



23RD NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT- 2022

JK LAKSHMI CEMENT LTD.- SIROHI, RAJASTHAN



Pankaj Tiwari
Sr. Manager - Process

Manoj Ubana
Dy. Mngr. - Electrical

Rajesh Kumar
Sr. Engr. - Process



BRIEF INTRODUCTION OF JKLC, SIROHI



OPC 43



OPC 53



PPC



"PRO+" PPC



JK LAKSHMI Power Mix
READY MIX CONCRETE



JK SMARTBLOX
Autoclaved Aerated Concrete



JK LAKSHMIPLAST
PLASTER OF PARIS



ISO 9001



ISO 14001



ISO 50001



ISO 45001: 2018



Established in August 1982 with 0.5 MTPA capacity.

Unit – II Commissioned in 1995 with 0.9 MTPA capacity.

Unit – III Commissioned in 1996 with 0.9 MTPA capacity.

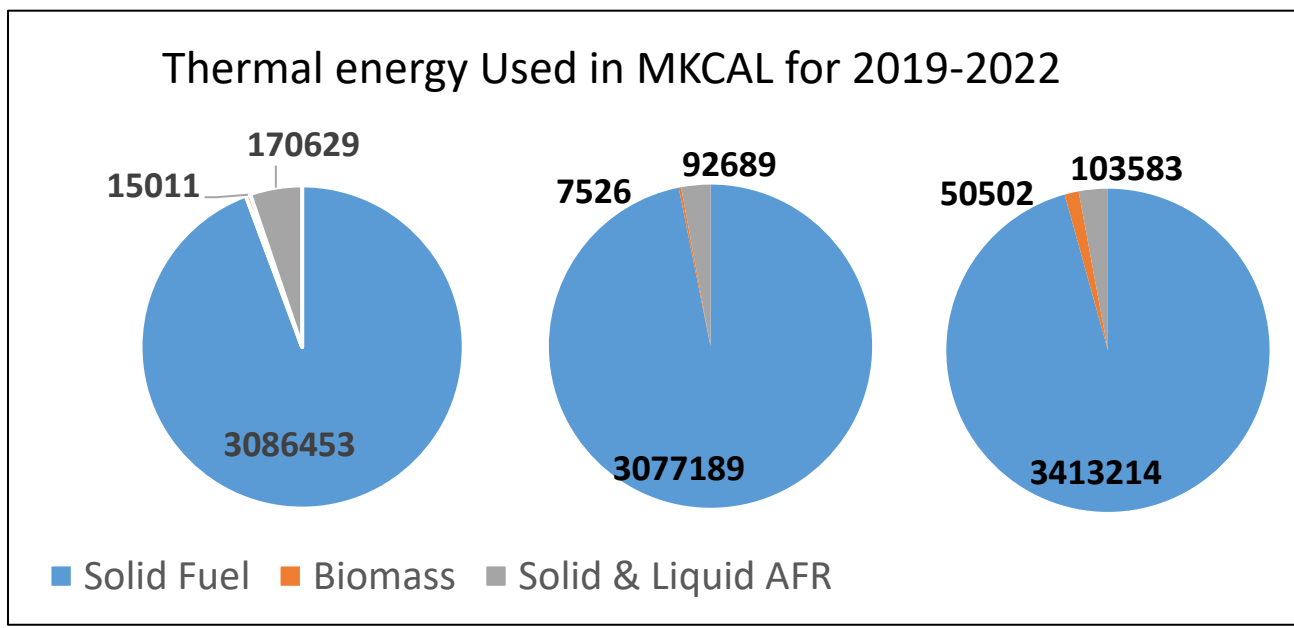
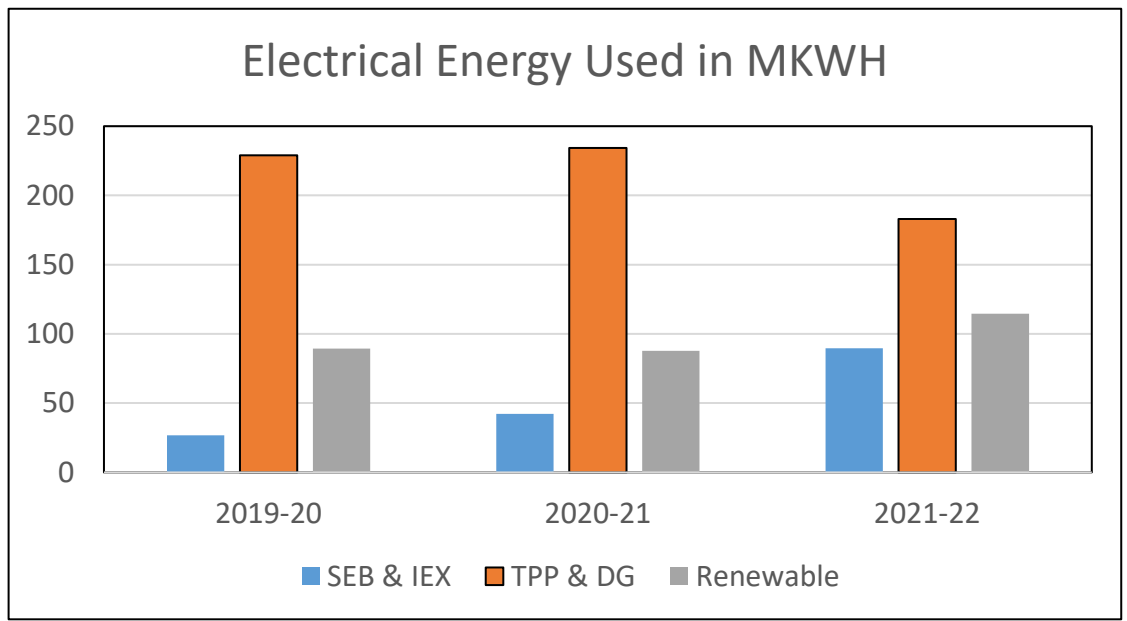
Present Cement Production Capacity 4.785 MTPA.

EQUIPMENT DETAILS

EQUIPMENT	AFTER MODIFICATION CAPACITY (TPH)	OPERATING CAPACITY (TPH)
Ball Mill	180	175
China VRM	180	226
VRM-1	225	324
VRM-2	225	326
Coal Mill-1	16	21
Coal Mill-2	35	28
Coal Mill-3	18	23
Kiln-1	4500	4754
Kiln-2	5000	5142
Kiln-3	5000	5145
Cement Mill-1	85	80
Cement Mill-2	150	199
Cement Mill-3/4/5/6	75/75/75/75	80/87/78/77



ENERGY USED IN LAST YEAR

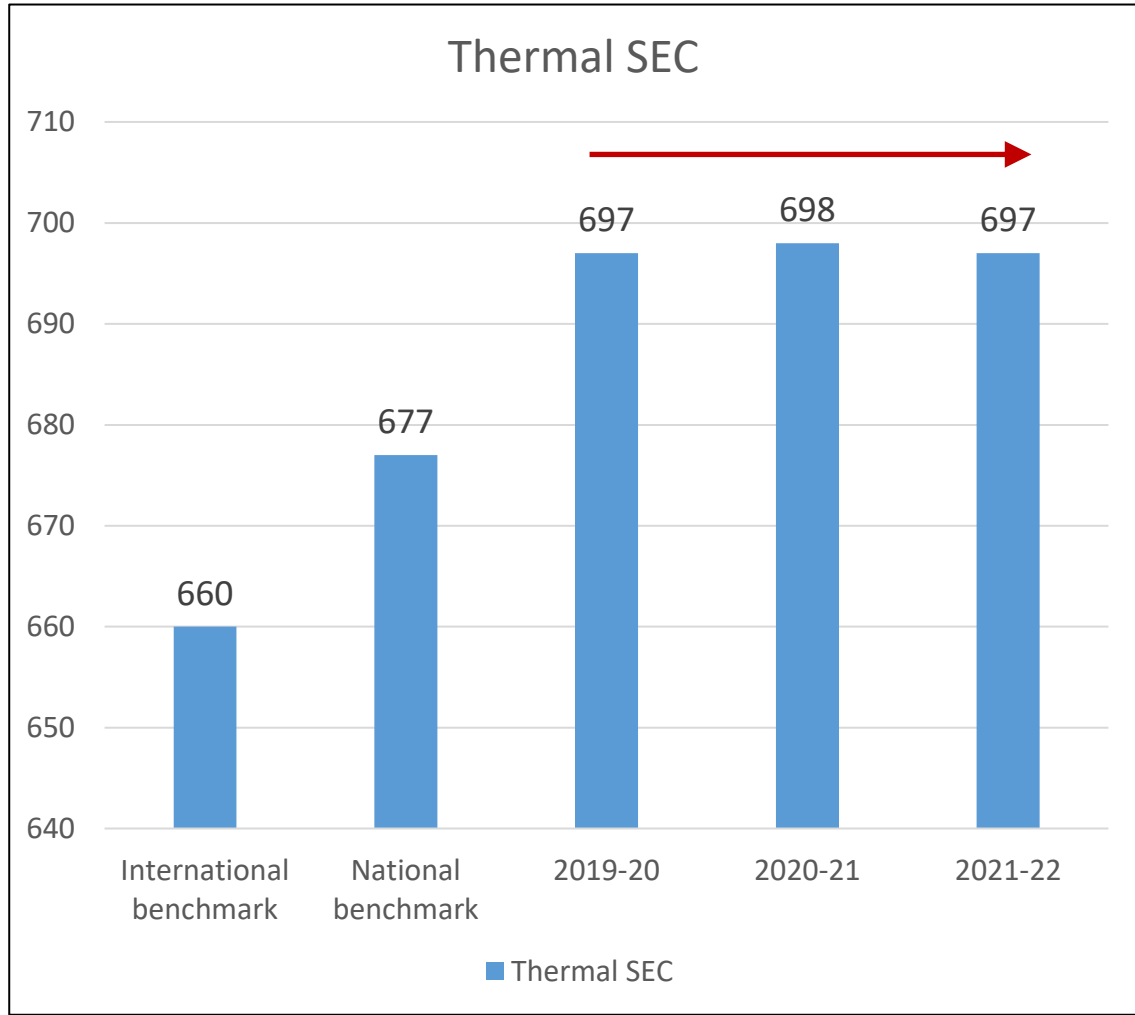


ENERGY USED IN LAST THREE YEARS

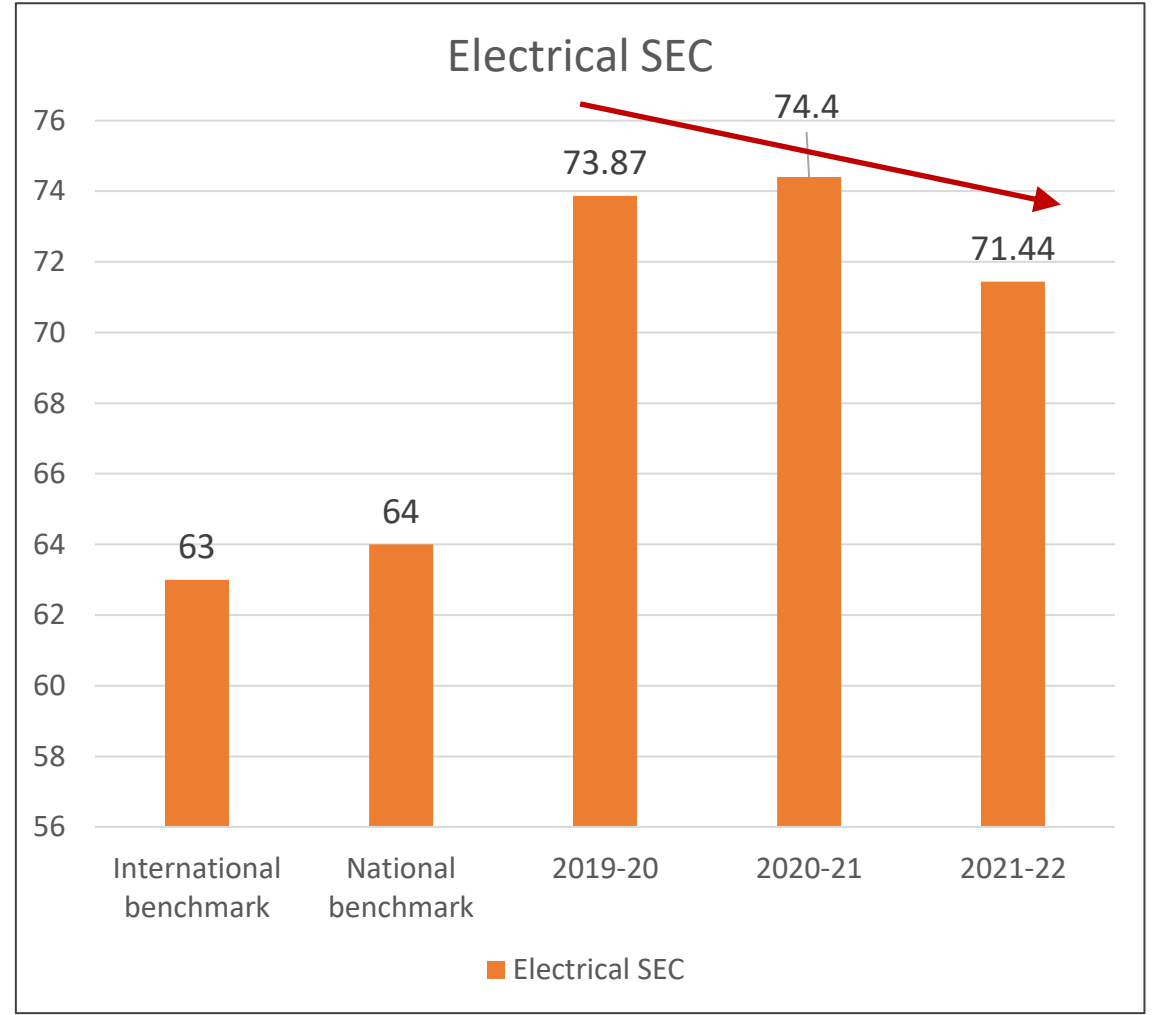
Parameters	UOM	2019-20	2020-21	2021-22
Annual Thermal Energy Consumption	Million Kcal	327209	317740	3567299
Annual Electrical Energy Consumption	Million KWH	344.862	363.893	386.56



SPECIFIC THERMAL ENERGY CONSUMPTION



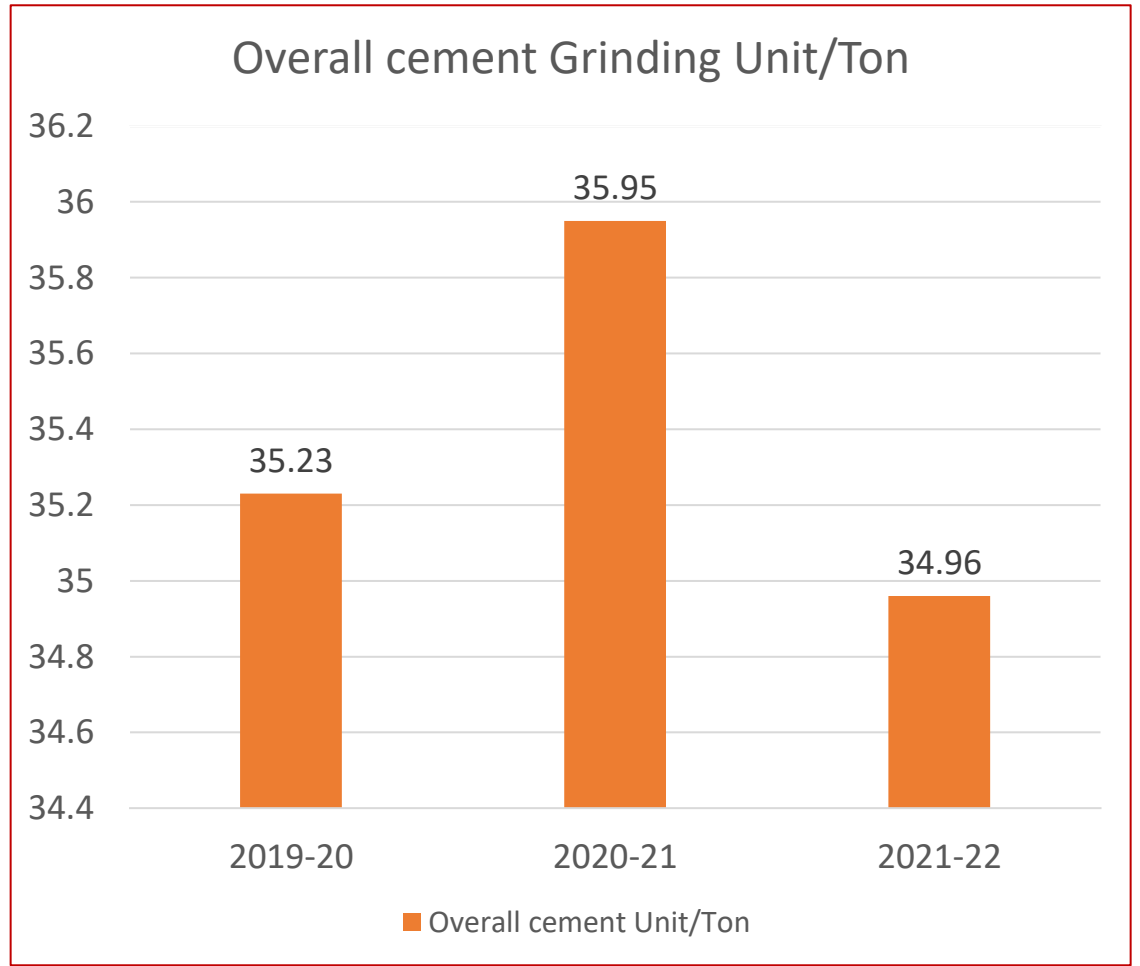
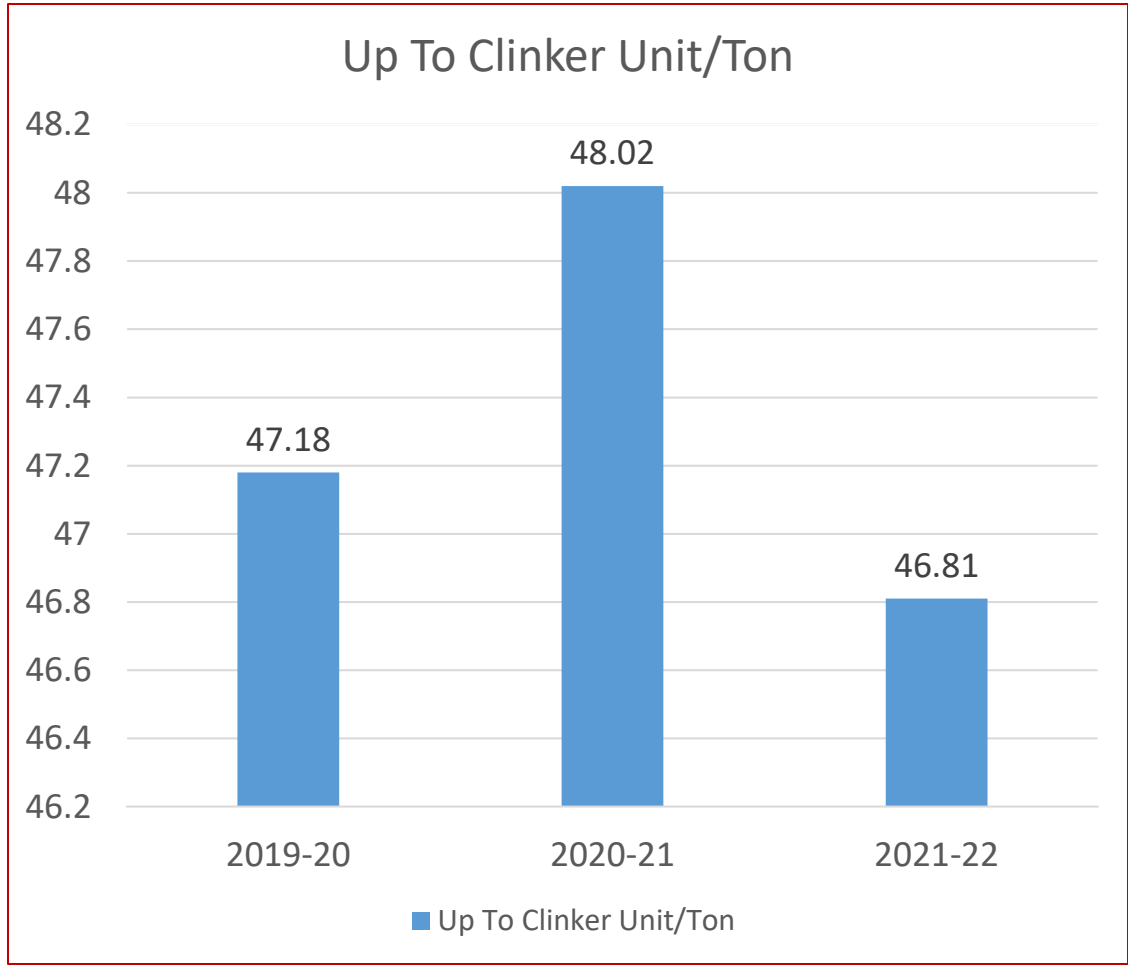
SPECIFIC ELECTRICAL ENERGY CONSUMPTION





SPECIFIC ELECTRICAL ENERGY CONSUMPTION UPTO CLINKERIZATION

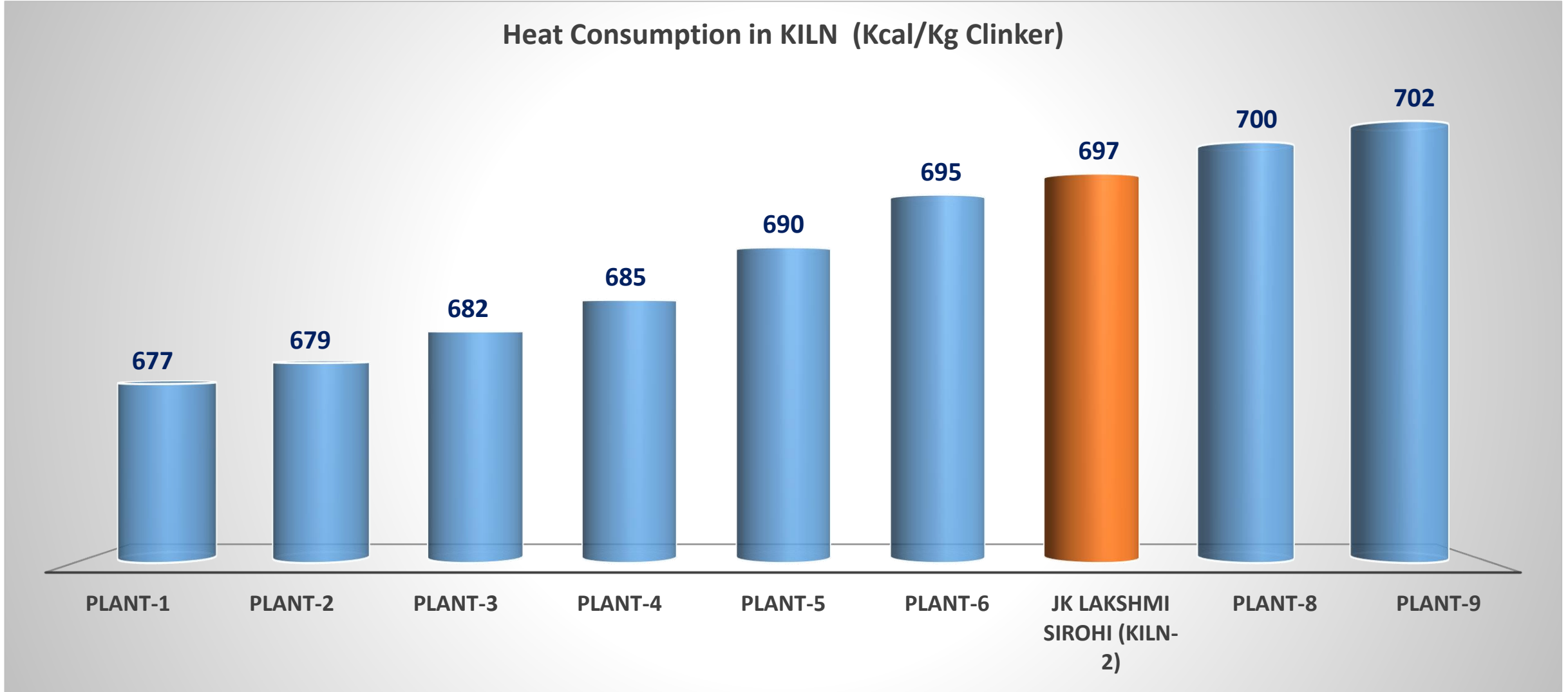
SPECIFIC ELECTRICAL ENERGY CONSUMPTION OF OVERALL CEMENT GRINDING





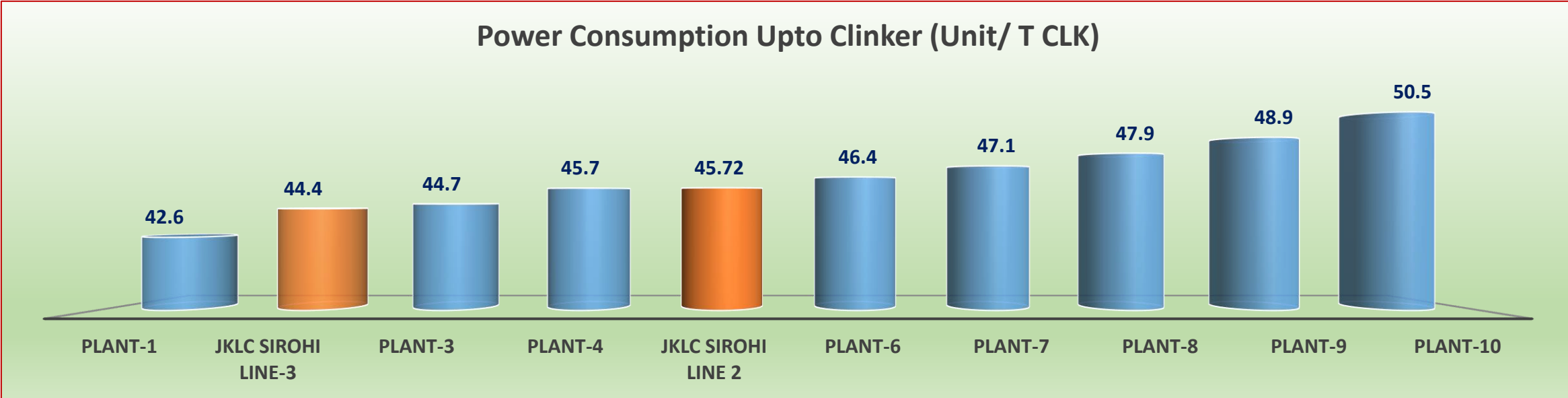
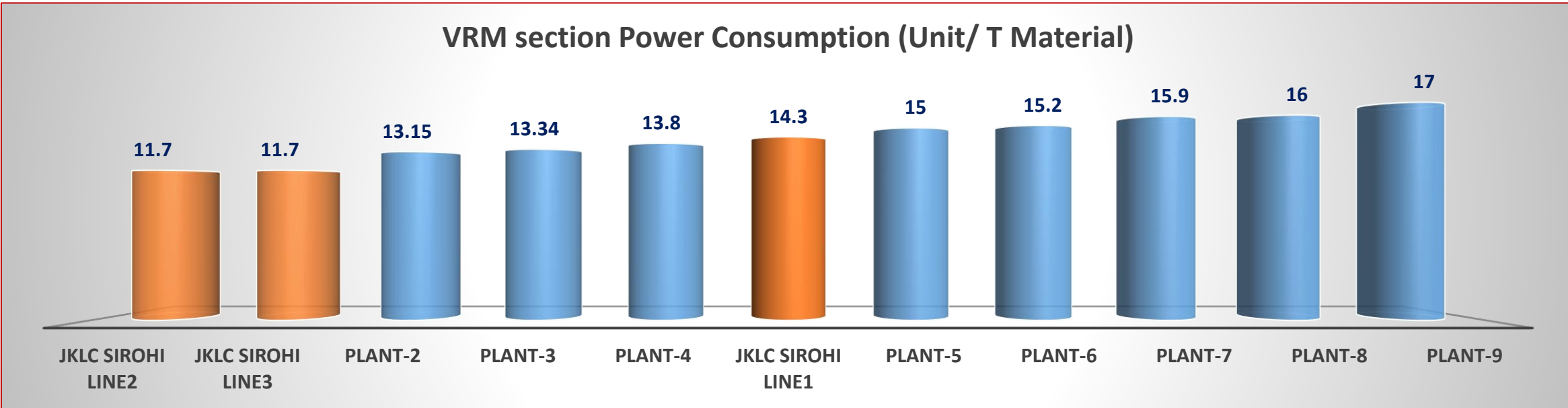
THERMAL SEC IN SAME CLUSTER

Energy Benchmarking By CII 2021-22





Energy Benchmarking By CII 2021-22





ROAD MAP TO ACHIEVE INTERNATIONAL AND NATIONAL BENCHMARK

- ✓ Adopted new technology like ITECA Seal, low NOx & higher efficient burner in Kiln
- ✓ Third generation separators in Cement mills
- ✓ Maximize the Solid & liquid AFR in Kiln
- ✓ Replacement of Old motors with IE3 motors in phase manner
- ✓ Maximize the Green power generation (WHRS, Solar & Wind)

TARGET IN 2022-2023

- ✓ Installation of ITECA Seal in Kiln-2
- ✓ Installation of dividing gate in Kiln2 Preheater
- ✓ Solid AFR feeding system in Kiln2
- ✓ Installation of new burner in Kiln-1
- ✓ Installation of VFD in Hybrid Bag House Fan
- ✓ Installation of new solar PV Plant of 7 MW to increase the renewable energy
- ✓ Installation of VFD in Mill Vent fan of Raw Mill
- ✓ Installation of High Efficient Separator in Cement Mill 2
- ✓ Modification of AQC boilers in Kiln1 to increase the green power generation



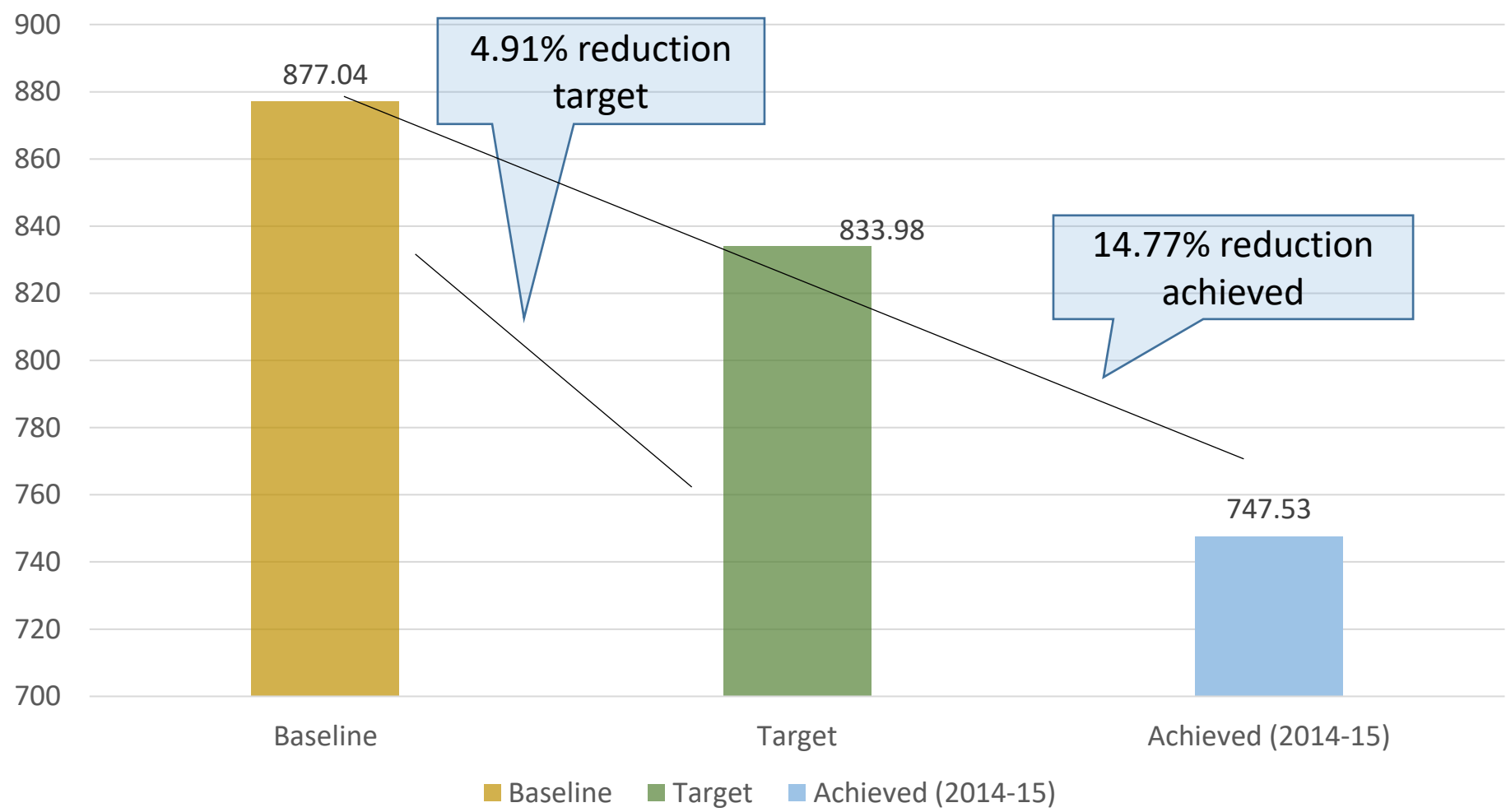
ENERGY SAVING PROJECTS SUMMARY FOR 3 YEARS

DESCRIPTION	UNITS	WITH INVESTMENT	WITHOUT INVESTMENT
TOTAL PROJECT IMPLEMENTED	NOS	8	26
TOTAL ELECTRICAL ENERGY SAVINGS	MILLION KWH	1.24	8.34
TOTAL THERMAL ENERGY SAVING	MILLION KCAL	1201	NIL
ELECTRICAL SAVING	RS MILLION	10	65
THERMAL SAVING	RS MILLION	1.81	0
TOTAL SAVINGS	RS MILLION	11.64	64.99
TOTAL INVESTMENT	RS MILLION	12.62	NA



PERFORMANCE IN PAT CYCLE I

SEC in Kcal/Kg of Eq Cement (PPC)

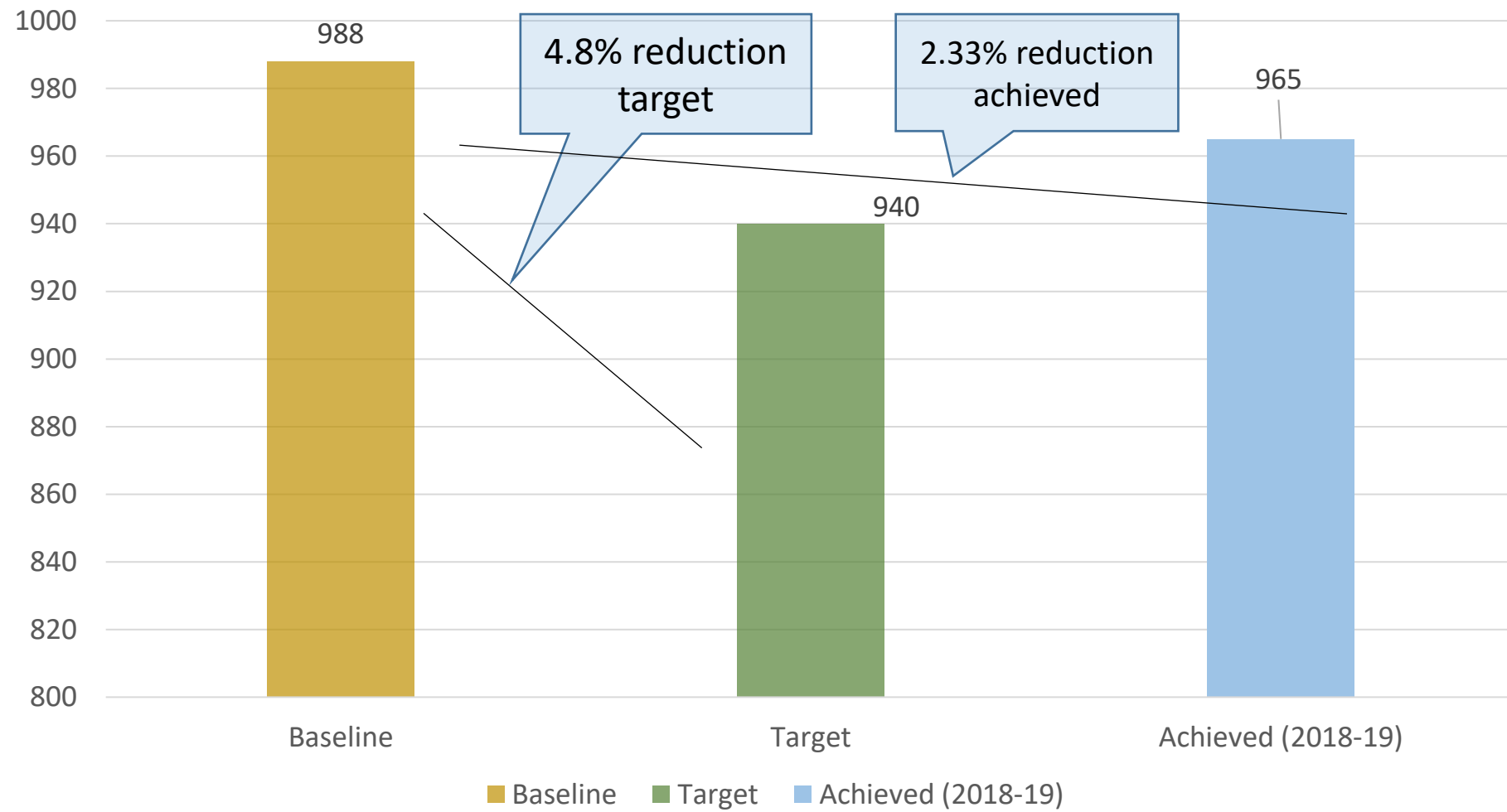


- We got 38987 certificates for over-achieved of the target.
- We sold 20000 certificates during the trading in 2017
- Banked 18987 certificates for next PAT Cycle to comply or sell
- These 18987 certificates would be expired as soon as the trading of PAT Cycle II completed.



PERFORMANCE IN PAT CYCLE II

SEC in Kcal/Kg of Eq Cement (OPC)



- Though we reduced it from 988 to 965 Kcal/Kg against the target of 940 Kcal/Kg of Eq. product, remained underachieved
- Banked 18987 certificates in PAT Cycle I is used for compliance in shortfall of -12624.



TARGET IN PAT CYCLE VII & PLAN TO ACHIEVE

JKLC SIROHI	BASE LINE (OPC) Kcal/ Kg of Eq Product	Reduction Target in %	Target (Kcal/Kg of Eq Product)
CMT0031RJ	912	3.399%	881

Step 1

Increment or Renewable Energy Generation

- Newly installed 4.16 MW Solar PP and 10.4 MW WHRS with 3 MW effective increase will boost our Renewable Energy Generation
- Another 7 MW solar is under commissioning

Step 2

Increment in uses of AFR & Biomass

- Plan is taken to increase the liquid and solid AFR & Biomass uses in Kiln from 6% TSR to 12% TSR within next two years and proposal is also submitted for approval, reduction target in SEC 50Kcal/Kg w.r.t. 2018-19

Step3

Energy Audit & Energy Conservation

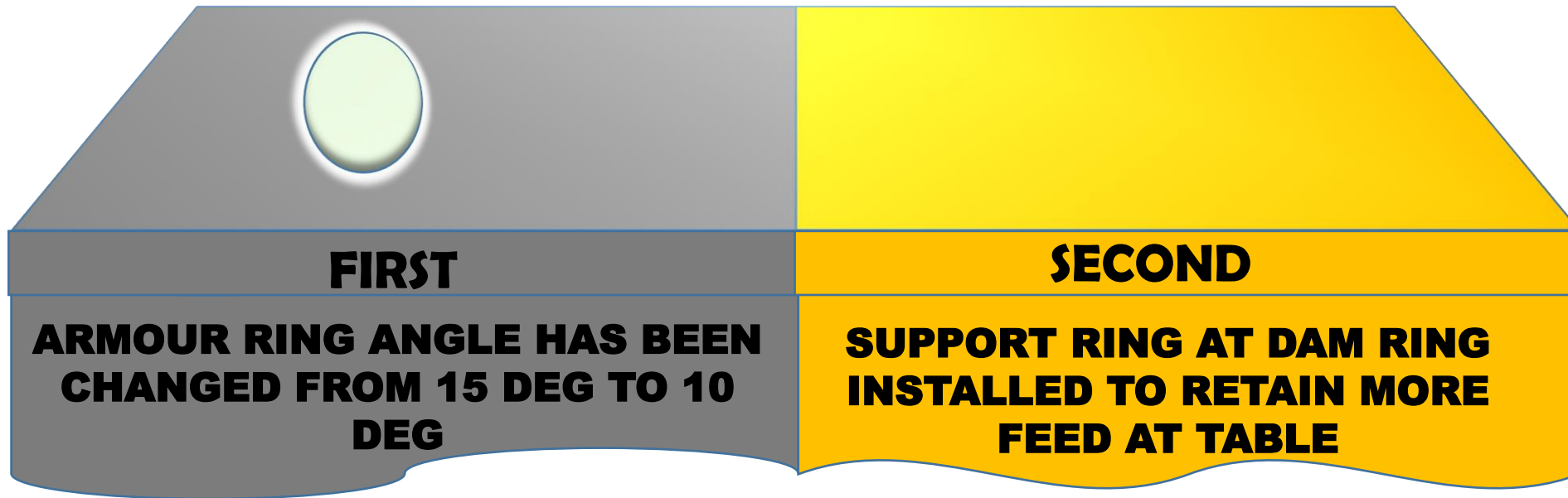
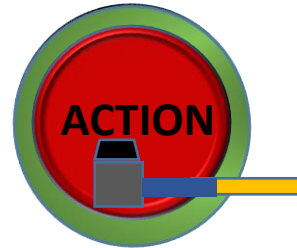
- Mandatory Energy audit is completed, recommendation awaited.
- Another third-party audit is also planned in next year.
- Our own initiatives and findings are very important & continued.

INNOVATIVE PROJECT

OPTIMISATION OF PHASE 01 VRM

BACKGROUND

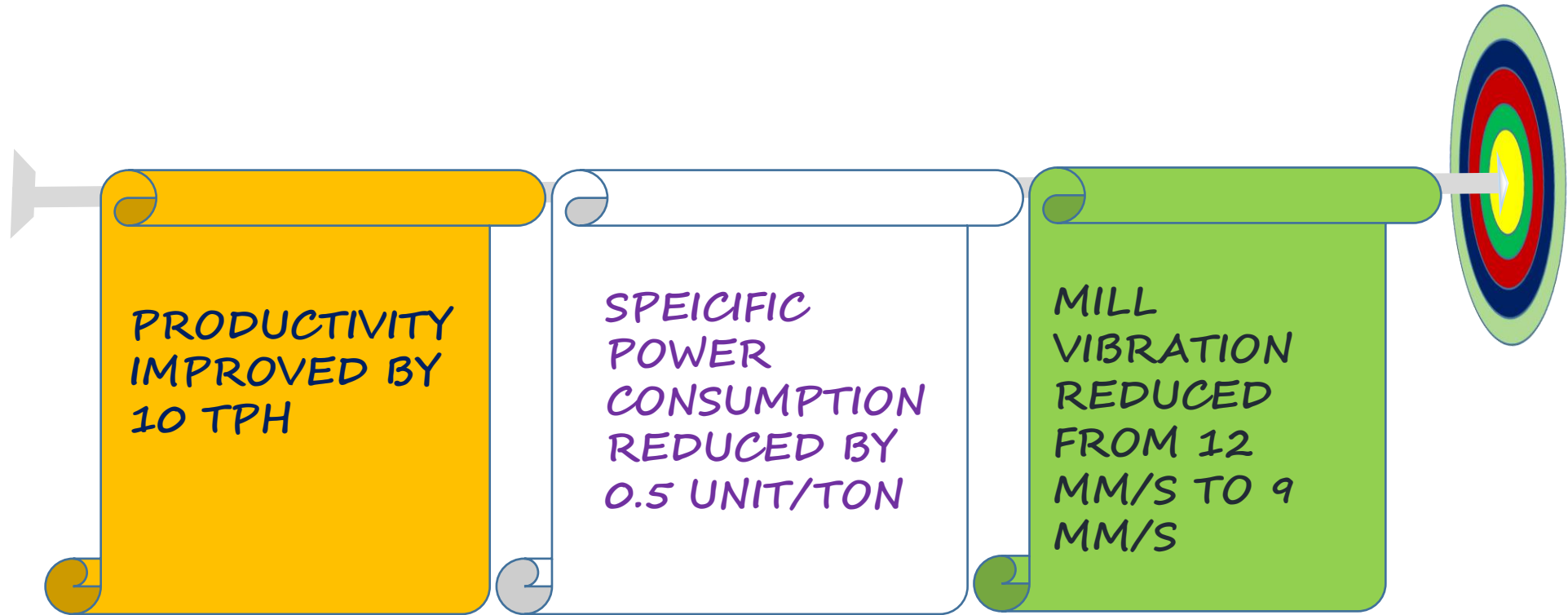
- **HIGHER PRESSURE DROP ACROSS MILL**
- **MILL REJECT ALSO HIGH**
- **MILL VIBRATION ON HIGHER SIDE**



BEFORE



AFTER





UTILIZATION OF RENEWABLE ENERGY

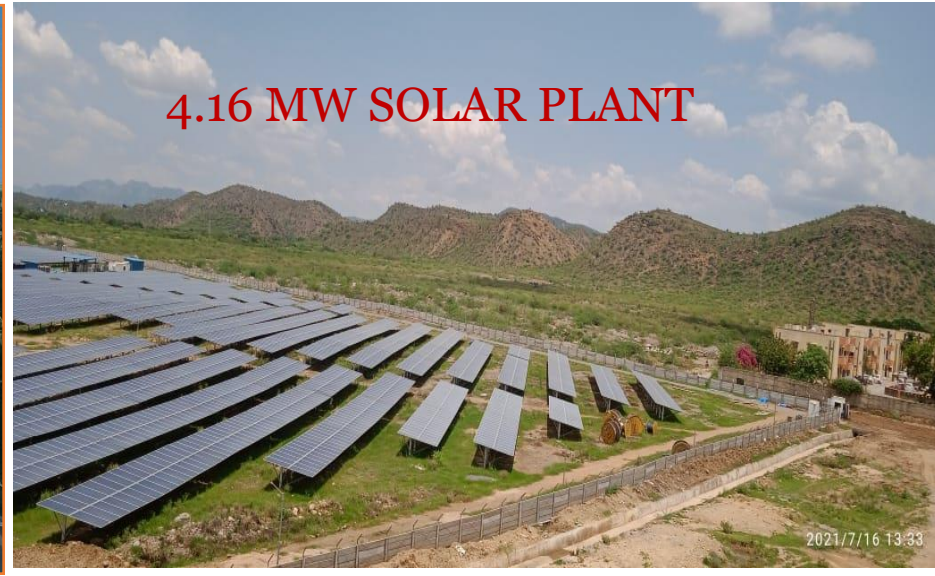
Year	Technology (Electrical)	Type of Energy	Onsite/Offsite	Installed Capacity (MW)	Generation (million kWh)	% of overall electrical energy
2021-22	WHRS	Green Power	On site	25.4	106.16	27.46
2020-21	WHRS	Green Power	On site	15	82.92	22.61
2019-20	WHRS	Green Power	On site	15	89.46	25.94
2021-22	Solar PV (Bldg Integrated)	Green Power	On site	0.27	0.252	For colony
2020-21	Solar PV (Bldg Integrated)	Green Power	On site	0.27	0.301	For colony
2019-20	Solar PV (Bldg Integrated)	Green Power	On site	0.27	0.294	For colony
2021-22	Solar PV for Plant	Green Power	On Site	4.16	8.422	2.18
2020-21	Solar PV for Plant	Green Power	On Site	4.16	5.4062	1.49

Year	Technology (Thermal)	Type of Energy	Installed Capacity	Usage (million kCal)	% of overall thermal energy
2021-22	Bio Mass	Green Energy	25 TPH	50502.46	1.4
2020-21	Bio Mass	Green Energy	25 TPH	7526.3	0.24
2019-20	Bio Mass	Green Energy	25 TPH	15011.09	0.46

RENEWABLE ENERGY AT JKLC



SOLAR MODULE IN COLONY



4.16 MW SOLAR PLANT



10.4 MW WHRS IN LINE3



7 MW SOLAR UNDER ERECTION

**CAPACITY : 268 kW
CO2 Saved= 962 Tons**

**Installed
4.16MW solar
PV
Upcoming
7MW solar PV**

**New 10.4 MW WHR
is Installed**



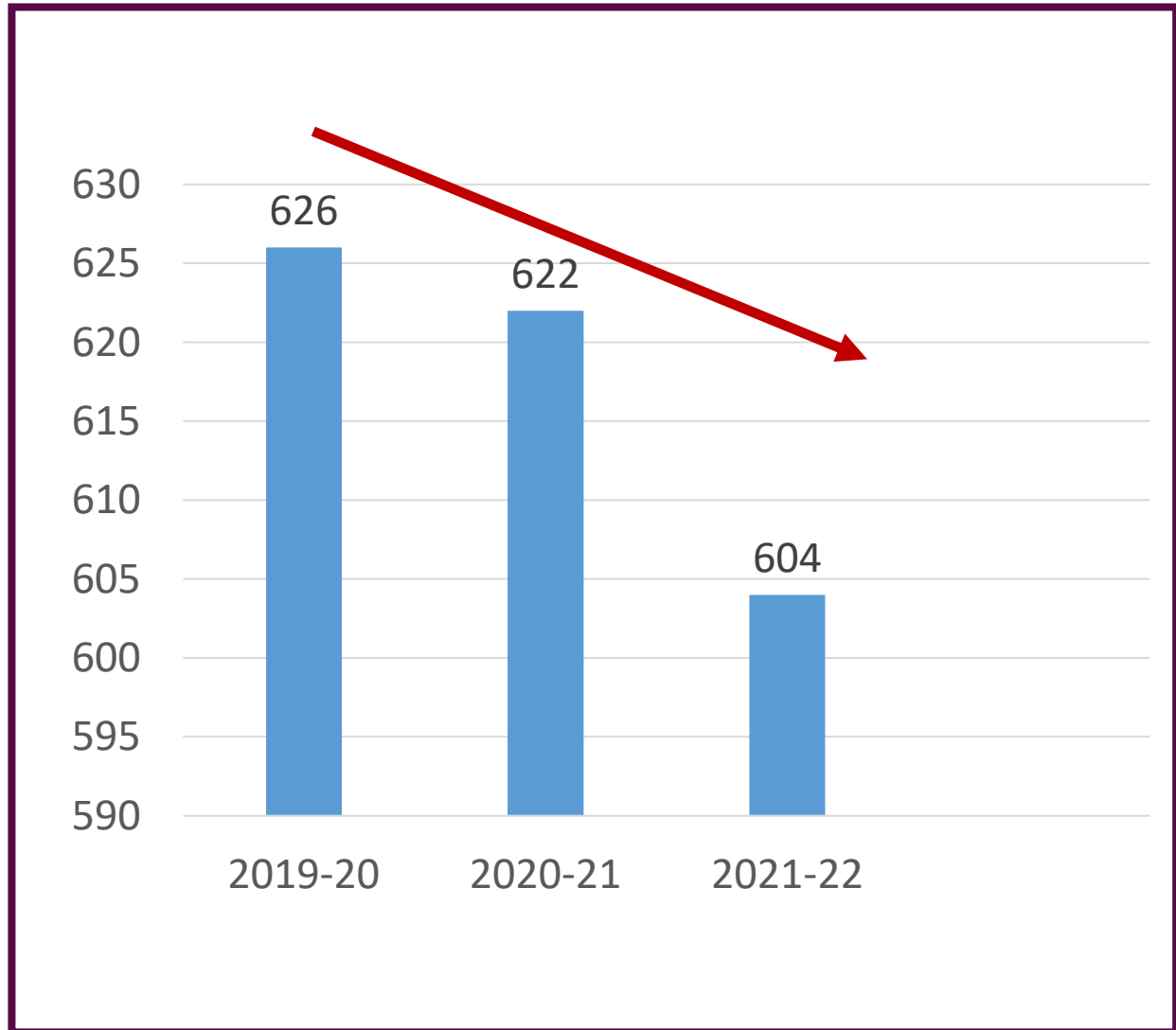
WASTE UTILIZATION AND MANAGEMENT

Sl No	Year	Waste Details	Quantity (in MT)	GCV	Heat value (Mkcal)	Waste as percentage of total fuel on Energy
1	2021-22	BIOMASS	14790	3414.41	50493	1.4%
2	2021-22	SOLID AFR	61796	1561.434	96462	2.7%
3	2021-22	LIQUID AFR	16336	434.15	7090	0.2%

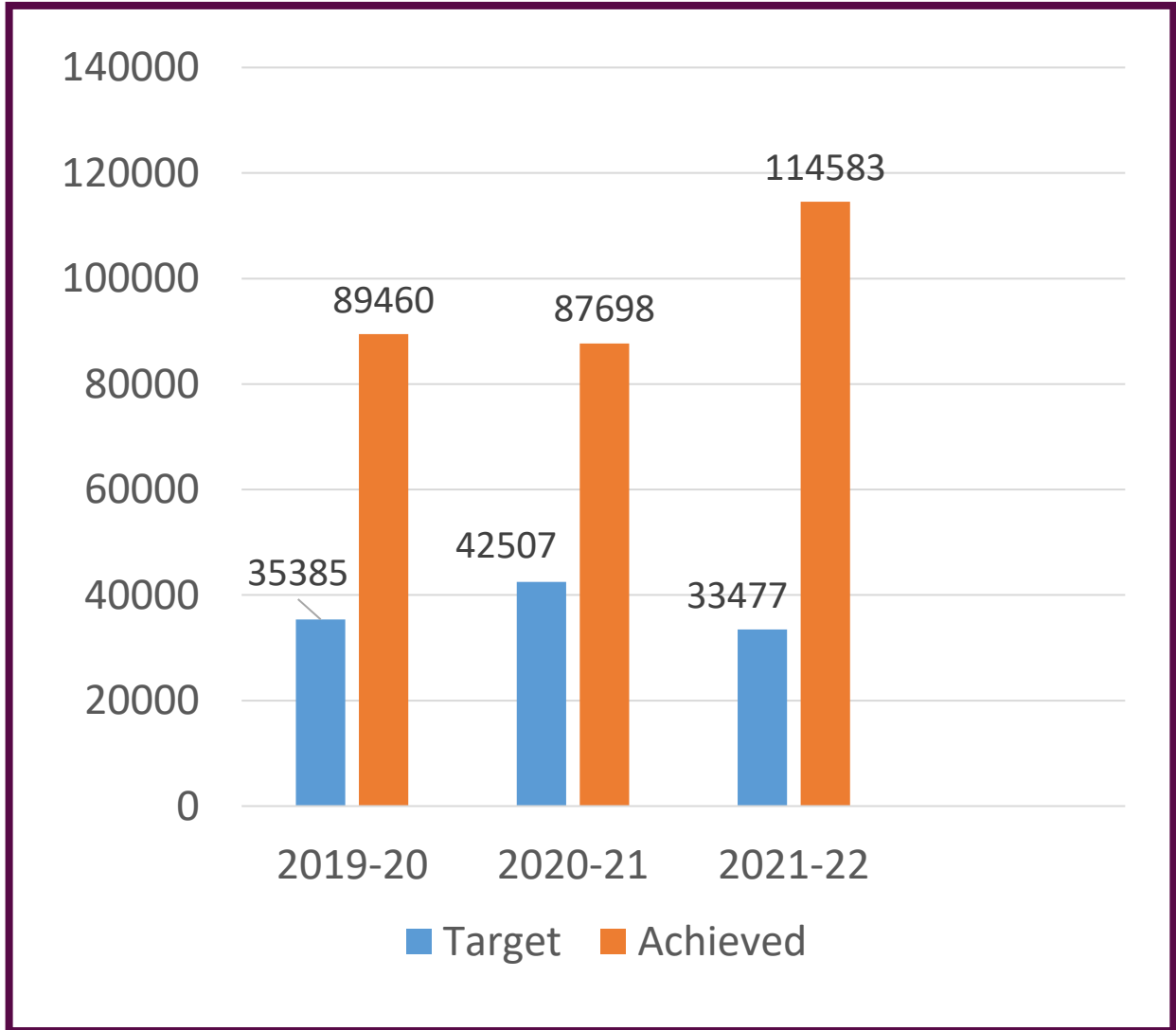
Sl No	Year	Waste Details	Quantity (in MT)
1	2021-22	CALCITE	2754
2	2021-22	POSPHATE SLUDGE	11.23
3	2021-22	MARBLE KHANDA	55360



ACHIEVEMENT IN GHG INVENTORISATION



RPO - TARGET v/s ACHIEVED

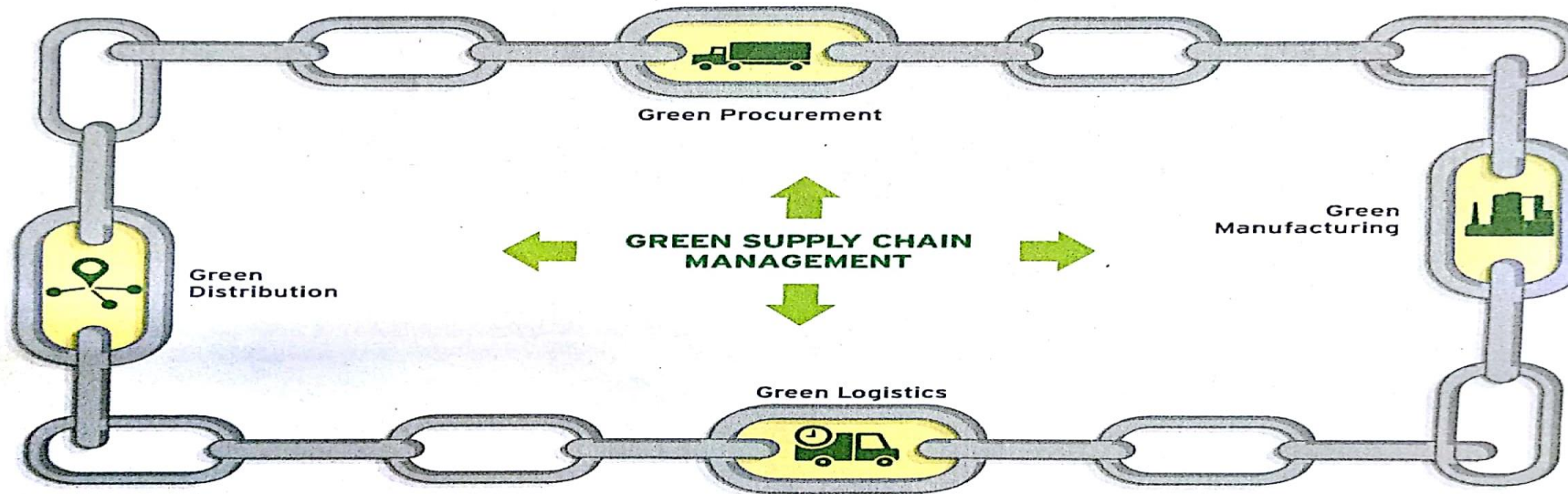




GREEN SUPPLY CHAIN POLICY

The supply chain of a company has a major environmental impact right from procurement of raw materials to transportation and distribution of products. In order to incorporate elements of sustainability in its supply chain, JK Lakshmi Cement Ltd. has adopted the management approach of Green Supply Chain Management (GSCM), which consists of diverse aspects such as Green

Procurement, Green Manufacturing, Green Distribution, and Green Logistics. Green Procurement is an upstream segment of the GSCM which aims to minimise environmental impact throughout the lifecycle of our products by implementing green strategies in our procurement process.



Green Supply Chain Management at JK Lakshmi Cement Ltd.

At JK Lakshmi Cement Ltd. we have established Green Procurement Guidelines, which consist of a comprehensive set of assessment criteria and recommendations for selection of suppliers. These guidelines help us in collaborating with suppliers who illustrate ideal practices such as optimal use of raw materials, minimisation of carbon footprint, energy and resource efficiency, preservation of ecosystems, material recycling, and initiatives towards enhancing economic and social sustainability.

In order to establish long-term relationships with suppliers committed towards sustainable development, JK Lakshmi Cement Ltd. evaluates their policies / processes on the following parameters at their manufacturing locations:

- Environmental Sustainability
- Social Sustainability

<https://www.jklakshmicementsrm.com/SRM/>



GREEN DISTRIBUTION, GREEN LOGISTIC & GREEN PROCUREMENT

Utilizing same Truck to dispatch packed cement in same route which is coming with additives at plant site

Utilization of same Bulker to dispatch loose cement in the same route which is coming with Dry Fly Ash.

Procuring only Energy Efficient Motors (IE3) and LED Lights

Utilizing the various hazardous and non- hazardous waste of various industry as alternative fuels.



ENERGY MONITORING SOFTWARE & REPORTS

CEMENT MILL-6 EMS REPORT 8/9/2012 2:34:27 PM

CEMENT MILL PRODUCTION : 290 TONS (OD) 27015 TONS (MTD)
 RUNNING HOURS : NaN HRS (OD) NaN HRS (MTD)

S. NO	EQUIPMENT	TAG	POWER CONSUMPTION			SPECIFIC POWER	
			TODAY	OD	MTD	OD	MTD
1	MILL MAIN MOTOR	JH4E	30488	10381	194398	38.48	35.81
2	RECIRCULATION FAN	JH1E	5437	1343	104138	2.88	2.89
3	TRANSFORMER	JH7M	2597	824	58187	2.34	2.19
TOTAL							

30-Aug-12 10:59:26 Controllers FTEB, CMIN, OFFNET U 15 CSn02 Connection TIMEOUT

24-hrs parameters for the month of AUG-2010 (KILN NO -1)

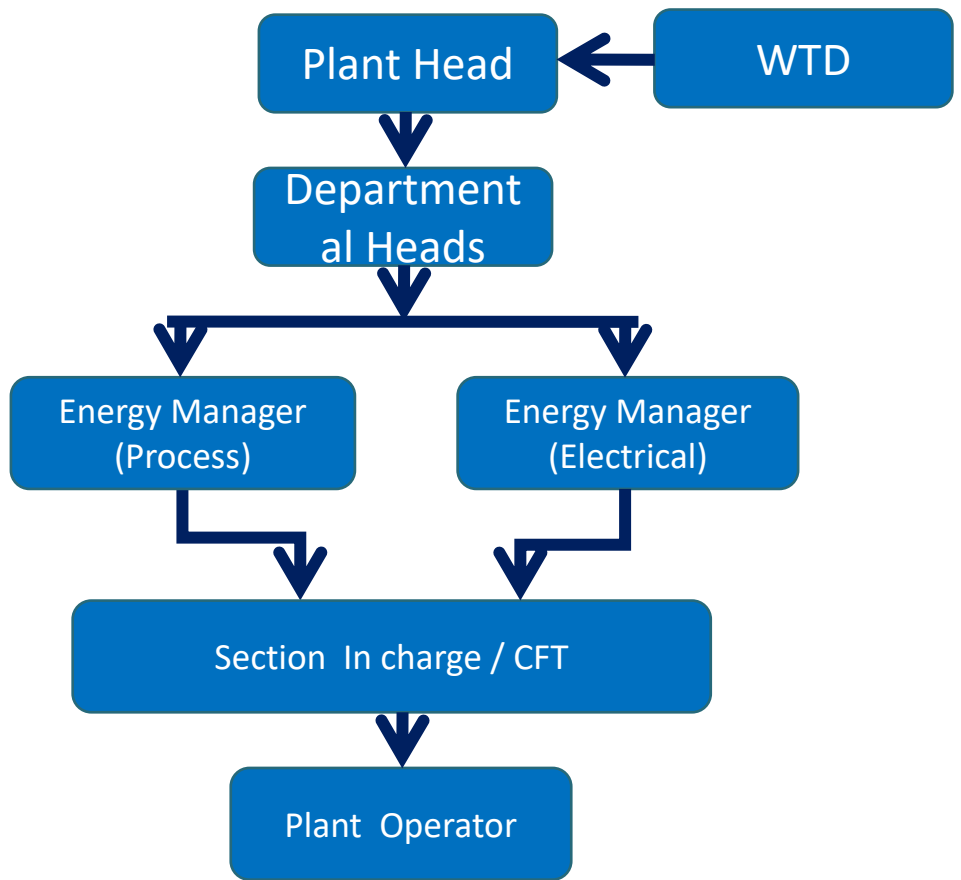
No.	Parameters	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun	Avg	
1	kiln feed																																
2	B.E.KW																																
3	pan con kw																																
4	kiln coal																																
5	pc coal																																
6	PH FAN RPM																																
7	PH FAN KW																																
8	water spray																																
9	TOP TEMP																																
10	Cy-6 gas temp																																
11	Cooler o/L T																																
12	clinker temp																																
13	kiln amp																																
14	B.Z temp																																
15	PH fan o/l o2																																
16	NCV																																
17	Coal con																																
18	Heat con																																
19	Available hrs																																
20	Running hrs																																
21	Run factor																																
22	production																																
23	Rate																																
24	PH fan KW																																
25	CV Fan KW																																
26	K/F&SilokW																																
27	cooler fan																																
28	L.T drives																																
29	Total																																
30	Power																																

WEEKLY POWER LOSS ANALYSIS (FROM TO)

S. NO.	SECTION	TARGACTU ET AL	POWER LOSSES						REMARKS
			1	2	3	4	5	6	
		UNITS PER TON. (MATERIAL)	LOSS IN SPECIFIC POWER CONSUMPTION DUE TO :-						TOT TOTA AL L
		DEPTT.	STOPPAGES	IDLE RUNNING	HIGH KW.	LOW TPH	LOSS U/To n	LOSS U/To n	Rs./=
		FREQ.	STOP.DETA ILS	EQUIPMEU/To n	cm.	cm.	cm.	cm.	
1	CRUSHER								
	PROD.	MECH.							
	AVR.PROD/DAY	ELECT.							
	AVR. R.HRS/DAY	INSTM N.							
	TPH	PROC ESS.							
	CR. < DR.KW	OTHER S.							
	STACKER KW	POW. INTR.							
	TOTAL KW UNITS/TON	TOTAL							
2	VRM-1								
	PROD.	MECH.							
	AVR.PROD/DAY	ELECT.							
	AVR. R.HRS/DAY	INSTM N.							
	TPH	PROC ESS.							
	AVR.B.H. D.P.	OTHER S.							
	AVR.BHF.RP M	POW. INTR.							
	AVR.RMF.RP M	MINES							
	RM DRV KW	TOTAL							
	RM FAN KW								
	BH FAN KW								
	RECLAIMER KW								
	L.T. DRIVE KW	RESIDUE AT 90 MIC. =							
	TOTAL KW UNITS/TON	RESIDUE AT 212 MIC. =							

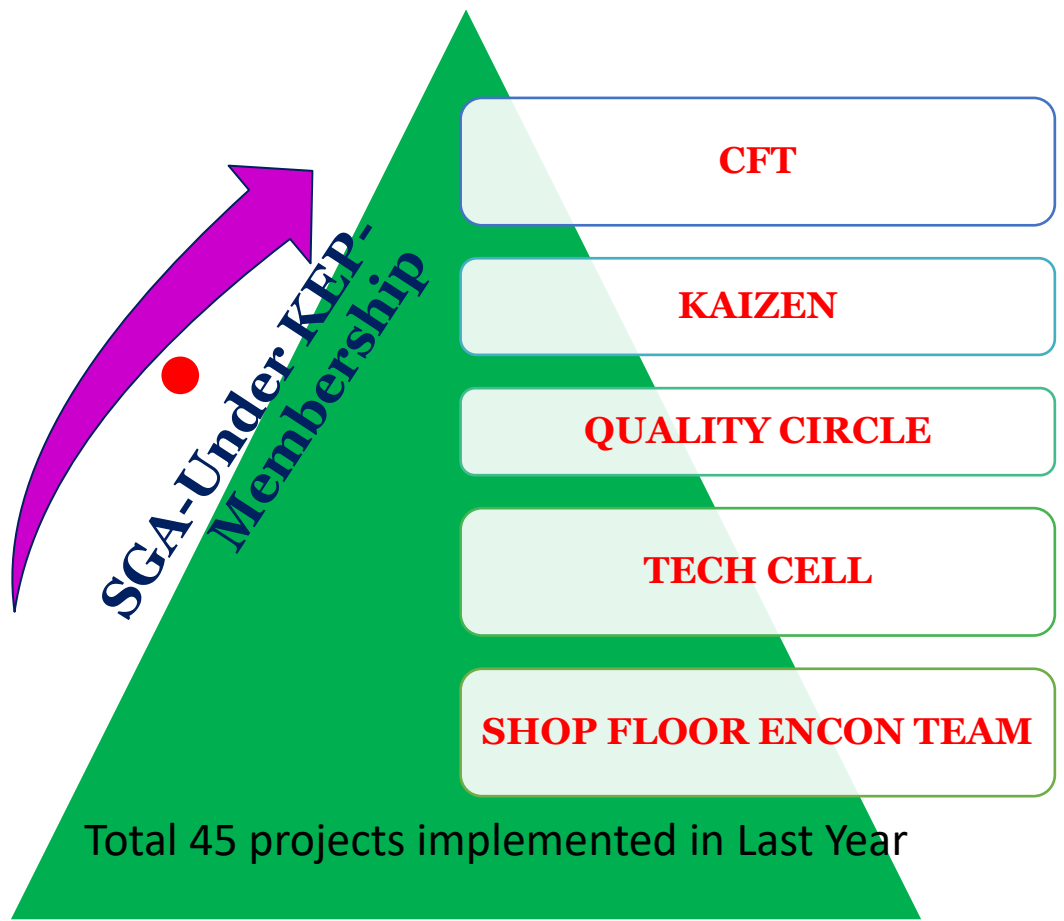


ENERGY MANAGEMENT TEAM



Energy Review Meeting Chaired By Unit Head

EMPLOYEE ENGAGEMENT ACTIVITIES AT JKLC



IMPLEMENTATION OF ISO 50001

QENHSE POLICY

JK Lakshmi Cement Limited, Jaykaypuram, is a leading manufacturer of clinker and cement. We operate our plant with zero water alternative fuel, and are committed to meet the requirements. We shall work with our customers to enhance their satisfaction with our services.

We are committed to

- Protection of environment (including prevention of pollution);
- Provide safe and healthy working conditions for prevention of injury and ill health;
- Eliminate hazards and reduce OH&S risks;
- Consultation and participation of workers;
- Energy efficient operations; and
- Fulfil compliance obligations

We shall achieve this by

- ✓ Adopting latest management system standards;
- ✓ Operating our mines and plant in safe and efficient manner;
- ✓ Optimum utilization of resources including energy and water in sustainable manner;
- ✓ Waste reduction at all level, utilizing waste and promotion of reuse and recycle;
- ✓ Conserve natural resources by utilizing alternative fuel and alternative raw material;
- ✓ Adopting and implementing technological improvements for process improvements and development;
- ✓ Ensuring availability of information and necessary resources;
- ✓ Promotion of greenery at our mines, plant and surroundings;
- ✓ Implementation of risk control measures;
- ✓ Identifying significant energy consuming processes, equipment, facilities & systems and implementing actions to reduce energy consumption;
- ✓ Emphasizing on procurement of energy efficient products and services that impact energy performance and design for energy performance improvement;
- ✓ Creating an atmosphere of openness and awareness by training and educating personnel at workplace;
- ✓ Effective relationship management with external providers, customers and other relevant interested parties; and
- ✓ Supplier development and up-gradation

Keeping in view of our organizational values and best management practices, we shall integrate management system requirements in all our business processes and continually improve our management system to achieve improved Quality, Environment, Health & Safety and Energy performance.

01 May 2021
Jaykaypuram

Dr. Sunil Kumar Saxena
Plant Head



VEXIL BUSINESS PROCESS SERVICES



Certificate

This Certificate is issued to

JK Lakshmi Cement Ltd.
Jaykaypuram 307 019
Dist. Sirohi
Rajasthan
INDIA

who have implemented an Energy Management System, which meets the requirements laid down in ISO 50001:2018, with the following scope:

Manufacture of Clinker, Ordinary Portland Cement (OPC) of Grade nos. 43 & 53 and Portland Pozzolana Cement (PPC)

Certificate No. : En9121018
Original Issue : 30 October 2014
Latest Issue : 27 October 2020
Valid Till : 28 October 2023



For Vexil Business Process Services Private Limited
60 F, Karna Nagar, Delhi 110 037



ISO 50001:2018

To check the validity of the certificate, please email to info@vexilps.com
The validity of the certificate can also be verified at info@vexilps.com
Coloured reproduction of this certificate is not permitted
Upon request, the Certificate shall be returned to Vexil Business Process Services Private Limited



GREEN MANUFACTURING: CII GREEN PRO CERTIFICATION





GREEN MANUFACTURING: CII GREEN PRO CERTIFICATION




Confederation of Indian Industry

CII-Green Products and Services Council
hereby certifies that

Composite Cement (COC)
(GPJK03009)

Manufactured by JK Lakshmi Cement Limited at their integrated plants in Sirohi - Rajasthan, Durg - Chattisgarh and grinding units in Jhajjar - Haryana, Kalol & Surat - Gujarat meets the requirements of GreenPro Ecolabelling and qualifies as Green Product.

This certification is valid till **December 2023**

Jamshyd N Godrej
Jamshyd N Godrej
Chairman, CII-Godrej GBC

ParasuRaman R
ParasuRaman R
Chairman, CII-Green Products & Services Council

K S Venkatagiri
K S Venkatagiri
Executive Director, CII-Godrej GBC

Supporting Council and programmes





Confederation of Indian Industry

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hereby certifies that

PHDP (Portland Pozolana Cement)
(GPJK03006)

Manufactured by JK Lakshmi Cement Limited at their integrated plants in Sirohi - Rajasthan, Durg - Chattisgarh and grinding units in Jhajjar - Haryana, Kalol & Surat - Gujarat meets the requirements of GreenPro Ecolabelling and qualifies as Green Product.

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Confederation of Indian Industry

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hereby certifies that

Portland Pozzolana Cement (PPC)
(GPJK03002)

Manufactured by JK Lakshmi Cement Limited at their integrated plants in Sirohi - Rajasthan, Durg - Chattisgarh and grinding units in Jhajjar - Haryana, Kalol & Surat - Gujarat meets the requirements of GreenPro Ecolabelling and qualifies as Green Product.

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Confederation of Indian Industry

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Platinum (Portland Pozzolana Cement)
(GPJK03007)

Manufactured by JK Lakshmi Cement Limited at their integrated plants in Sirohi - Rajasthan, Durg - Chattisgarh and grinding units in Jhajjar - Haryana, Kalol & Surat - Gujarat meets the requirements of GreenPro Ecolabelling and qualifies as Green Product.

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GREEN MANUFACTURING: CII GREEN PRO CERTIFICATION




Confederation of Indian Industry

CII-Green Products and Services Council
hereby certifies that

Sixer (Portland Pozzolana Cement)
(GPIK03004)

Manufactured by JK Lakshmi Cement Limited at their integrated plants in Sirohi - Rajasthan, Durg - Chattisgarh and grinding units in Jhajjar - Haryana, Kalol & Surat - Gujarat meets the requirements of GreenPro Ecolabelling and qualifies as Green Product.

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Supporting Council and programmes





Confederation of Indian Industry

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PRO + (Portland Pozzolana Cement)
(GPIK03003)

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Supporting Council and programmes





Confederation of Indian Industry

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HDP (Portland Pozzolana Cement)
(GPIK03005)

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K S Venkatagiri
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Executive Director, CII-Godrej GBC

Supporting Council and programmes





Confederation of Indian Industry

CII-Green Products and Services Council
hereby certifies that

Portland Slag Cement (PSC)
(GPIK03008)

Manufactured by JK Lakshmi Cement Limited at their integrated plants in Sirohi - Rajasthan, Durg - Chattisgarh and grinding units in Jhajjar - Haryana, Kalol & Surat - Gujarat meets the requirements of GreenPro Ecolabelling and qualifies as Green Product.

This certification is valid till **December 2023**

Jamshyd N Godrej
Jamshyd N Godrej
Chairman, CII-Godrej GBC

ParasuRaman R
ParasuRaman R
Chairman, CII-Green Products & Services Council

K S Venkatagiri
K S Venkatagiri
Executive Director, CII-Godrej GBC

Supporting Council and programmes





IMPLEMENTATION OF INTEGRATED QENHSE

QEnHSE External Audit Report

(There were no non-conformities/observations during QEnHSE Audit)

S. No.	Observations	Status
1	History of mechanical breakdowns to be maintained at the department.	Completed
2	To ensure active involvement in emergency preparedness, sectional safety committee meeting may also include discussion on ERP Drills, Fire Drills, Fire trainings & any other activities conducted in the section so that to improve awareness of all.	Completed
3	Encourage reporting first aid cases inside the plant.	Completed
4	Internal audit report may have identified format no.	Completed
5	Consider to include clause for return of near expiry medicines to the supplier in the Purchase Order.	Completed
6	Involvement of health officer in risk evaluation criteria for HIRA & Significant environmental aspect, may be considered.	Completed
7	Mining operation is outsourced. LOA to be maintained at the department.	Completed
8	Apply reasonable controls to restrict assembly of unwanted workers or waiting trucks in the loading area.	Completed
9	Consider health checkup of lorry drivers (vision & color blindness) for those transporters, who have regular contract with us and have permanent drivers.	Completed
10	Bi Mass operations may be considered for assessment of environmental aspects and HIRA risks.	Completed
11	Copy of legal compliance related to the department, may be maintained.	Completed



LEARNING FROM CII ENERGY AWARD PROGRAMME

- Insulating paint over high temperature area to reduce radiation losses implemented in Kiln3
- Installation of Active Harmonic Filter for Power factor improvement (installed)
- Use of Thermodynamic Steam Trap in our WHRS Steam line (applied)



REWARDS AND RECOGNITION



State Safety Award-2021



Water Optimization Award 2020



CII National Award for Energy Excellence 2021



State Safety Award-2018