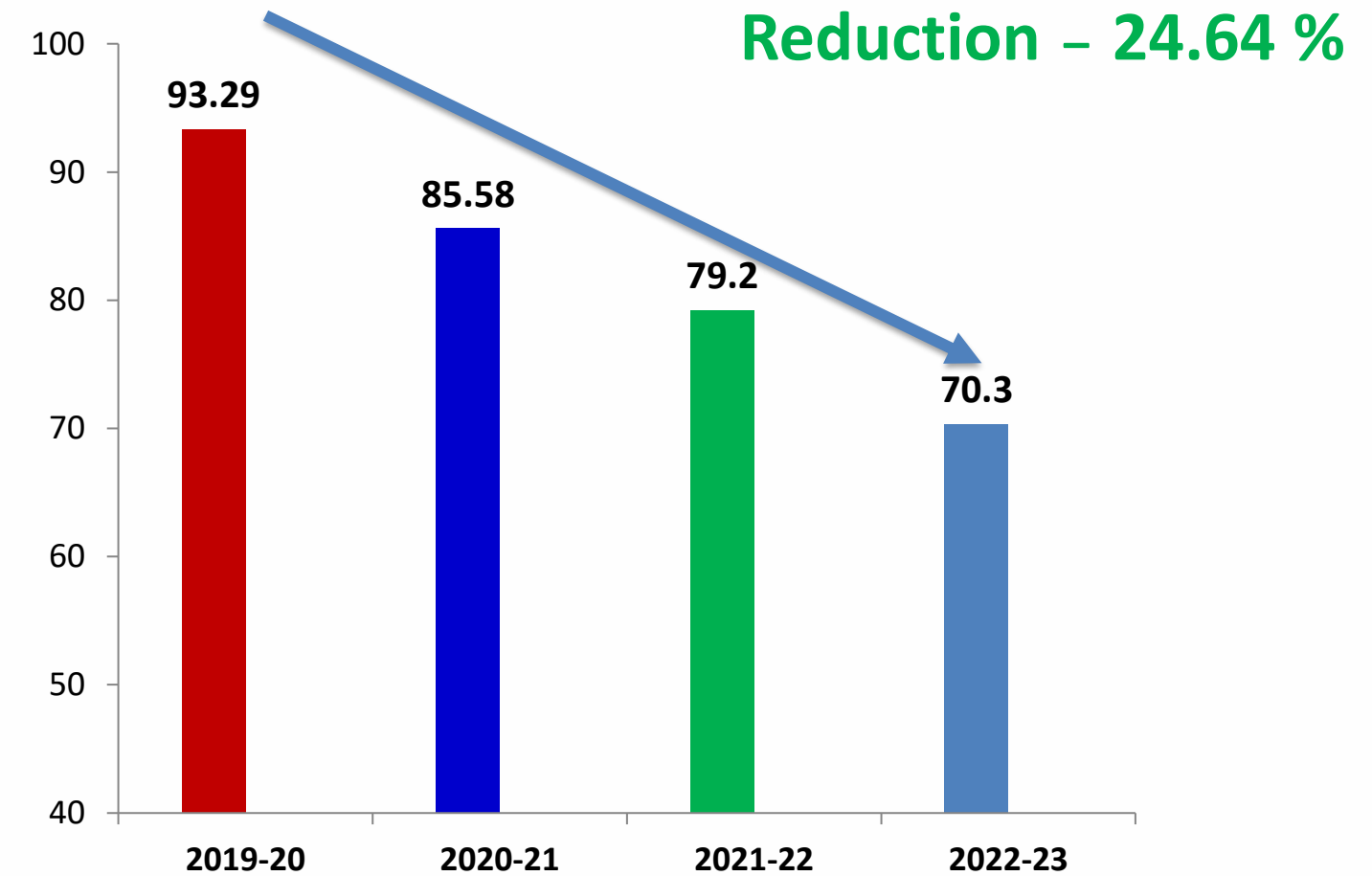
MSL : 440.9 meter



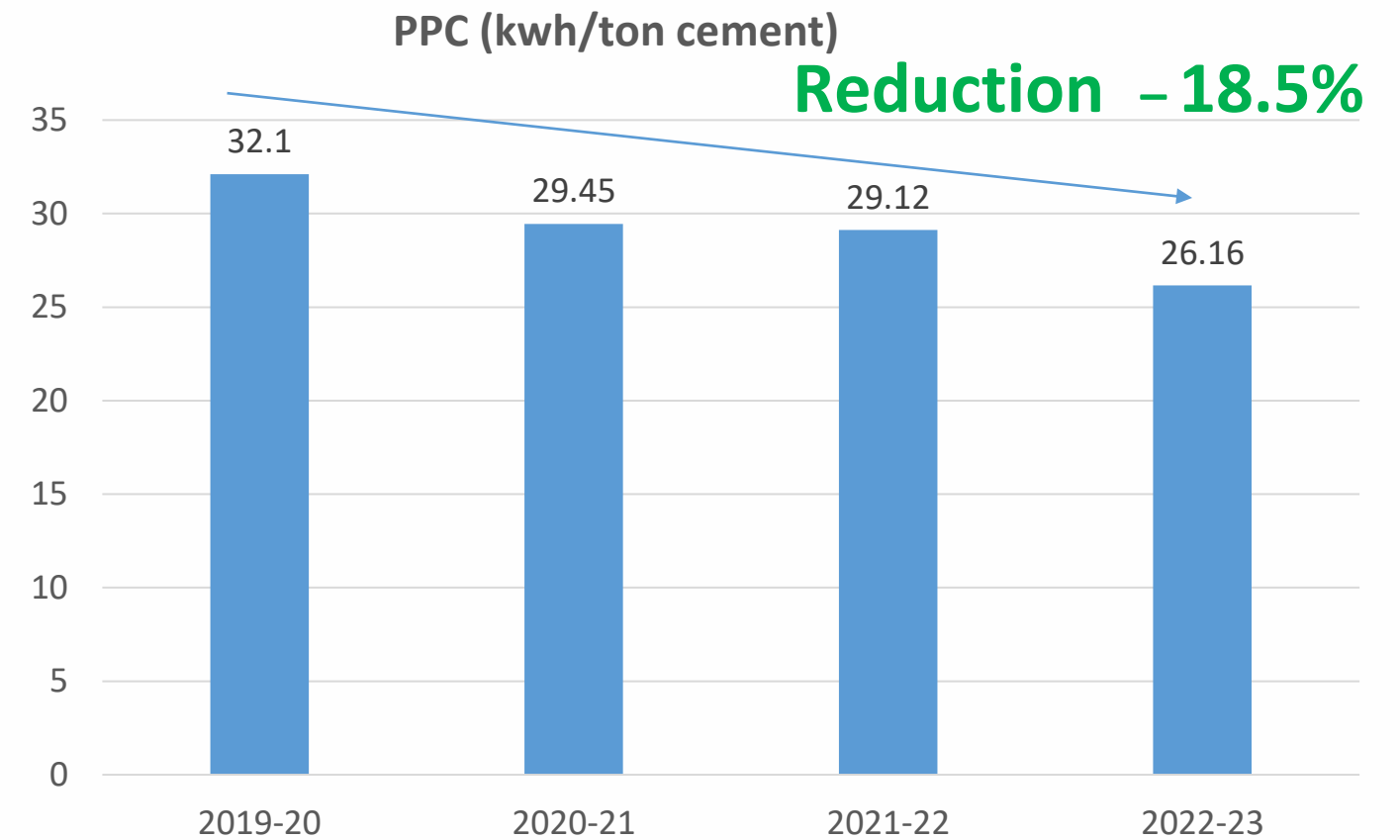
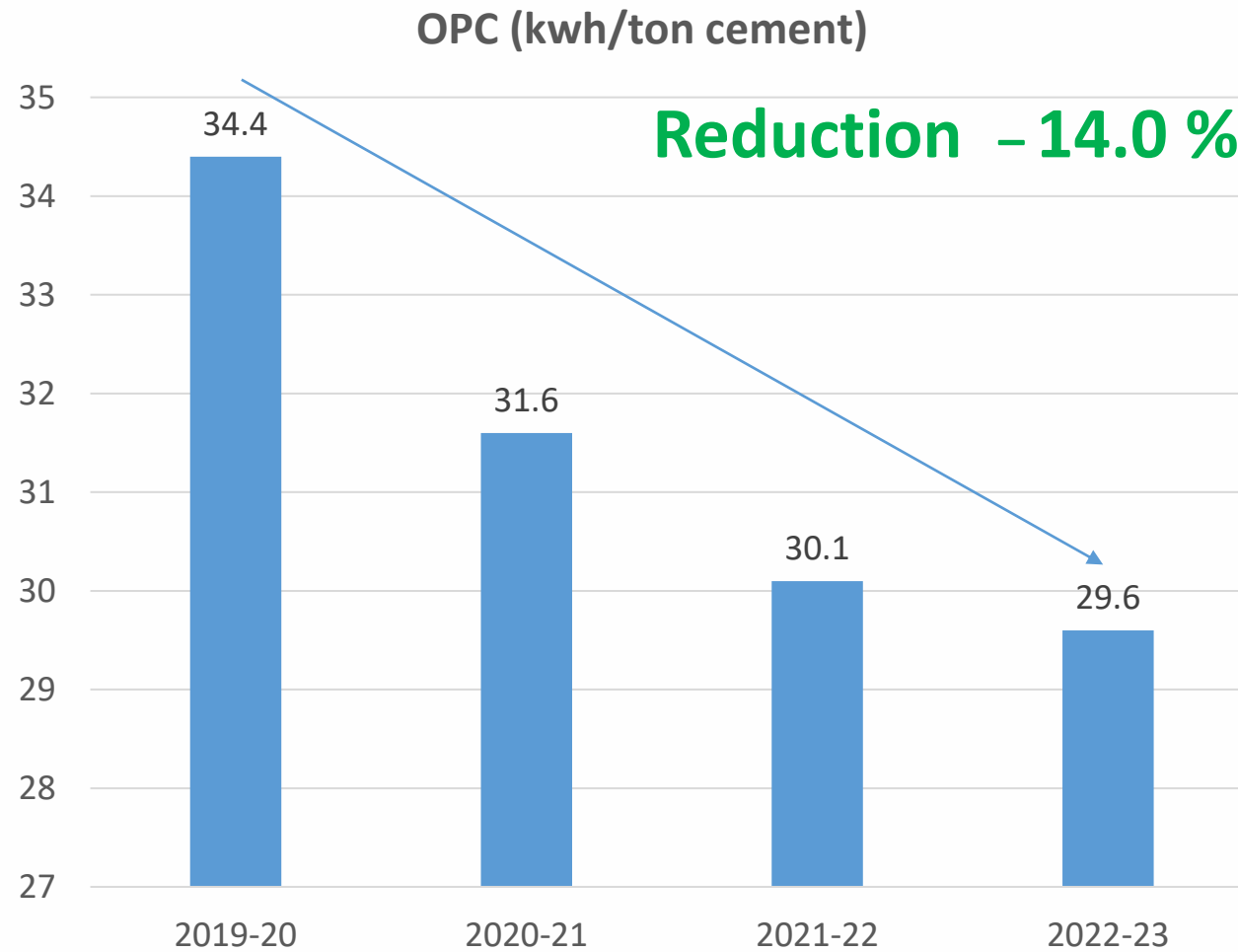
**Specific Power Consumption
KWh/T of Clinker**

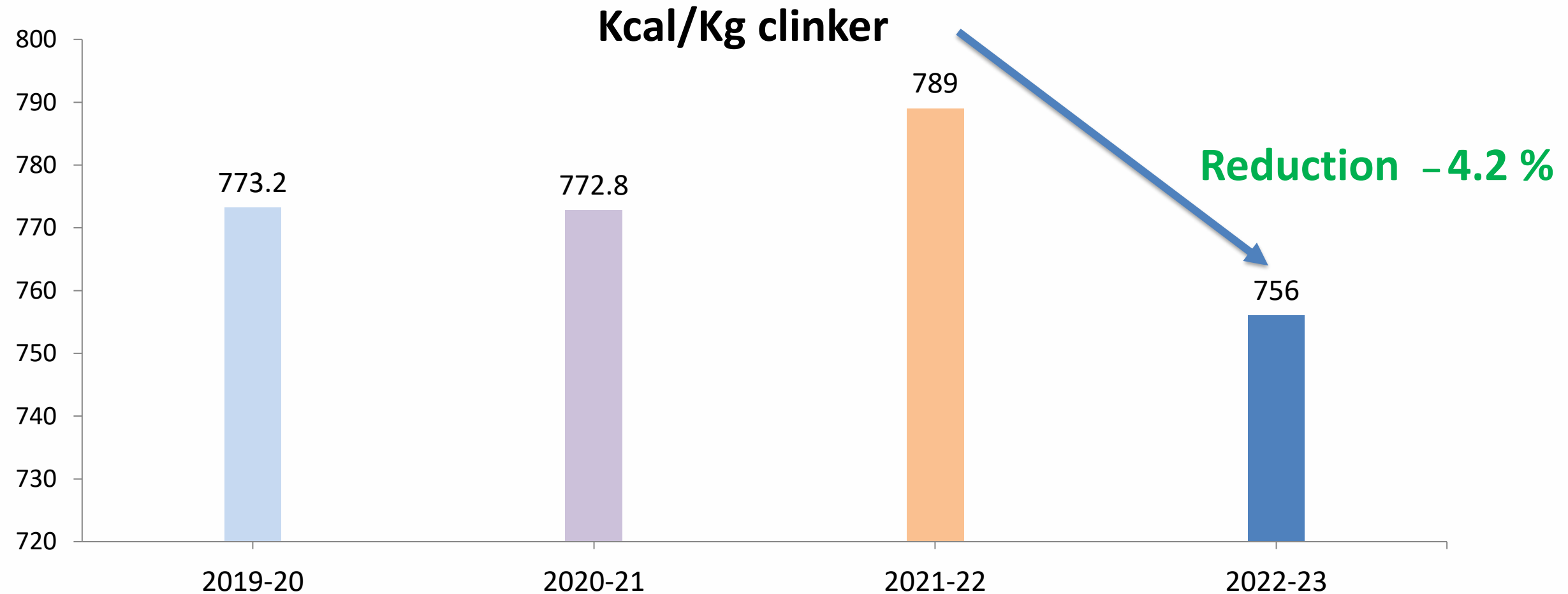


**Specific Power Consumption
KWh/T of Cement**



Specific Power Consumption KWh/T of Cement





- Thermal energy higher side due to kiln-1 & kiln-2 suspension type preheater with planetary cooler kilns.
- This includes number of heat up, light up fuel, Alternative fuel utilization & handling loss.
- Kiln-3 ILC Specific heat consumption 761 k Cal/kg of clinker after hook up.
- After stabilization K-3 specific heat consumption is 741 k Cal/kg clinker

Comparison with Global Benchmark Data

Specific energy consumption	JK NBH Achieved	National bench mark
Thermal - Kcal/Kg clinker	756	675
Electrical-kWh/Ton clk	53.2	42.6

Comparison with nearest competitors

Specific energy consumption with WHRS & 20% TSR	Plant-1	Plant-2
Thermal - Kcal/Kg clinker	720	725
Electrical-kWh/T of cement	43.4	45.6

➤ Reference: CII Benchmarking Book V 6.0 & May'23

Year	Investment	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
2019-20	1049	379	2090	0	0	2090
2020-21	8.5	18.90	108.2	0	0	108.2
2021-22	11213.6	368.0	2937.4	3300	39.6	2977.0
2022-23	106.45	5.02	30.18	1720	344.11	377.29
Total	12377.55	770.92	5165.78	5020	383.71	5552.49



Energy Saving Projects Implemented during FY 22-23

Energy Saving Projects	Investment	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
CM HRP Reject Bin Airslide angle Modification and one bin Areation blower of 30 kW will be stopped.	1.5	1.40	8.54	-	-	8.54
CM HRP feeding and reject Recirculation circuit Belt (BC20) and Megnatic separator MS021 to be removed	3.5	0.72	4.41	-	-	4.41
CM3 Separator coarse SC Removal and direct discharge chute to be provided	1.75	0.46	2.82	-	-	2.82
Kiln3 dust transport Drag chain 333CV585 to be removed and air slide to be installed	0.7	0.32	1.94	-	-	1.94
01 No of coal Mill screw conveyour to be removed and Direct chute to be provided	2	0.81	4.49	-	-	4.49
HR Paint on Preheater cyclones	96.5	-	-	1720	344.11	344.11
Coal Mill VRM Stack canopy modification	0.5	1.31	7.98	-	-	7.98
Total	106.45	5.02	30.18	1720	344.11	374.29



Energy Saving Projects Implemented during FY 21-22

Energy Saving Projects	Investment	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
P&V System Replacement to BLDC Motor Operated AHU System	8.5	1.34	7.80	0	0	7.80
Replacement of P2J01 600mm Screw Conveyor Motor 110KW to 55KW. Motor run at a lower torque point making it to run less efficiently and drawing more power than its needed	0	1.5	8.8	0	0	8.8
DOL to VFD Operation of Dust Filter Fan- P3P10	0	0.39	2.28	0	0	2.28
DOL to VFD Operation of Packing Plant Compressor-CP200	0	0.67	3.89	0	0	3.89
Automation of 15KW Tube Well Pump with a timer (24 hrs. slots) in circuit with setting of 2hrs running & one hour stop	0	0.17	1.03	0	0	1.03
Replacement Of Office Lights (Ccr,Instt. Room) 92nos Conventional Tube Lights-40watt To High Efficient Nos 24, 20 Watt Panel Led Light	5.07	1.15	6.71	0	0	6.71
Alternate lighting pole circuits are separated and timer circuit synchronized with it in such a way that 160Nos. Colony poles will illuminate from 7:30PM to 11:30PM and Afterwards 50% poles switched off automatically	0	0.07	0.40	0	0	0.40
Total	13.57	5.29	30.91	-	-	30.91



Energy Saving Projects implemented during FY 21-22

Energy Saving Projects	Investment	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
Kiln-3 up gradation by installation of new technology Pre heater.	3500	94.38	1031	3300	39.6	1070.6
New Raw mill installed (Hydraulic roller press)	4000	186.38	1304.7	0	0	1304.7
New coal mill installed (Vertical roller mill)	2500	27.22	190.57	0	0	190.57
New bucket elevator installed in place of flux or cement transport system mechanise by installed bucket elevator.	1200	54.75	380.25	0	0	380.25
Total	11200	362.73	2906.52	3300	39.6	2946.12



Energy Saving Projects implemented during FY 20-21

Energy Saving Projects	Investment	Annual Electrical Savings		Annual Thermal Savings		Total annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
Kiln-3 Cooler Fans (8,9,10) 3 no's pressure drop reduction by removing silencer	0.0	0.86	18.0	0	0	18.0
Compressor power saving through reduction in pressure of control air for dust filters,CF silo and preheater from 6.5 to 5.5 bar	0.0	2.92	14.6	0	0	14.6
Maliyakhera Crusher , Transportation Group Interlock with timer & Made bag filters into DP mode	0.0	4.96	24.8	0	0	24.8
Packing Plant S/C P1J01 Motor replacement (110 KW to 55 KW)	0.5	1.95	9.76	0	0	9.76
Cooler fan 09 & 10 replacement with high efficiency impeller	0	2.76	13.8	0	0	13.8
HRP Bag filter FN188 and FN183 VFD installation done	8.0	0.86	4.30	0	0	4.30
Separator sealing gap reduced & productivity increase in RM-4(Oct'20).	0.0	4.58	22.9	0	0	22.9
Total	8.5	18.9	108.2	0	0	108.2



Energy Saving Projects implemented during FY 19-20

Energy Saving Projects	Investment	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
Energy Efficient Cooling Tower Fan (Cell No.-2)-WHR	3.1	0.78	4.28	0	0	4.28
Power saving in Line 3 compressor by high efficiency blasters from 150 liter to 75 liters and optimize the blasting	0.0	3.97	21.88	0	0	21.88
Compressed air power saving by reducing pressure setting from 6.6 bar to 5.5 bar in cooler and coal mills compressor K3X26.& connected to common header	0.0	2.54	13.97	0	0	13.97
Replacement of 125W HPMV/HPSV light by 35W & 70W LED light,250W HPMV/HPSV light by 90W, 135W & 200W LED light &80W, 72W & 36W Tube light by 24W & 18W LED light &15W CFL light by 250 Number 9W LED light	1.03	0.79	4.34	0	0	4.34
Power saving in pumps of Line-1 & 2 water optimization by replacing new pumps	0.0	0.97	5.35	0	0	5.35
Kiln-3 Cooler ESP 2nd & 3rd filed Current optimization	0.0	1.15	6.35	0	0	6.35



Energy saving projects implemented during FY 19-20

Energy Saving Projects	Investment	Annual Electrical Savings		Annual Thermal Savings		Total Annual Savings
	Rs. Lakh	Units in Lakh	Rs Lakh	Tones fuel	Rs Lakh	Rs Lakh
Coal Mill-1 & 2 optimization by grinding media degradation, folaphone and auxiliary furnace installation.	0.0	7.27	40.05	0	0	40.05
Optimization of Kiln 1 & 2 bag house fan power by reducing SG gas fan outlet draught with PID logic (-25 mmwg to -10 mmwg)	0.0	1.84	10.13	0	0	10.13
Coal Mill 3 & 4 optimization of Auxiliary equipment auto stop time (15 min to 5 min after MD stoppage)	0.0	1.03	5.65	0	0	5.65
WHRs power generation saving by increasing speed of mid cooler fans & optimizing last fans	0.0	59.45	327.59	0	0	327.59
Cooler Fan-1,2 & 3 Silencer removal to reduce pressure drop	0.0	6.10	33.60	0	0	33.60
Installation of Roller press with CM-4 in combo circuit for Cement grinding	1045	293.49	1617.11	0	0	1617.11
Total	1049	379	2090	0	0	2090

Energy Conservation Project to Achieve Bench Mark In Next Year



Energy Conservation Projects Planned 2023-24				
S.N.	Description of Project	Annual Electrical Energy Saving, Million kWh	Annual Thermal Energy Saving, Million kcal	Investment in Million Rs
1	Return dust reduction through modification of CCX Cyclone after CFD Study	0	3.0	1
2	Calcliner exit duct modification	0.75	0	0
3	Reduction of feed box height	0	3.0	0.5
4	Stacker & reclaimer for Fuel feeding system	0	42.47	150
5	By replacing old 325 CP720 RM Compressor with new energy efficient compressor	0.16	0.0	0.8
	Total savings in Rs (Crore)	0.91	48.47	152.3

Innovative projects



Innovative #1: Solid AFR Feeding system



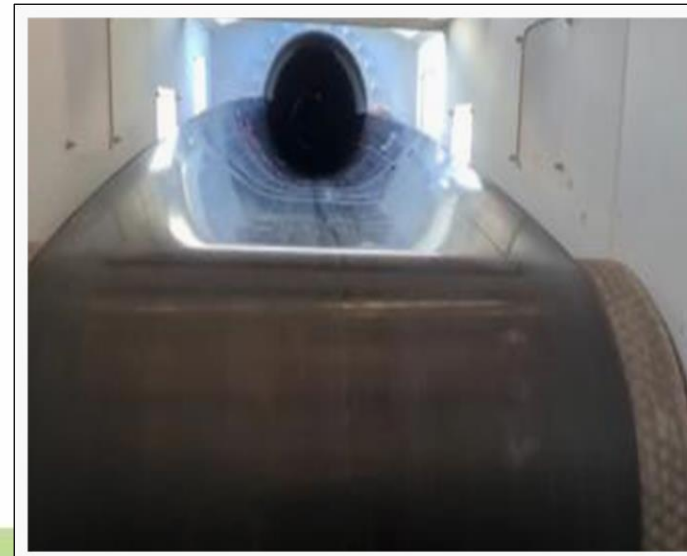
Remark- 1st VECO belt conveying system In india. Solid AFR Commissioned done in Jan-23

Innovative #1: Solid AFR Feeding system



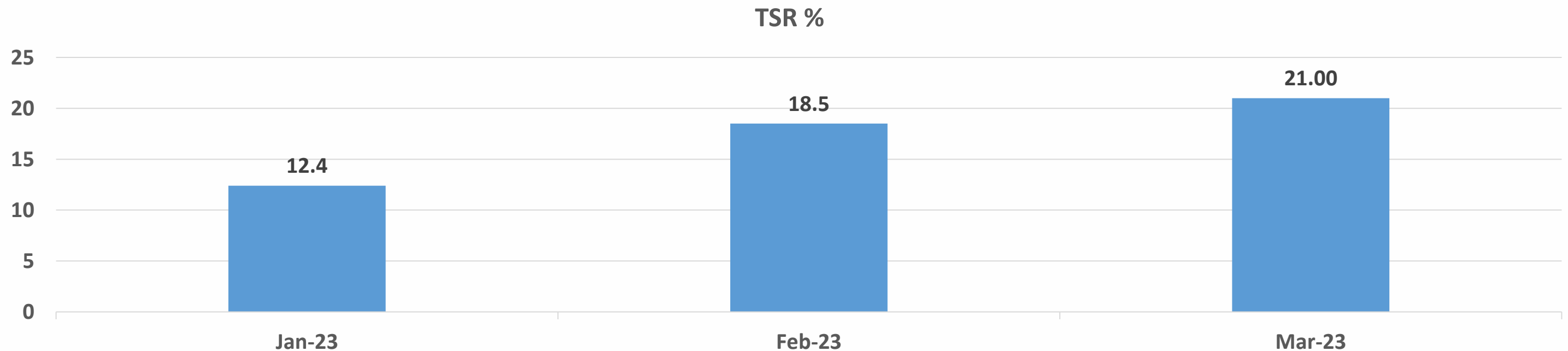
AIR SUPPORTED VECO BELT CONVEYOR

- Pipe Belt Conveyor, best suitable for conveying bulk materials over long distances either Horizontal or inclined position.
- The material being transported glides on a cushion of air in a closed steel tube.



Innovative #1: Solid AFR Benefit

1. Use of recycle material like RDF, Agrowaste etc.
2. Replaced use of fossil fuel intern conservation of natural fuels.
3. By use of Solid AFR ,reduced -3.5 kgco2/GJ reduced.
4. Total Solid AFR Saving 6 Crore. (FY 22-23, Commissioned in Jan-23)



Kaizen Theme: - Generation Improvement & Cost benefit.

Problem before Kaizen: -

Before kaizen AQC Boiler Bypass damper not closed fully and damaged. So that TG Generation loss, Because of Flue gases bypass and not used as steam generation. The Damper Metallurgy was SS 304

Kaizen Activities:

After Analysis to withstand the abrasion the damper metallurgy was changed to SS 316 and Refractory arrangement of 70 mm thickness at flap part 1st time in india supplied by M/s Dyrocon .TG Generation gain approx. 0.7 mw/day. **As a result we had achieved 16800 Units Per Day Savings. Rs 100800 Per Day, 3.02 Lac/month and 3.6 Cr. Per Annum benefit .**

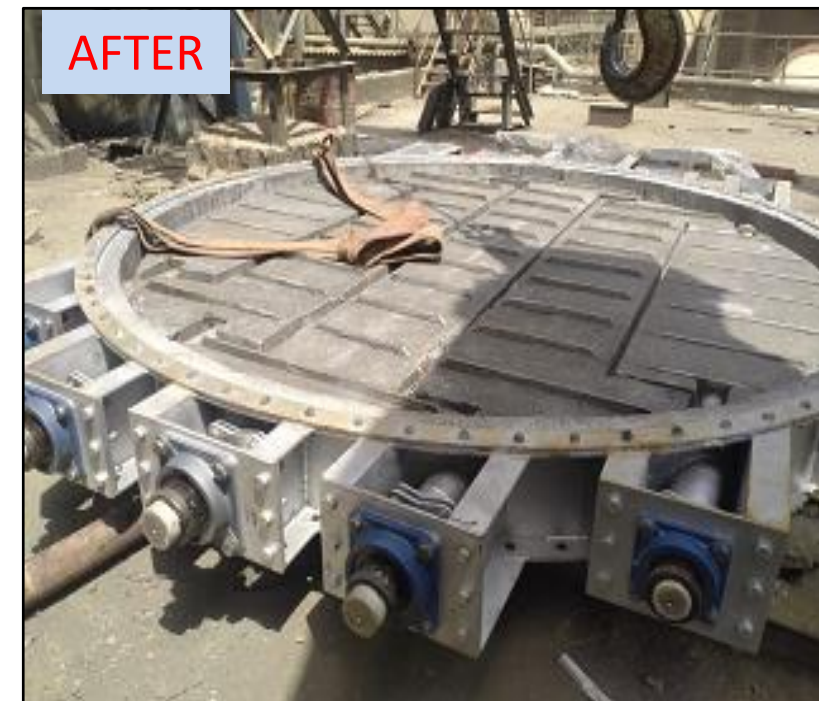
Direct Benefit- **Overall saving of 3.6 Cr/Annum with a sustainable gain of 0.7 MW.**

In-Direct Benefit -1. Damper reliability improved and even after 1 year of Running the Damper had no erosion problem like before .

BEFORE



AFTER





The purpose of this application is to operate the Kiln, raw mill and coal mill in an optimized way within given set of range.

It helps to control or regulates the parameters in synchronization of two or more parameters which reflects the values more precisely and accurate.

Fig:- The main view shown above gives an overview of the main elements of the application and provides for easy access to targets and limits that may be changed during normal operation.

Description

The process trend helps to study the process.

The Trend can be navigated using the trend under the Products\ECS Process Expert \Trend.

Another place to navigate the trend is by clicking on the icon highlighted in the trend.



Innovative #3: Benefits of PXP

1. Increase in production - 1 to 1.5 %.
2. Reduction in specific power consumption -1 to 1.5 %.
3. Reduction in heat rate-1.3 to 1.5%

Innovative #4: Environmental Sustainability (Noise Reduction)

Kaizen Category: Improvement & Cost saving.

Kaizen Theme: Turbine & Boilers drain line silencers inhouse installation work.

Problem before Kaizen: Whenever the plant was light-up or trip, we needed to open the main steam line drain to remove condensate water.

Due to which a lot of sound was created due to release of steam.

Which was created an atmosphere of irritation.

The value of sound level is measured around 140Db which was high in it's own.

Kaizen Activities: For made silencer, We first collected the scrap materials and made the silencer according to our design.

After fabrication work, We installed the well fabric silencer with main steam drain line and observe the results-After the installation of silencer to main steam drain line, getting the value of noise level around 80db against 140db.

Benefits / Results: **Direct Benefit-1.** We had saved around 7 Lacs approx. to made silencer by in-house man power(According to quotation we had to spend 7.5 Lacs approx.)

After the installation of silencer to main steam drain line, getting the value of noise level around 80Db against 140Db.



Location	Air pollution Control Device	Emission
Kilns + Raw mills	Bag house	< 30 mg/Nm ³
Cooler	ESP	< 30mg/Nm ³
Coal mill	Bag house	< 30mg/Nm ³
Cement mills	Bag house	< 30 mg/Nm ³
SNCR Project	Pyro process	< 800 mg/Nm ³
No of small bag filter		73

Continuous Emission monitoring System in Main stack



Measuring analyzer



Control Room Display



Kiln+RM bag house & Coal mill



Cooler ESP



SNCR SYSTEM



Cement mills-1,2&3

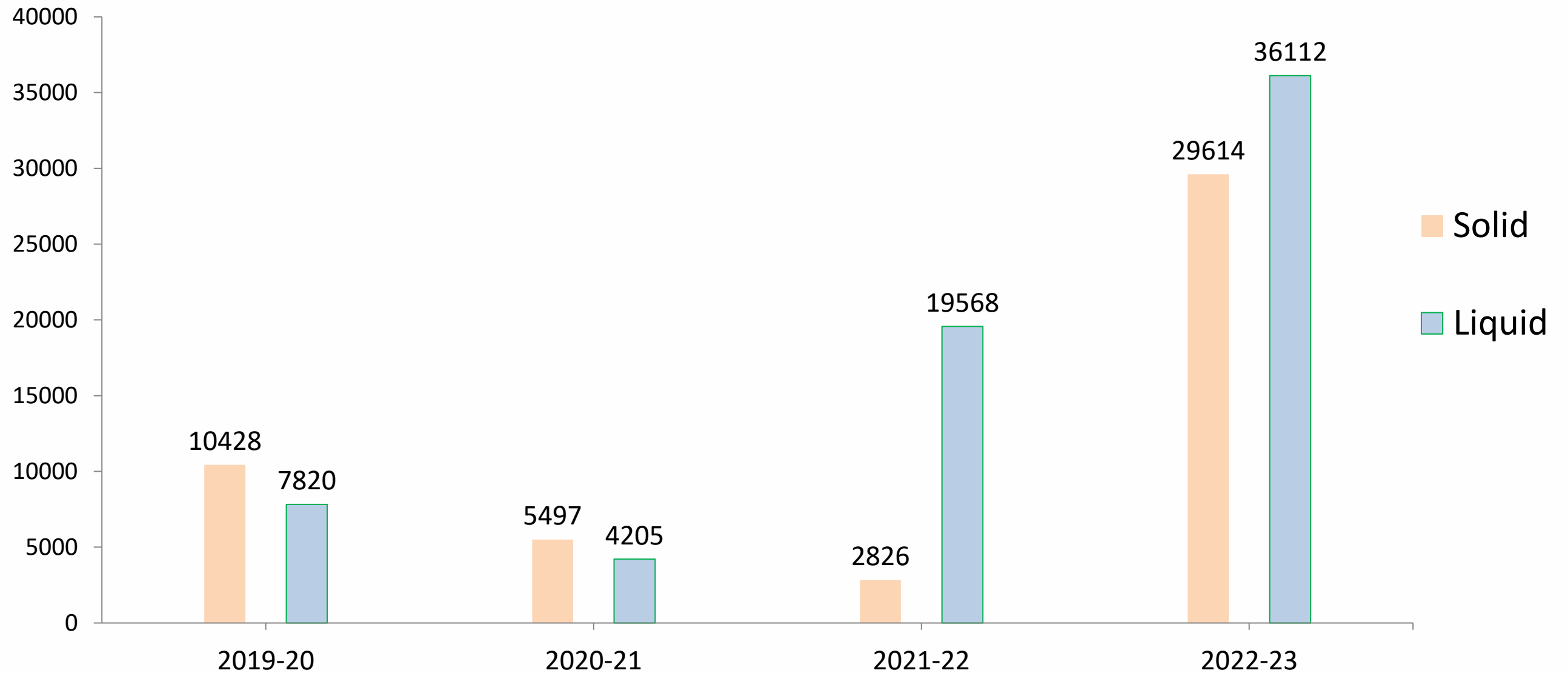


Cement Mill - 4

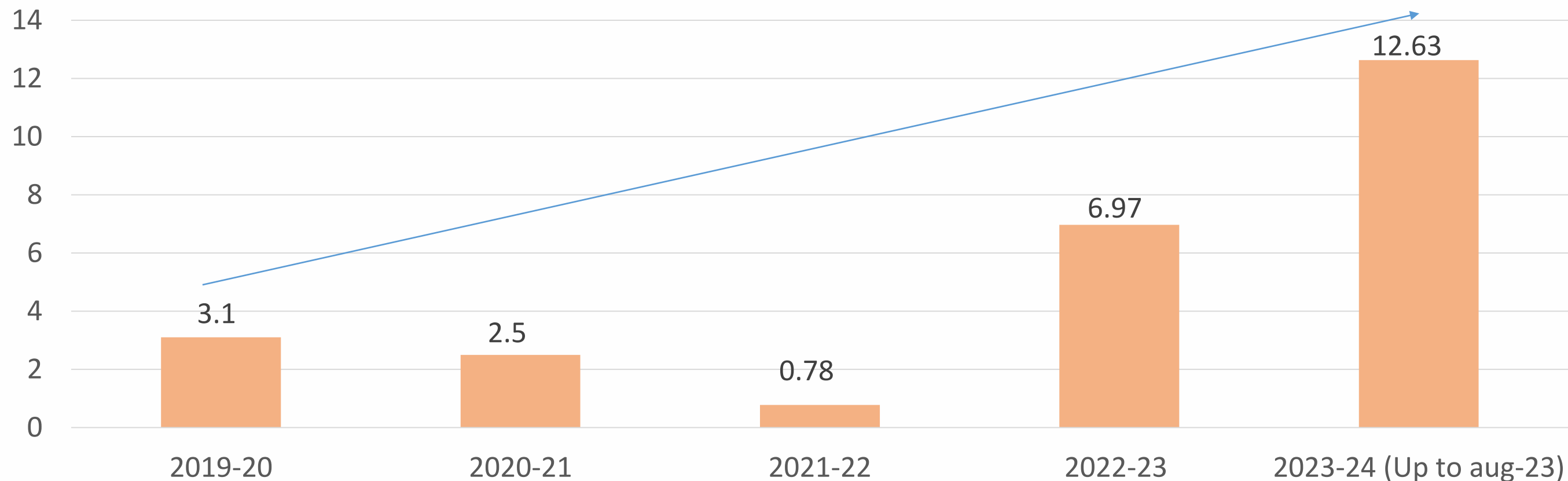
Alternative fuels uses

Alternate Fuel	FY 19-20	FY 20-21	FY 21-22	FY 22-23
WASTE MIX LIQUID-HCV	923	1902	574	5368
WASTE MIX LIQUID-LCV	3283	7340	18995	30744
Liquid AF (A)	4206	9242	19568	36112
RDF	737	138	74	6044
FIBER MASS	170	70	0	0
WASTE MIX SOLID	3310	2601	831	0
PLASTIC WASTE	1182	1353	270	0
RDF-II	101	0	0	0
AGROWASTE	3858	29	101	0
FMCG	266	370	20	0
CONTAMINATED PLASTIC WASTE	758	195	0	0
Cotton Waste	62	51	20	0
MSW	0	64	0	0
Carbon black	0	0	0	6007
WASTE/RESIDUE	0	240	72	0
RUBBER DUST	0	153	472	0
EXPIRED PRODUCTS	0	7	0	0
INHOUSE COLLECTION	0	15	30	0
CHEMICAL SLUDGE	0	21	0	0
DISTILLATION RESIDUE	0	187	0	0
ALIPHATIC/NAPTHENC SOLVENTS	0	0	8	0
AQUEOUS WATE / TOXIC EFFLUENT	0	0	39	0
ETP SLUDGE 35.3	0	0	197	0
BLACK FURNACE DUST	0	0	685	8676
Mustard agro waste	0	0	0	8887
Solid AF (B)	10382	5497	2826	29614
Total AF (A+B)	14588	14739	22393	65726

AFR Consumption , MT



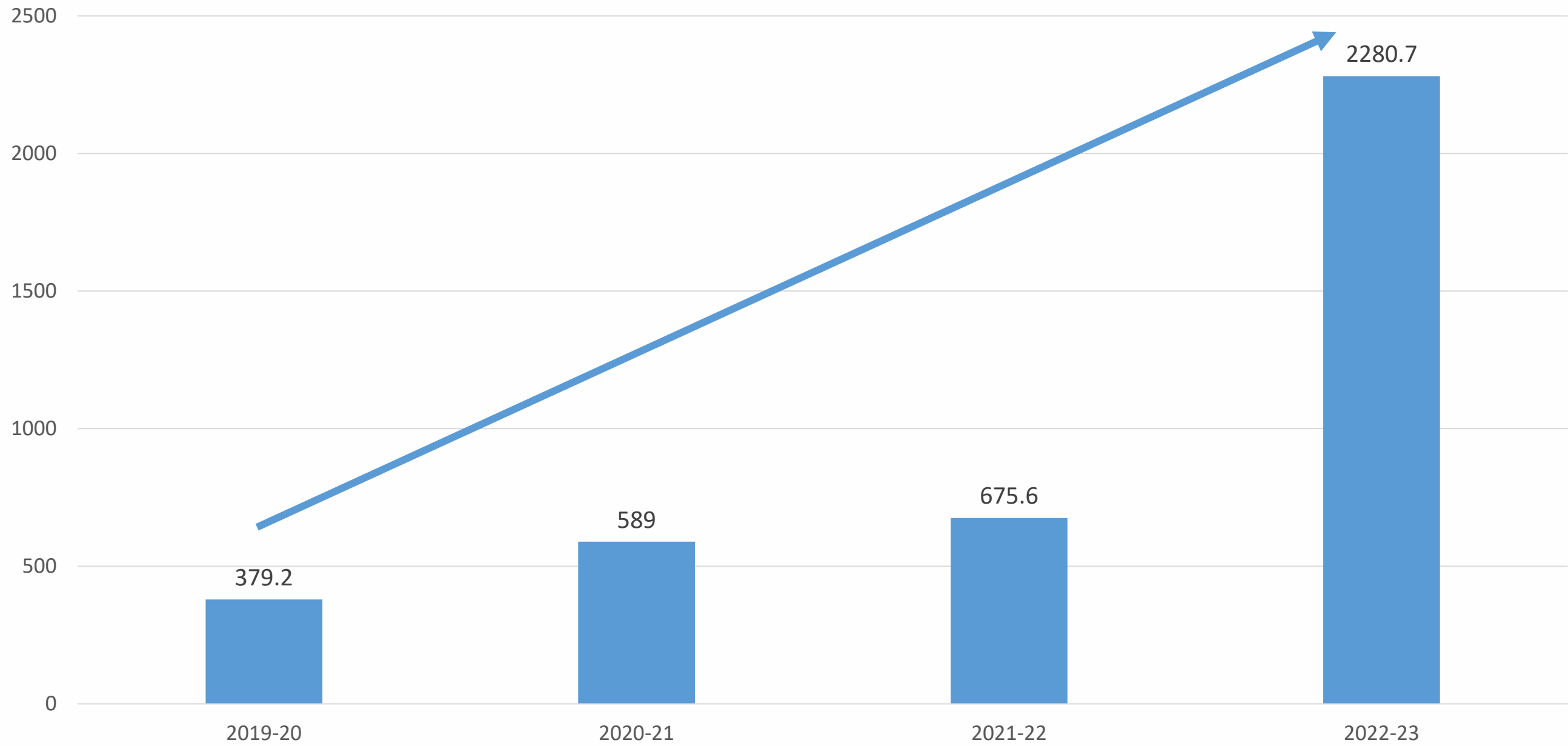
TSR %



- **TSR consumption is less due to system constraint & LCV AFR consumption**
- **Kiln-3 project upgradation activities going on (May-21 to Sep-21)**
- **Kiln-1 & 2 there is no Provision for Solid AFR.**
- **Kiln-3 new solid AFR system installed & commissioning done**
With this project TSR can reach up to 22-25%

AFR SAVING

Saving(Lacs)







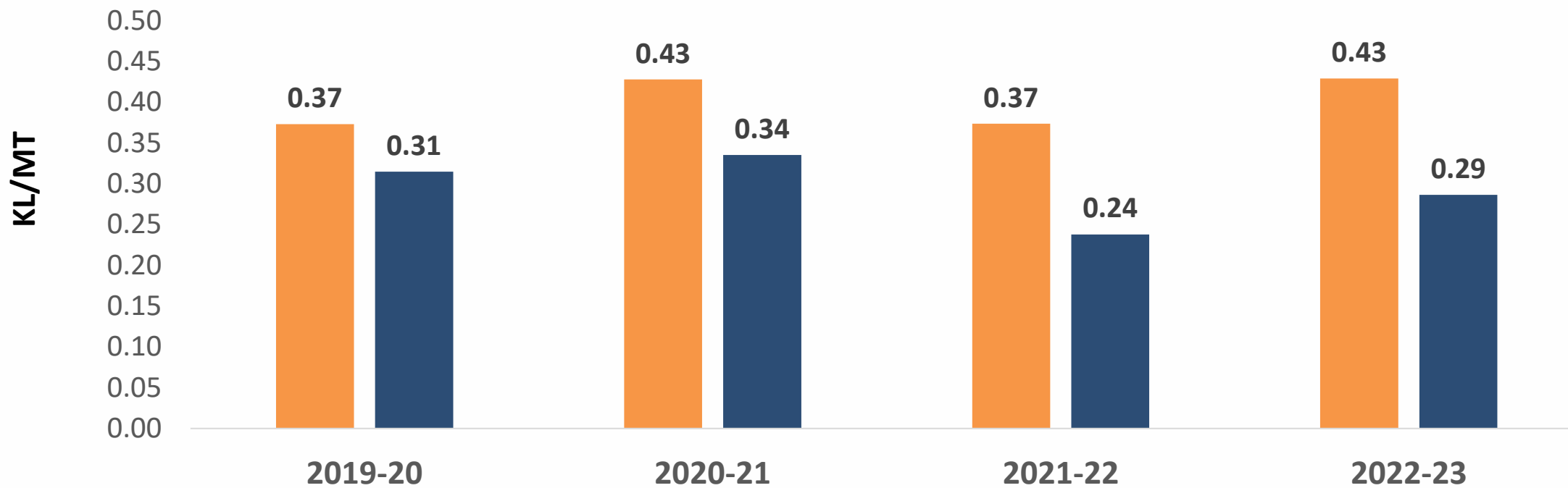


6 No's Sweeping vehicle deployment for plant road & colony cleaning.

Water Consumption

Name of the products	Process water consumption per unit of products (KL/MT) including water used for plantation & dust suppression			
	2019-20	2020-21	2021-22	2022-23
Clinker	0.37	0.42	0.37	0.43
Cement	0.31	0.33	0.24	0.29

Water Consumption data



- Replacement of WHR Cooling tower WCC to ACC to reduce water consumption by 1600 KL/Day (Investment – 23 Cr)
- Rainwater collection in ponds and mine pits and use for plant activities to reduce ground water consumption
- STP for Plant and Colony
- Collection of rooftop and storm water to recharge the ground water through injection wells.
- Replacement of underground pipes with overhead pipes to deduct leakage easily and ensure leakage proof water storage tank.
- Drip irrigation system for plantation
- Auto sensors for wash basins at commercial buildings
- Digital water flow meter with telemetry system at each ground water withdrawal structure
- Ground water level measurement (piezometer)



Capacity : 35 KLD Plant & 55 KLD Colony



Capacity : 1100 KLD

Environment Protection Expenses

S.NO	Description	Status	Investment In Lakhs
1	SNCR system for NOx reduction	Project completed FY 2017-18	200
2	Alternative fuel feeding system - liquid	Commissioned Oct- 2021	750
3	Alternative fuel feeding system - solid	Commissioned in Jan'23	1300
4	Lime stone shed	Project completed FY 2021-22	1200
5	Solar power plant	Projected completed FY 2021-22	280
6	Yard Management in various location	Project under progress 2021-2024	2570
Total			6300

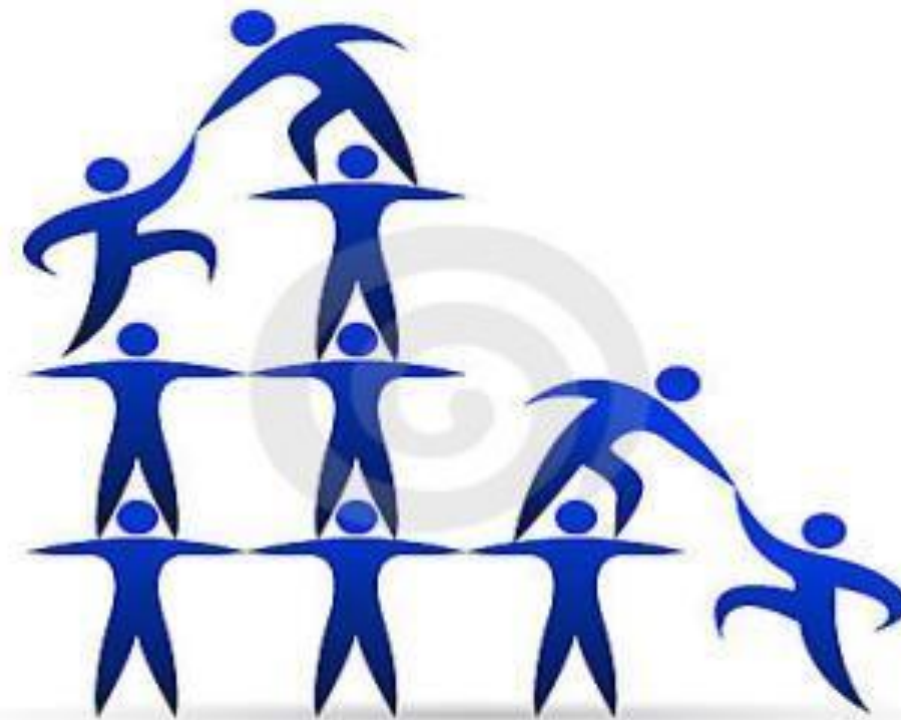


Plantation By Chief Guest COO-Shri Rajnish Kapur sir



Plantation By Unit Head-Shri RBM TRIPATHI sir

TEAM WORK EFFORTS MADE IN ENCON PROJECTS



Teamwork Efforts made in Encon Projects

S.No	Name of the Project	Source of En-Con Idea	Idea originated year	Extent of man power involved	Progress of implementation
1	Chute filled with clinker and falling over DBC U4J07 & 7A and derailed it	Engineer	2022-23	Engineers & team	Completed & section engineer
2	TG inlet Temp. Improved up to 370 Degree C, SCC Improve & Improve Power generation 0.2 mw.	Engineer	2022-23	Engineers & team	Completed & section engineer
3	To increase carbon black feeding in coal VRM for TSR improvement	Engineer	2022-23	Engineers & team	Completed & section engineer
4	Installation of direct coupled geared motor in place of chain sprocket arrangement.	Engineer	2022-23	Engineers & team	Completed & section engineer
5	Interlocking implementation to prevent CHRP tripping due to material flushing at BC150 belt.	Engineer	2022-23	Engineers & team	Completed & section engineer

Teamwork Efforts made in Encon Projects

S.No	Name of the Project	Source of En-Con Idea	Idea originated year	Extent of man power involved	Progress of implementation
1	Water supply arrangement in coal mill-4	Engineer	2021-22	Engineers & team	Completed & section engineer
2	Brushless DC motor operated Air Handling Unit erection & commissioning	Engineer	2021-22	Engineers & team	Completed & section engineer
3	Installation of drain valve in goose neck in HRP roller bearings.	Enginner	2021-22	Engineers & team	Completed & section engineer
4	To reduce compressor running or shifting load to other compressor	Engineer	2021-22	Engineers & team	Completed & section engineer
5	Modification of truck loading platform for packer-7	Engineer	2021-22	Engineers & team	Completed & section engineer
6	To optimize R-HRP mill production & power by controlling input size by taking NBH Crusher in line.	Process Engineer	2021-22	Engineers & team	Completed & section engineer

S.No	Name of the Project	Source of En-Con Idea	Idea originated year	Extent of man power involved	Progress of implementation
1	Reduce idle running of Coal mill -3 & 4 auxiliary by group start of equipment's	Operator	2020-21	Engineers & team	Completed & section engineer
2	Kiln-3 Cooler Fans 3 nos pressure drop reduction	Engineer	2020-21	Engineers & team	Completed & section engineer
3	LS crusher implementing single start logic	Operator	2020-21	Engineers & team	Completed & section engineer
4	HRP Bag filter FN188 and FN183 VFD installation done	Engineer	2020-21	Engineers & team	Completed & section engineer
5	Through Separator sealing work completed in RM-4(Oct'20)	Process Engineer	2020-21	Engineers & team	Completed & section engineer
6	Maliyakhera Crusher , Transportation Group Interlock with timer & Made bag filters Dp mode	Engineer	2020-21	Engineers & team	Completed & section engineer

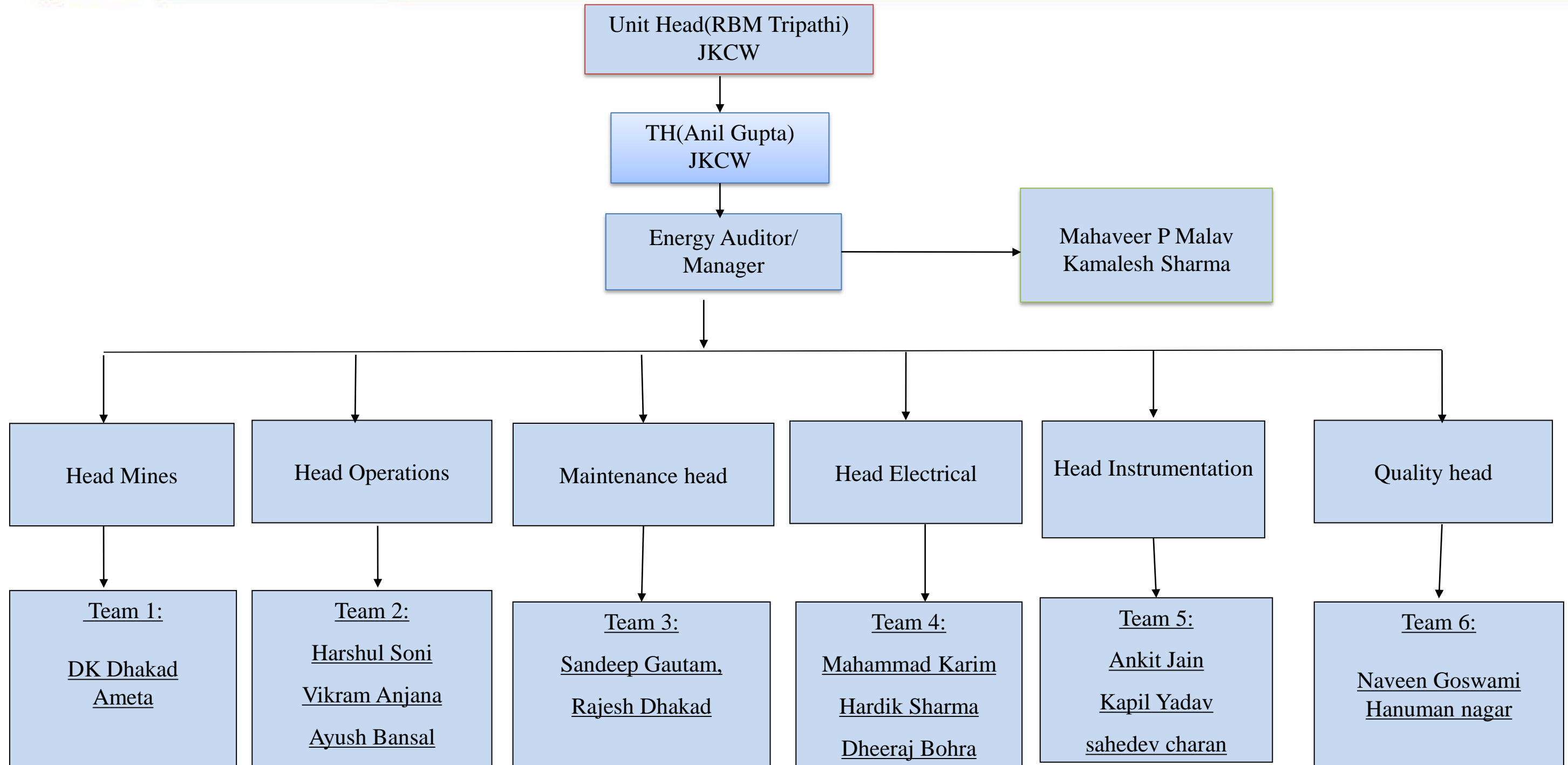
Teamwork Efforts made in Encon Projects

S.No	Name of the Project	Source of En-Con Idea	Idea originated year	Extent of man power involved	Progress of implementation
1	WHRS power generation saving	Manager	2019-2020	Manager, Engineers & team	Completed & section engineer
2	Replacement of 125W HPMV/HPSV light by 35W & 70W LED light, 250W HPMV/HPSV light by 90W, 135W & 200W LED light & 80W, 72W & 36W Tube light by 24W & 18W LED light & 15W CFL light by 250 Number 9W LED light	Engineer	2019-2020	Engineers & team	Completed & section engineer
3	Energy Efficient Cooling Tower Fan (Cell No.-2)	Engineer	2019-2020	Manager, Engineer & team	Completed & section engineer
4	Cooler Fan-1,2,3 & 10 Silencer removal.	Engineer	2019-2020	Engineers & team	Completed & section engineer
5	Compressed air power saving by reducing pressure setting from 6.6 bar to 5.5 bar in cooler and coal mills compressor K3X26.& connected to common header	Engineer	2019-2020	Engineers & team	Completed & section engineer

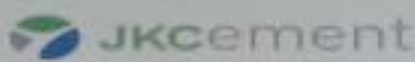
- ❖ Plant has equipped with Knowledge management system supplied by FLS.
- ❖ Each section has individual equipment specific energy report.
- ❖ Data used for study of energy performance.
- ❖ Report will send to concern section in charges & UH.
- ❖ The daily specific power & heat reviewed by HOD,TH & UH.
- ❖ Daily basis cost impact also reviewed TH,UH & MH




Energy Management Cell



- Up gradation of motor with High efficiency motor like IE3 & IE4.
- VFD for various drive in cement mill section.
- Optimization of cooler for increase in WHR power generation.
- Increasing fly ash from 30% to 33% in PPC with optimized clinker quality.
- For better understanding of operators thermal energy consumption incorporated in CCR mimic and same type for SPC will implemented for mills section and pyro section.
- Implementing single start logic in mill sections for power saving.
- Cement mill section running planned in night shift to consume low cost power.
- Various conveyor start stop time optimization logic implemented for power saving.
- Replacement of low efficiency fan to higher efficiency fan



J. K Cement Ltd.
 JK Cement Works, Nimbahera (Rajasthan)



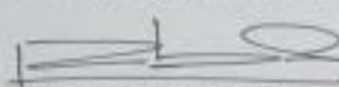
ENERGY MANAGEMENT POLICY

We, at JK Cement Works, Nimbahera are Committed to Demonstrate the Excellence in Energy Management in all our activities of Cement Manufacturing on Continual basis so as to make our Operations Environmentally Sustainable.

We are improving energy efficiency & conservation By:-

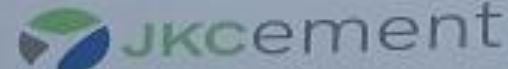
- We have implemented ISO 9001:20001, Energy Management System in our Organization.
- Establishing a framework for setting energy objectives and targets through effective energy management cell with certified energy managers
- Reviewing, Monitoring and Analyzing Energy Consumption and Bench marking Performances and set new targets
- Conducting audits for improvement of overall Energy Efficiency of the plant.
- Purchasing equipment and appliances with consideration of the Bureau of Energy Efficiency Star Ratings and Energy Efficiency.
- Using alternative fuels which helps the Environment also directly / indirectly to protect natural resources.
- Ensuring Energy Conservation, Management and Awareness throughout the Organization.
- Always complying with relevant and applicable Laws and Regulations.
- Maximizing Renewable Energy uses from Waste Heat Recovery Power & Solar Power in our Organization.
- We have collaborated with EESL (Energy Efficiency Service Limited), Govt. of India for improving Energy Efficiency in our Organization.

To Promote Energy Conservation & Energy Savings Propagate Awareness amongst all employees and Stock Holders


RBM TRIPATHI
 President (Operation) & Unit Head




JK Cement LTD.

01st January 2022



जे. के. सीमेंट वर्क्स, निम्बाहेड़ा - चित्तौड़गढ़ (राज)

ऊर्जा प्रबंधन नीति

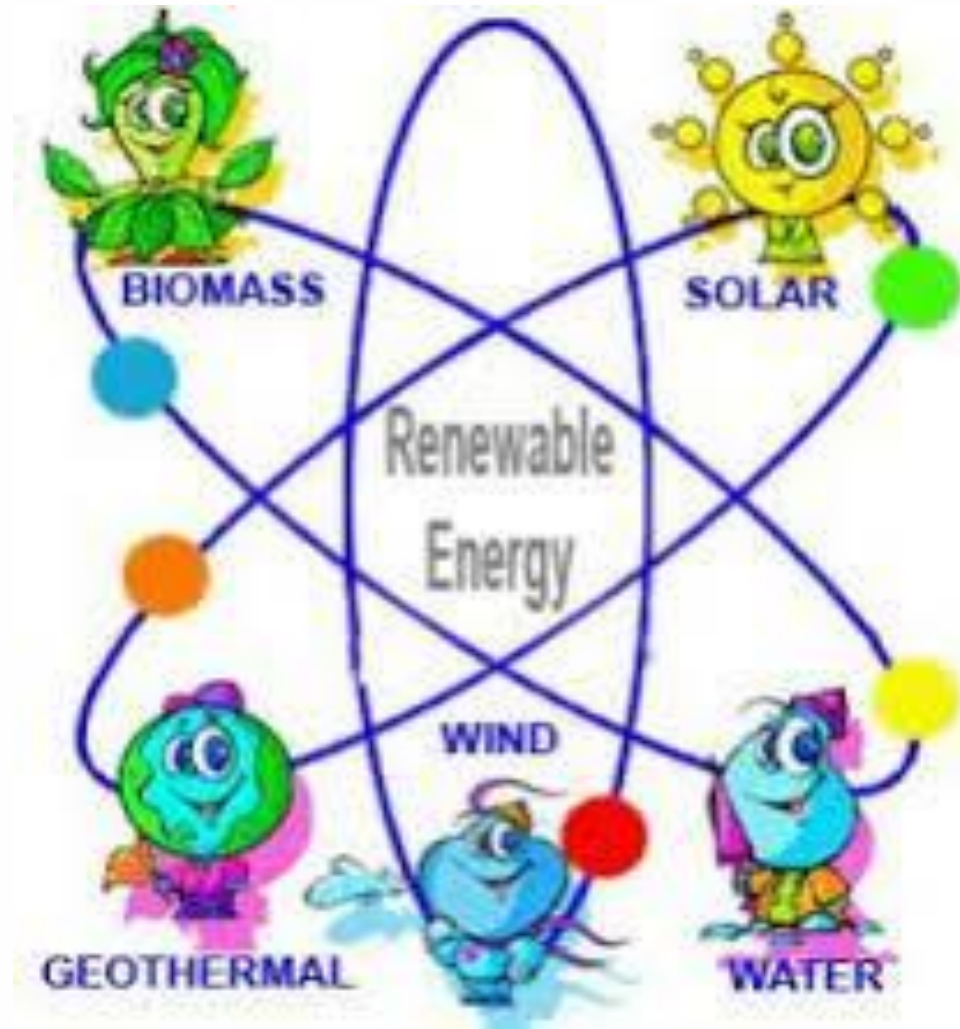




जे.के. सीमेंट वर्क्स – निम्बाहेड़ा, प्रतिबद्ध है कि हमारे सीमेंट विनिर्माण की सभी गतिविधियों में ऊर्जा प्रबंधन, जो कि निरन्तर रूप से हमारे संचालन को पर्यावरणीय दृष्टि से सतत्ता/ टिकाऊ बनाने के लिये, उत्कृष्टता साबित करता है।

हम ऊर्जा दक्षता और संरक्षण में सुधार कर रहे हैं जो कि ...

- हमने अपने संगठन/संस्था में ISO 50001, ऊर्जा प्रबंधन प्रणाली लागू किया है।
- प्रभावी ऊर्जा प्रबंधन सेल एवं प्रमाणित ऊर्जा प्रबंधकों के माध्यम से ऊर्जा उद्देश्य एवं लक्ष्यों को स्थापित करने हेतु रूपरेखा स्थापित करना।
- ऊर्जा उपभोग एवं निष्पादन (प्रदर्शन) चिह्नांकन की समीक्षा, निगरानी और विशलेषण करना और नये लक्ष्य निर्धारित करना।
- संयंत्र में व्यापक (समग्र) ऊर्जा दक्षता के सुधार हेतु लेखा – परीक्षा (ऑडिट) का प्रबंध करना।
- कय किये जाने वाले उपकरण, ब्यूरो ऊर्जा दक्षता विभाग के विमर्श से ऊर्जा दक्षता एवं स्टार रेटिंग युक्त हो।
- प्रत्यक्ष या अप्रत्यक्ष रूप से पर्यावरणीय प्राकृतिक संसाधनों के बचाव हेतु वैकल्पिक ईंधन का उपयोग करना।
- ऊर्जा संरक्षण, प्रबंधन एवं जागरूकता, संगठन के माध्यम से सुनिश्चित करना।
- प्रासंगिक एवं लागू कानून एवं विनियमों की हमेशा अनुपालना करना।
- हमारे संगठन (संस्था) में वेस्ट हिट रिकवरी ऊर्जा एवं सौर ऊर्जा का अधिकतम उत्पादन करना।
- अपने संगठन में ऊर्जा दक्षता में सुधार के लिए (ऊर्जा दक्षता सेवा समिति (लि.) भारत सरकार कि सहभागिता के साथ काम किया है।
- सभी कर्मचारीयों और हित धारकों के बीच ऊर्जा संरक्षण और ऊर्जा बचत के लिये जागरूकता बढ़ाना।

Replacement Of Thermal & Electrical Energy With Renewable Energy



Capacity Layout: Nimbahera

-Plant Capacity (kWp)- 7,011.5

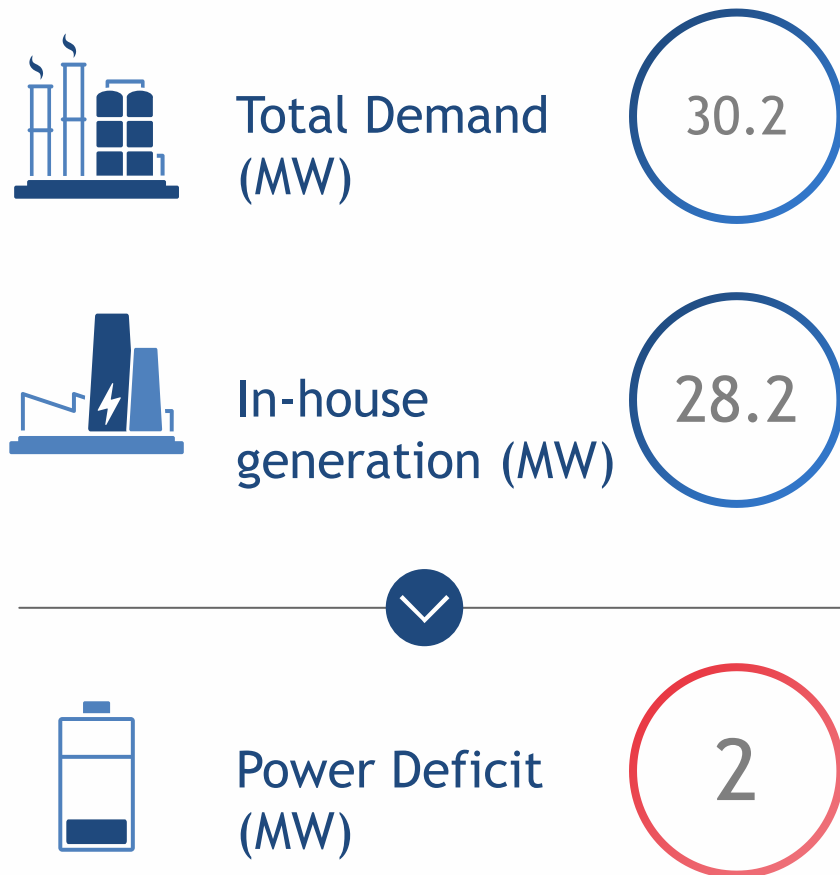
Area required -19.5 acres
Evacuation Voltage-11 kV



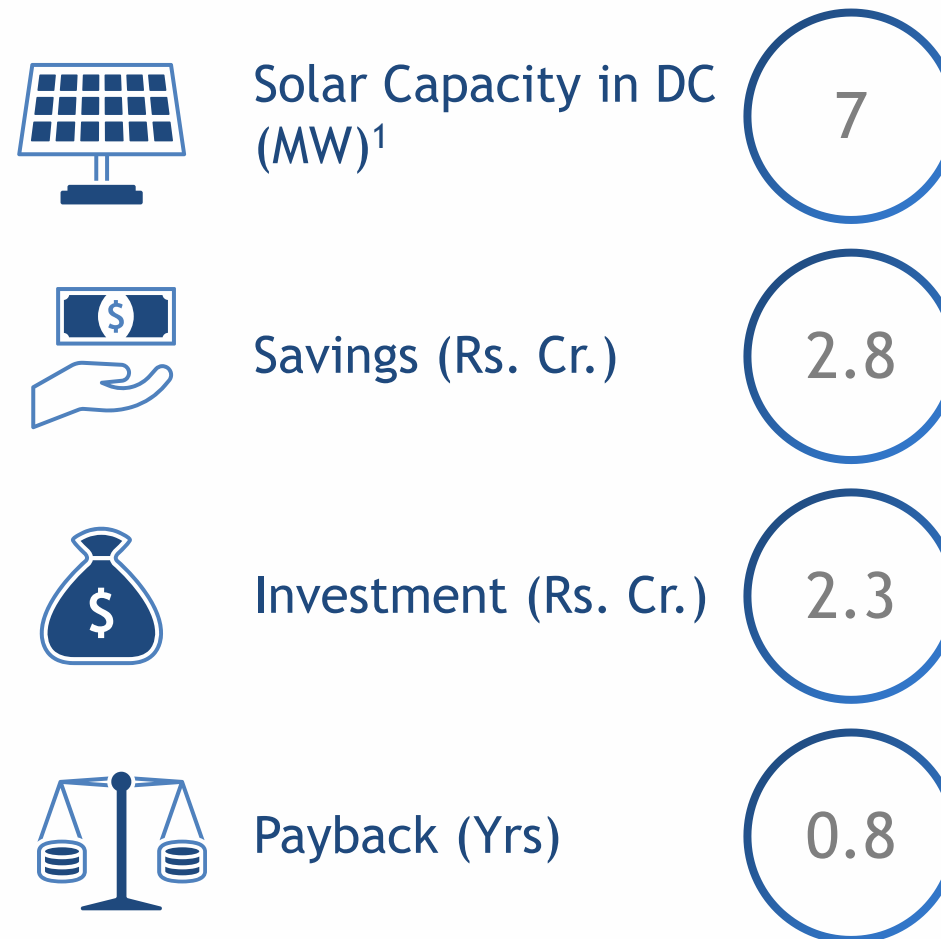
TARIFF STRUCTURE	CAPACITY (MWp)	Estimated Generation 1 Year(KWh)	Grid Tariff Rs./KWh	Saving Per Unit Rs./KWh	Estimated Saving in One Year with 11.096 MWp	Estimated Saving in One Year with Plant Load in PPA	Investment	Pay Back (Yrs.)
Option-1(OPEX)	11.096	1.945 Cr	6.30 2020-21	3.13	6.088 Cr	2.8 Cr	2.3 Cr	0.8
Option-2 (26 % Equity)				3.32	6.458 Cr			

NIMBAHERA: Post up-gradation, opportunity exists to set up 7 MW (DC) Solar Power Plant in behind the meter arrangement

Current scenario: Power Demand & Generation in NBH



Opportunity to setup Solar Power Plant



Nimbahera Solar Power Plant



- ✓ JK Cement committed & believed in suitable development in each & every aspect.
- ✓ At present we have Solar lighting in JK RTC of 30 kWh capacity , Car shed parking roof & Solar water heaters in company guest house.
- ✓ At present in progress Synchronizing our 7.0 MWp(DC)/5.1 MWp(AC) Solar Power Plant at Nimbahera.

Energy generated by JK RTC

FY 19-20	18190
FY 20-21	49710
FY 21-22	37220
FY 22-23	40614
Total	145734

- ✓ We have Waste heat recovery from PH & AQC with total capacity 13.2 MW.

✓ JK Cement committed & believed in suitable development in each & every aspect.

✓ Energy generated by plant

FY	KWH
FY 21-22	73700
FY 22-23	9665015
Total	9738715

Tool to commit and validate CO₂ emission target in line with keeping global temperature rise well below 2°C and preferably 1.5°C below pre-industrialization level.

Climate Target of JKCL

1.

Committed to SBTi targets in 2021 – Under Validation

- ✓ Reduction of Sp. Gross CO₂ emissions from 680 to 532 kg CO₂/t cementitious material (~21.7% reduction) by 2030 from base year 2020 – including Power & AFR emissions.

2.

Active member of GCCA

- ✓ Pledged for UNFCCC's 'Race to Net Zero' by 2050 under theegis of GCCA.

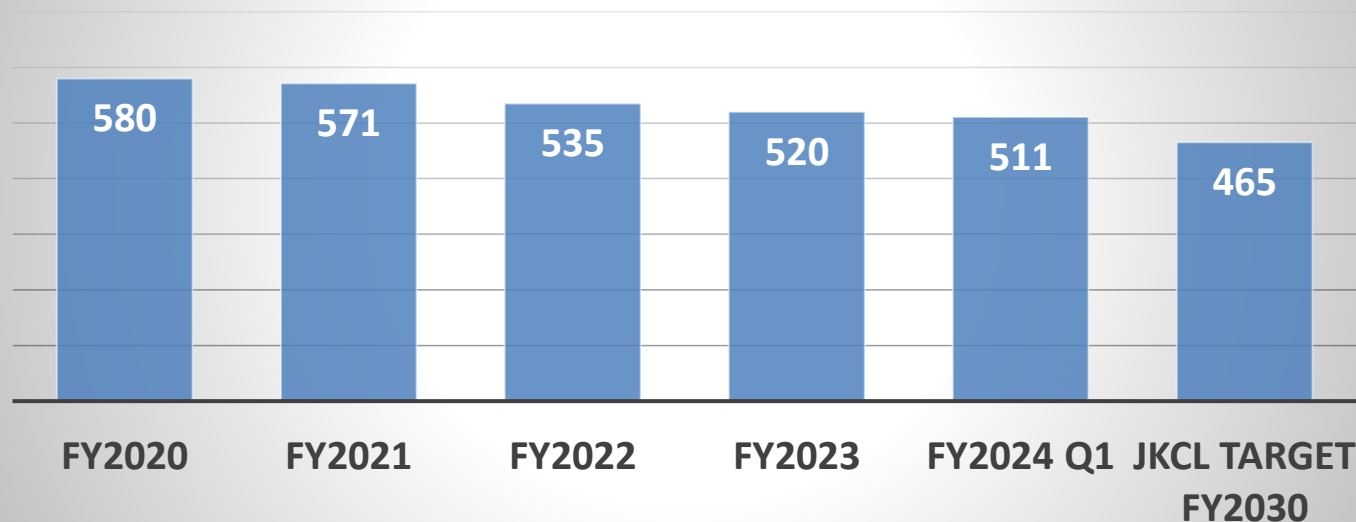
3.

Submitted Energy Compact to Ministry of New & Renewable Energy approved

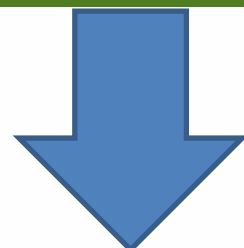
- ✓ To increase Green Power Mix from 19% (FY2020) to 75% (FY2030).

Performance up to FY2024 Q1

Net Specific GHG Emission-Scope 1
kgCO₂/Cementitious Materials



Target- 19.8% reduction by FY2030



Achieved – 12% reduction by FY23

Net Sp. GHG Emission-Scope 1, Kg CO₂/t Cementitious materials

Unit	FY 2022	FY 2023	FY 2024 Q1
NBH	601	568	551
MGR	668	676	683
Muddapur	530	514	485
Gotan Grey	910	903	836
Gotan White	501	454	464
Katni	0	0	0
Aligarh	0	0	0
Jharli	1	2	2
Balasinor	10	9	0
Company	535	520	510



Global Cement and Concrete Association (GCCA)



Science Based Targets Initiative (SBTI)



Carbon Disclosure Project (CDP)



Cement Manufacturer's Association (CMA)



Federation of Indian Chambers of Commerce and Industry (FICCI)

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S.NO	TRAINING TITLE	NUMBER OF PARTICIPANTS	VENUE	FACULTY	CATEGORY
1	ACCIDENT ANALYSIS & PREVENTIONS	2	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
2	BLUETREE TRAINING-CLMS	5	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
3	CONFINED SPACE SAFETY	1	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
4	ELECTRICAL PROTECTION SYSTEM AND RELAY COORDINATION- TRANSFORMERS & MOTORS	4	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
5	ELECTRICAL SAFETY IN INDUSTRIES	2	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
6	FIRST AID - St. JOHN AMBULANCE PROGRAM	5	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	SAFETY
7	HAZARDOUS & E-WASTE MANAGEMENT & ENVIRONMENT PROTECTION	3	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
8	HEAT AND MASS BALANCE	5	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
9	HYDRAULICS AND ITS APPLICATIONS	7	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
10	IMPLEMENTATION OF EMERGENCY RESPONSE PLAN	1	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
11	IMPORTANCE OF LOCK OUT - TAG OUT IN INDUSTRIES	1	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
12	IMPORTANCE OF SAFETY MANAGEMENT AND ITS IMPACT ON PRODUCTION	2	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
13	INDUSTRIAL SAFETY & HAZARDS MANAGEMENT	8	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	SAFETY
14	MAINTENANCE OF BEARINGS AND RELIABILITY	4	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
15	MAINTENANCE OF ELECTRICAL EQUIPMENTS	2	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL

S.NO	TRAINING TITLE	NUMBER OF PARTICIPANTS	VENUE	FACULTY	CATEGORY
16	OCCUPATIONAL HEALTH AND SAFETY	2	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	SAFETY
17	OPERATION & MAINTENANCE OF GEARBOXES.	2	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
18	OPERATION & OPTIMISATION OF KILN & COOLER	4	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
19	OPERATION AND OPTIMISATION OF MILLS	5	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
20	PLC & SCADA DEVELOPMENT	5	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
21	QUALITY CONTROL- CHEMICAL & PHYSICAL ANALYSIS OF RAW MATERIAL & FINISHED GOODS	2	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
22	ROLE OF 5S IN INDUSTRIAL DEVELOPMENT	1	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
23	ROLE OF PERMIT TO WORK IN SAFETY	1	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
24	SAARTHI TRAINING PROGRAM	20	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	MANAGEMENT
25	SAFETY DURING HEIGHT AND CONSTRUCTION WORK	1	TRAINING CENTRE, FACTORIES AND BOILERS OFFICE,JAIPUR	FACTORIES AND BOILERS FACULTY	EHS
26	THERMAL ENERGY CONSERVATION & MANAGEMENT	8	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
27	USE OF FLY ASH IN CEMENT INDUSTRY - ISSUES & CHALLENGES	6	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
28	WORKMEN INSPECTOR PROGRAM	2	REGIONAL TRAINING CENTRE, NIMBAHERA	RTC FACULTY	TECHNICAL
29	ISO AUDITORS CERTIFICATION COURSE	10	REGIONAL TRAINING CENTRE, NIMBAHERA	LRQA FACULTY	TECHNICAL

CSR Activities (2022-23)

S.No.	CSR Project or activity identified (60-75 words)	Section in which the project is covered	Specify State and other
1	Organising health camps and supporting in infrastructure development in Government hospitals. Also working on malnutrition eradication through development of Anganwadi's.	Health Sector	Rajasthan
2	Providing infrastructure support in Government schools Constructed new school buildings in Teelakheda & Malyakhedi villages.	Education Sector	Rajasthan
3	Skill training program to 112 participants in Stitching, beautician and soft toys making. Established sanatry pad making unit in Mangrol and around 40 womens are getting livelihood opporytunity.	Livelihood Promotion	Rajasthan
4	Condtructed CC road in five schools in an around 2.5km in surrounding areas.	Infrastructure Sector	Rajasthan
5	Providing drinking water facility in eight villages.	Drinking Water Facilities	Rajasthan
6	Planted around 2500 plants this year for environment conservation.	Environment Sector	Rajasthan
7	Providing welfare facilities in surrounding communities under CSR.	Social Sector	Rajasthan
8	Promoting sports in surrounding area through sporting and sponcering sports tournaments	Sports Promotion	Rajasthan



Stitching center



Sanatry Pad production Unit

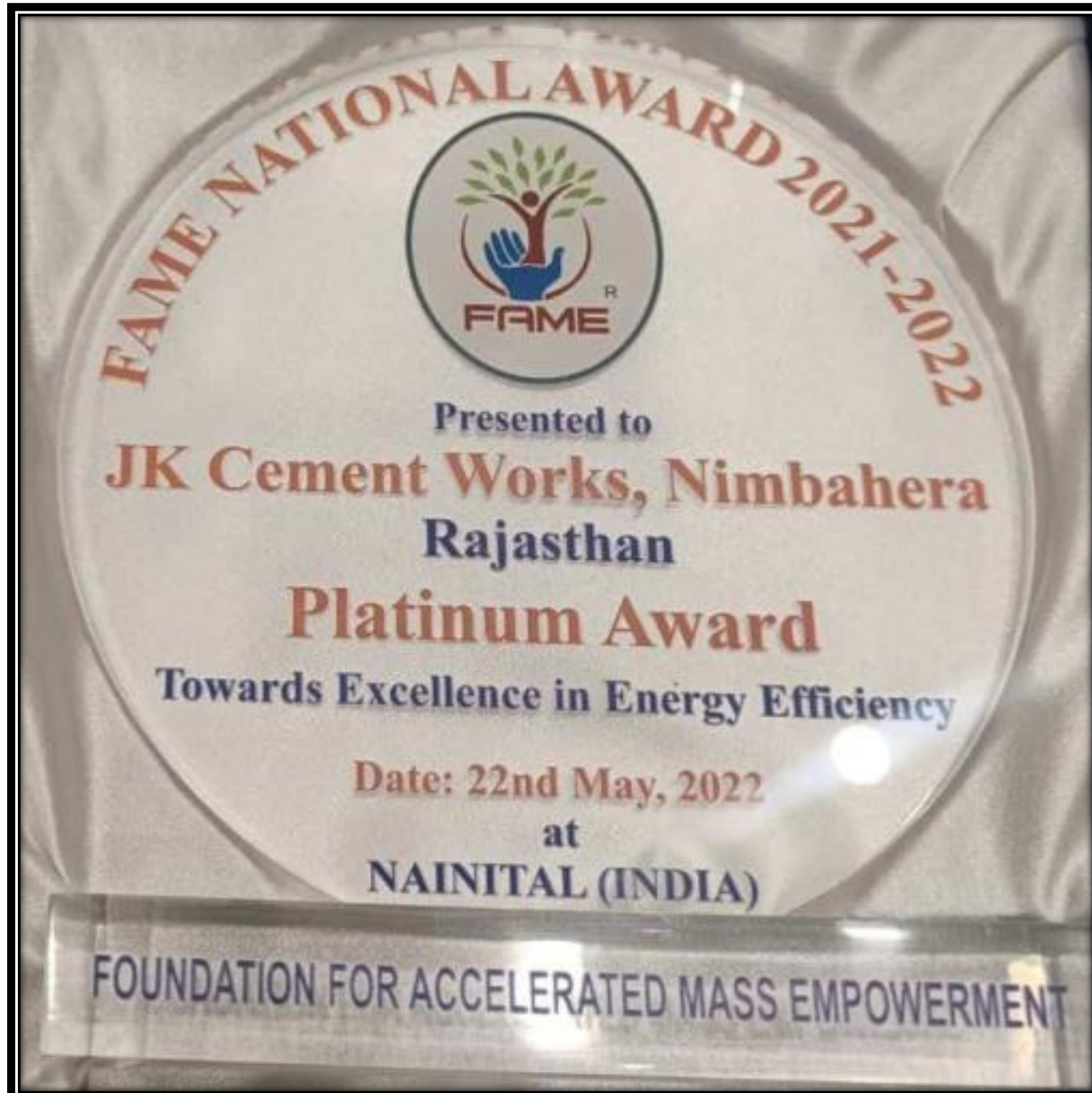
CSR Activities (2021-22)

S.No.	CSR Project or activity identified (60-75 words)	Section in which the project is covered	Specify State and other
1	Pest Control & Awareness campaigning at Rural Areas, Organizing free Medical camps at Nearby NBH Sub Division (more than 30 Villages), Blood donation camp/ Eye camp, Financial Assistance for Developing Govt. Hospital & distributions of Medical equipment's etc.	Health Sector	Rajasthan
2	Constructions of Class room, Boundary wall & Toilets etc. at nearby Govt. Schools, Development/ Renovations & Maintenance of Aganwadi Centers , On occasion of Independence day we facilitate & motivate by Silver Medal to meritorious students who had secured more than 70% marks in Board Exams., Free Coaching classes/awareness Sessions for youth/students for smooth preparation of misc. competitive Examination etc.	Education Sector	Rajasthan
3	Misc. Skill development programs are being organized for Women empowerments, Established & taking care the operations of Sanitary napkin production Plant through a Self-Help Group which are provided the employments more than 20 nos. women of nearby villages. Also many kind of food products are also being produced by this women's for getting more financial benefits.	livelihood Promotion	Rajasthan
4	Constructions & renovations of Community center/Moksha Dham/ C.C. Road/New Angenwadi Building / Play Ground & misc. Infrastructures etc. at nearby villages of Nimbahera/ Chittorgarh.	Infrastructure Sector	Rajasthan
5	Providing Water Pipe Line at misc. villages as requested by locals, Supply of drinking water through water tanker at villages & NBH City specially during the Summer days & as required by the concerned Govt./ Pvt. agencies, Others required work related to the water Conservations/harvesting etc.	Drinking Water Facility	Rajasthan
6	Distribution of the tree plants at mining areas/ villages/ Govt. Schools and nearby locations & taking care of the tree plants for the protection of environments.	Environment Sector	Rajasthan
7	Financial Help for Promotion of local Mela / Fort Festival/ Cultural program, Provide help for Promotions of Women's Self-help Group on Misc. occasions i.e. Dussehra Mela, Hast Shilp Mela & others occasions at Chittorgarh/ Nimbahera .	Social Sector	Rajasthan
8	Development / maintenance of School Sports Field/ Play Grounds in nearby villages as requested by the beneficiaries, Financial Assistance to Develop the State level Football academy in Nimbahera, Distribution of Sports materials/kit to the villagers, Financial Help for sports tournaments, awareness session etc.	Sports Promotion	Rajasthan



CSR Activities (2020-21)

S.No.	CSR Project or activity identified (60-75 words)	Section in which the project is covered	Specify State and other	Expenditure for the Year 2020-21
1	Contribution for preserving & encouraging Art & Cultural Heritage like Chittorgarh Fort Festival.	Art & Culture	Rajasthan	3,23,256
2	Construction of Bio Toilets in nearby school in rural area, Infrastruicture development & Renovation work for community welfare like Renovation at Aganbari Centre, Contruction of Community Hall. Contribution for Nandghar Yojana in nearby villages.	Community Welfare	Rajasthan	35,44,168
3	Distribution of food packets and essential grocery items in near by villages. Contribution in Fooding, Distribution of Mask, Sanitizers & other PPEs, Sanitizers & Direct Contribution to Govt.	Disaster Relief	Rajasthan	30,62,490
4	Contribution for Ground Water Survey in Chittaurghar District to Third party. Pump set to PHED for drinking water arrangement.	Drinking Water Arrangement	Rajasthan	14,18,976
5	Construction & Renovation of school buildings, class rooms. Reimbursement of expenses on Coaching of students of rural areas at near by villages.	Educational Charity	Rajasthan	37,12,947
6	Providing Tree guards & other facilities for plantation.	Environment	Rajasthan	1,71,630
7	Sanitation work in entire Nimbahera City as well as nearby Villages for Covid 19 prevention. Regular Pest Control Activity in nearby villages. Contribution for Renovation/Extension of Govt. Hospital building.	Health	Rajasthan	45,69,947
8	Sparsh Sanitary Pad Project for Women self help groups and providing structured setups & training for earning through production and sell of low cost sanitary pads. Organising training programs for Woman Skill development.	Livelihood Promotion	Rajasthan	23,70,383
9	Distribution of Silver medals for bright students based on performance for motivation at various schools.	National Functions	Rajasthan	5,02,759
10	CC Road Construction in nearby villages. Financial Aid to Panchayat for Rural Development. Drainage system construction at Karunda Village for better health & Hygiene. Construction of Rest rooms in village for travellers.	Rural Development	Rajasthan	2,13,91,406
11	Contribution for Sport promotions like Lighting at Community Sports Ground. Providing sports equipments in nearby areas.	Sports Promotion	Rajasthan	27,220
		Grand Total		4.10.95.183









JK CEMENT WORKS, NIMBAHERA (RAJ)





RBM TRIPATHI

Unit head

Thanks to CII for providing us this platform to demonstrate our energy efficient initiatives. We are continuously focusing to develop the renewal source of energy at our manufacturing locations.

➤ New cement mill HRP commissioning done with existing ball mill.

➤ Replacement of reciprocating compressors with screw compressors.

➤ VFD installation at various fans and compressors.




SHANT NALHOTRA, KISHORE GUPTA, G. MATHAN



Confederation of Indian Industry

22nd National Award for Excellence in Energy Management

2021



Confederation of Indian Industry

22nd National Award for Excellence in Energy Management 2021


This is to certify that

JK Cement Ltd., Nimbahera


has been recognized as

"Energy Efficient Unit"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 24 - 27 August 2021.



K S Venkatagiri
Executive Director
CII - Goindwala GBC



Ravichandran Purushothaman
Chairman, Energy Efficiency Council
CII - Goindwala GBC



- Nimbahera won Manufacturing Award – Large Scale Industry at Udaipur Chamber of Commerce, Udaipur (Rajasthan) for Manufacturing Excellence.
- *Position :- 2nd Rank*



- Mines of Nimbahera and Mangrol won total 15 Prizes in different category during 30th Mines Environment & Mineral Conservation Week 2019-20” was celebrated under the auspices of Indian Bureau of Mines, Ajmer.



- Rajasthan Bhamashah Award 2019 for great contribution in education sector.



- Golden Peacock Environment Management Award 2019 at the 21st Annual World Congress on Environment Management and Climate Change.



- “CII - National Energy Efficiency Circle (EC) Competition” on 18-19 May’2017 in New Delhi.
- Second Best prize for “Best Energy Efficiency Organization” by Confederation of Indian Industry.



❖ J.K. I.T.I. Building awarded –
“ Energy & Environment Foundation Global Green Building Award -2016 “



THANK YOU