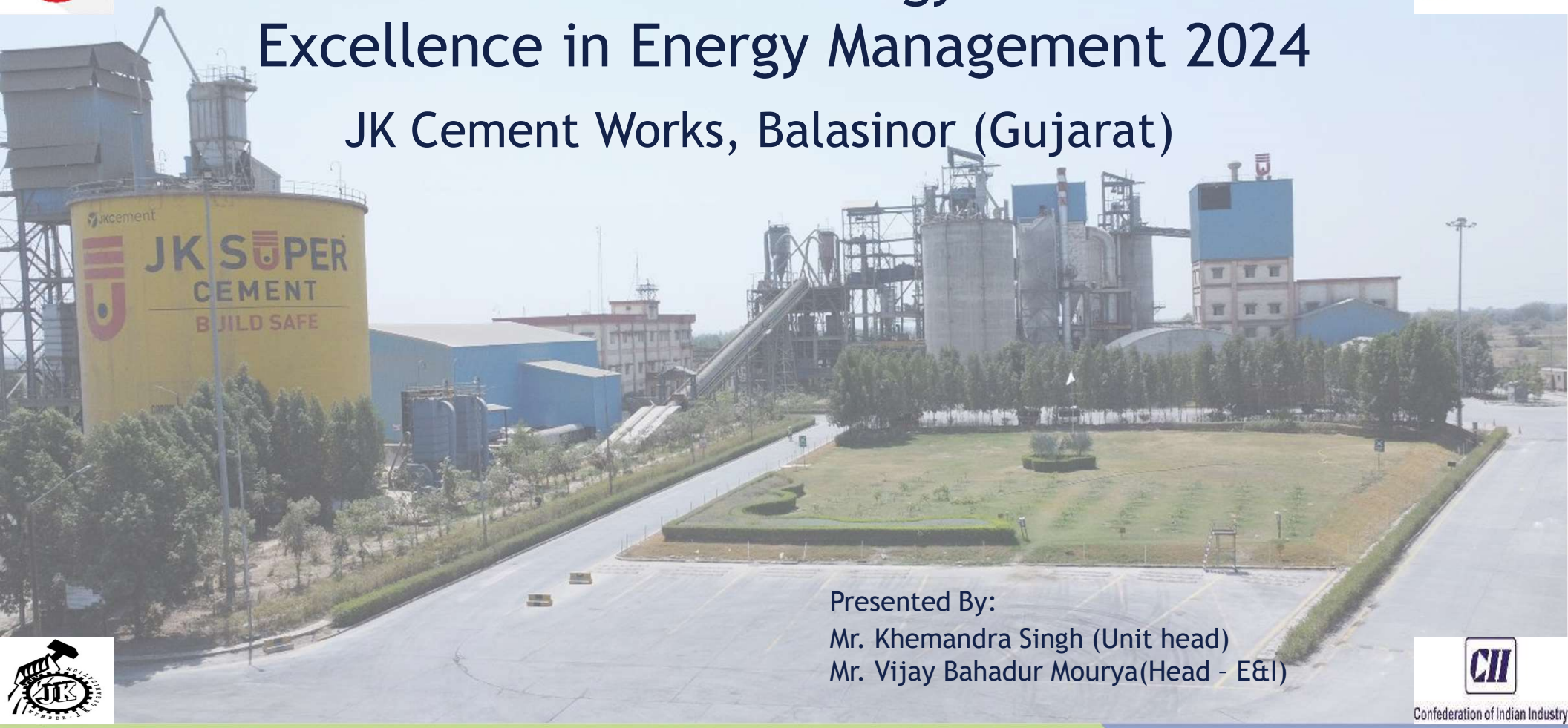
25th CII National Energy Award for Excellence in Energy Management 2024

JK Cement Works, Balasinor (Gujarat)



Presented By:
Mr. Khemandra Singh (Unit head)
Mr. Vijay Bahadur Mourya(Head – E&I)

Confederation of Indian Industry

Company profile

JK Cement Limited -manufacturing units in India

JK organization

JK cement

Balasinor unit

Group Established

- JK Cement's operations commenced with commercial production at its flagship grey cement unit at Nimbahera, Rajasthan in May 1975.

Group Cement capacity

- Grey Cement 24.34 MTPA
  (Includes 0.64 MTPA in Subsidiary)
- White Cement & Wall Putty 1.20 MTPA
  (Includes 0.60 MTPA in Subsidiary)

JK Cement Works, Balasinor

- Capacity 0.70M TPA
- Commencement Oct-2020
- Production FY'24 0.67 MTPA
- Contribution of PPC 100 %

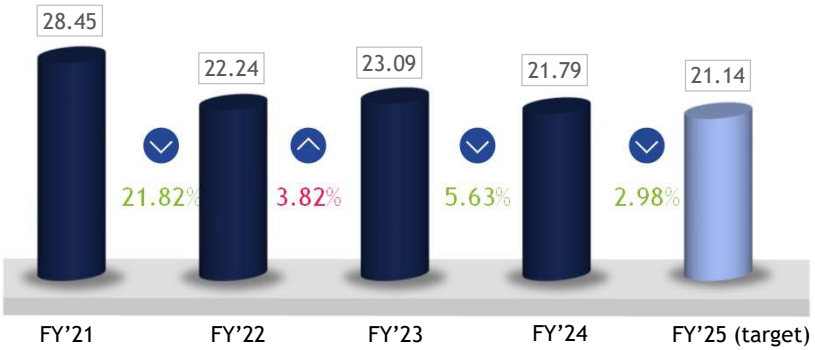
Overview of JK Cement Ltd. Balasinor

	Material Unloading (BRU)	Vertical Roller Mill	Packing Plant
Make	Schenck Process	FLSmidth	Beumer
Model No	HTU-MARK-IIIC	OK 40-4	Fillpac RV 16
Capacity	250 Tons	100 TPH	240 TPH

Energy consumption

Energy break-up

Grinding Power (KWh/MT)



Remarks

S. No	Description
1	Mill operation optimized and throughput increased by 2.06%.
2	Idle running of the equipment optimization
3	New RM shed installed, reduces the moisture in feed.

Packing Power (KWh/MT)

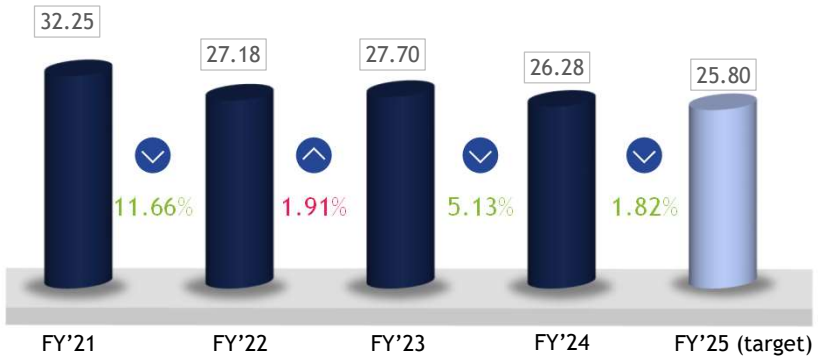
Remarks

S. No	Description
1	Packer throughput increased by 1.90%
2	Maximization use of steel silo circuit (Less power required per cement

Energy consumption

Energy break-up

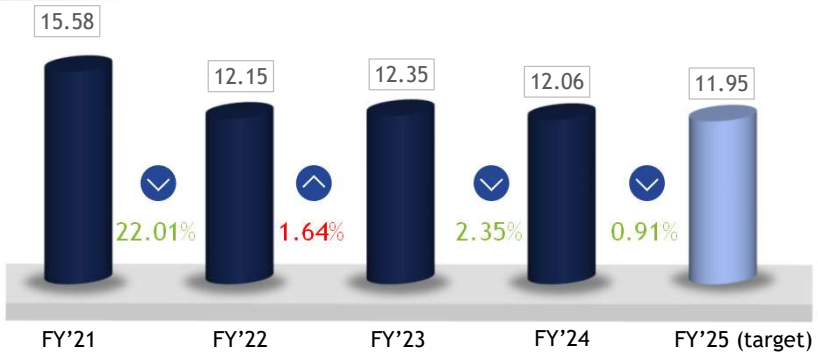
Total Plant Power (KWh/MT)



Remarks

S. No	Description
1	Plant lighting & AC operation optimize by IR sensor and smart AC controller.
2	Compressed air optimized by arresting the leakages.

Total Thermal Energy (Kcal/Kg)



Remarks

S. No	Description
1	HAG operation optimization & heat loss prevention
2	New RM shed installed, reduces the moisture in feed.

Competitors & National Benchmark

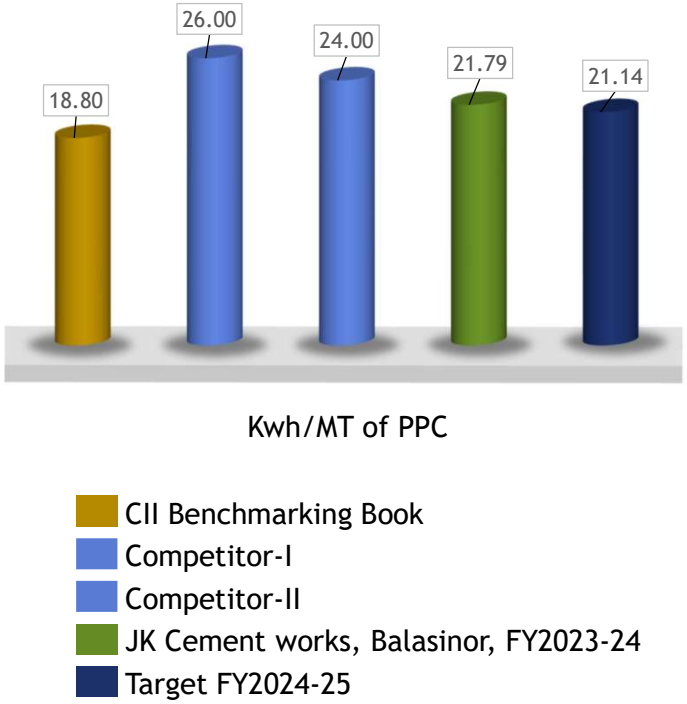
Details of external benchmarking

Name of Competitors	Kwh/MT of PPC
Competitor-I	26.00
Competitor-II	24.00
CII Benchmarking Book (source: CII)	18.80
JK Cement, Balasinor FY'2023-24	21.79
Target FY'25	21.14

Action plan to achieve energy target's FY'25

S.No.	Planning
1	Targeting the improved MTBF by reduction in downtime.
2	Further optimization of mill operation.
3	Ensure no feed cut with help high efficiency magnets.
4	Further optimization of air and water losses.
5	High efficient drive to be installed.
6	Plant lighting optimization with LDR and other technology.

Competitors in cluster & National benchmark



List of major EnCon project planned in FY'25

S. No	Title of Project	Annual Saving (M kWh)	Investment (M INR)
1	Solar Panel installation on CCR roof top & Gypsum shade for office lighting (250kWp)	0.3600	9.50
2	Mill operation optimisation	0.3200	2.60
3	High efficient magnetic pulley and permanent magnet to be installed	0.2000	2.20
4	Low pressure compressor for flyash unloading	0.1500	3.00
5	Packer operation optimization	0.0400	Nil
6	Separate compressor to be install for DFA and BRU bag filter purging	0.0400	1.40
7	Main utility pump will be replaced by lower rating pump of 15kW	0.0200	0.09
8	Direct water line to be use for water spray in mill	0.0100	0.01
9	Light Dependent Register (LDR) to be install in High mast tower	0.0020	0.02
10	Street light replacement with Solar Light	0.0003	0.03
11	Self sustaining P&V system.	0.0002	0.01
	Total	1.1500	18.85

List of Energy Saving Projects Implemented

Energy Saving Projects

Year	No. of Energy saving projects	Investments (INR Million)	Electrical savings (Lacs kWh)	Thermal savings (Kg/MT cement)	Savings (INR Million)	Impact on SEC (Electrical kWh/MT cement)
FY' 21	2	0.00	3.56	–	3.10	1.60
FY' 22	23	1.70	20.71	0.30	21.20	3.87
FY' 23	11	1.00	2.66	0.01	13.13	0.45
FY' 24	8	1.87	3.62	–	2.78	0.54

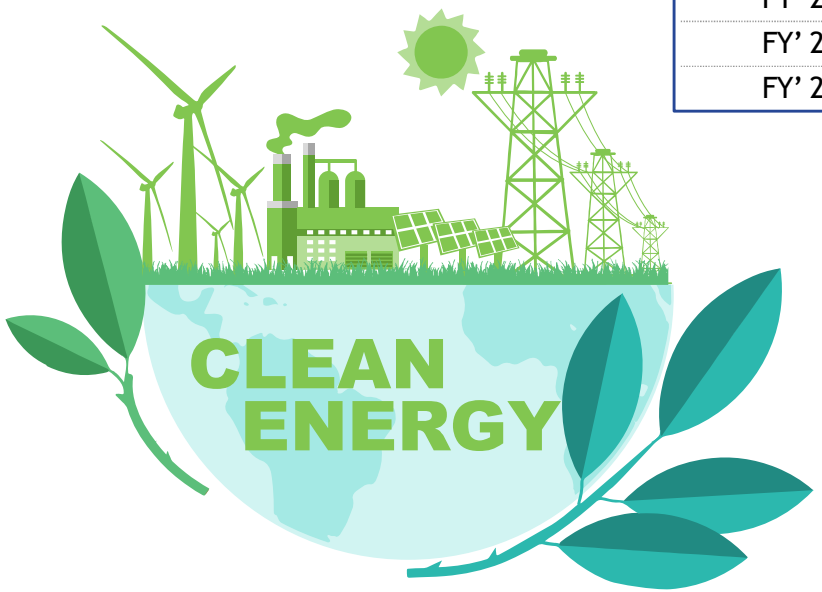
Innovative Project 1-Smart bag counting system installation at truck loading point

Description	Impact	Savings (INR in lacs)	Investment (INR in lacs)
Objective To increase packer throughput by increasing bag counting accuracy Problem Accuracy of previous bag counting system was only 60% on avg. basis and required manual intervention for burst command. Manual bag counting involved due to Auto system inaccuracy and increase bag loading time which decrease the packer throughput. Solution Load cell based smart bag counting system installed in spiral chute and it is most accurate system as its accuracy is ~100%. The Packer throughput increased from 165 to 168 tph.	The packer throughput increased	2.5	1.2

Loadcell mounting arrangement

Smart bag counter panel

Utilization of Renewable Energy Sources



Utilization of Renewable Energy at Balasinor

Year	Energy	Off site	Installed Capacity (MW)	Generation (Million kWh)	% of overall electrical energy
FY' 21	NA	NA	NA	NA	NA
FY' 22	Wind	Off site	1.8	0.784	5.39
FY' 23	Wind	Off site	1.8	2.946	17.76
FY' 24	Wind	Off site	1.8	2.914	16.51

Energy Monitoring System

Energy Data Collection

- EMS
- Total 25 Energy Meters for all section and major drives
- Section wise power capturing from IMCCs

Energy Reports

- Daily Power Report
- Real Time display of equipment's power

Review System

- Daily Variance analysis in power
- Daily Production meeting and Power review
- Monthly Review Meeting with apex management.
- Internal benchmarking, data analysis , M&M, action plan and execution. (PDCA)

Energy Monitoring Cell

Cross Functional team

The energy management cell consists of all technical departments.
The team has included ground-level workmen.
The team is led by an energy manager.

Monitoring of energy and idea exchanges

The team monitor the energy data and discusses energy improvement ideas.
The cost-benefit analysis is performed before the idea implementation

Review mechanism

The energy manager and team review the energy data weekly.
Fortnightly it is reviewed with the Unit head.
Monthly review with apex management.

Implementation of ISO 50001:2018

LRQA

Certificate of Approval

This is to certify that the Management System of:

J. K. Cement Works

Tahsil – Balasinor, Ahmedabad Indore Highway, Village - Vadadala, Balasinor, 388255, Dist – Mahisagar, India

has been approved by LRQA to the following standards:

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 50001:2018

Approval number(s): ISO 9001 – 00032089, ISO 14001 – 00032086, ISO 45001 – 00032087, ISO 50001 – 00032088

The scope of this approval is applicable to:

Manufacture of Pozzolona Portland cements at Balasinor.

Luis Cunha

Area Operations Manager - North Asia & SAMEA

Issued by: LRQA Limited

UKAS

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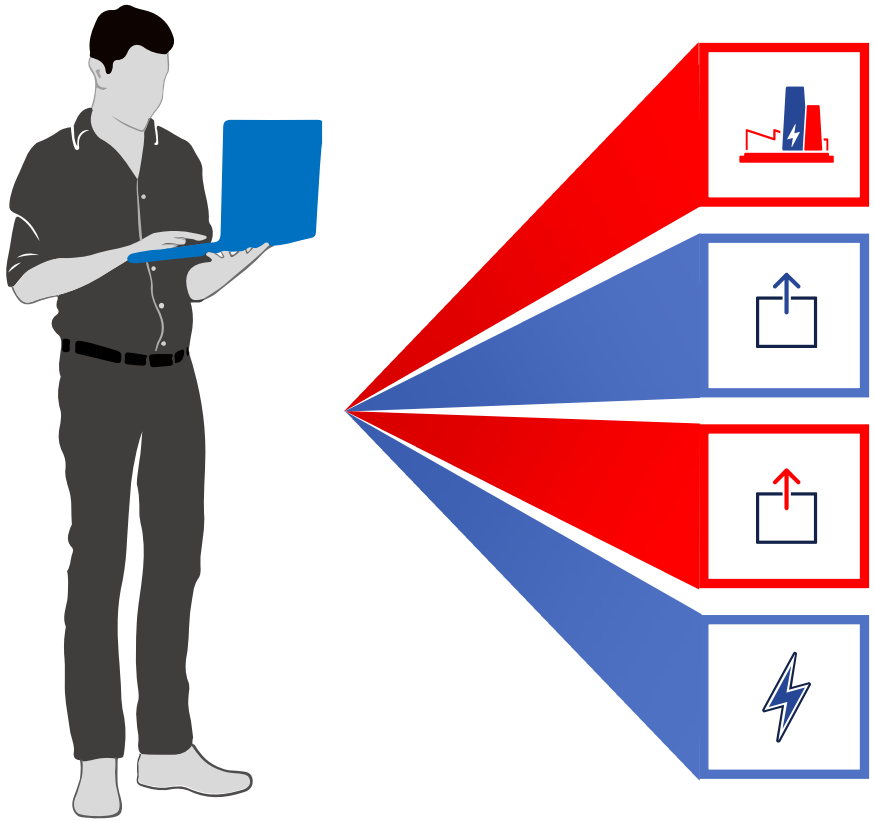
Certified by 50001:2018
Validity: 11 August 2027

ISO 50001 brings an effective process to measure and manage energy use in order to Reduce/manage energy usage and operating costs

Learning from CII Energy Award Programs



Isolating 1 no's distribution transformer

There are two no. of distribution transformer for LT voltage control. After monitoring the load we had isolated one transformer to reduce the idle losses . 1.9 to 2.0 kW per hour saving and calculated based on annually on Load and No load condition.

VFD installation for bag filter fans

VFD drive installed to reduce the fan RPM with fulfillment of process requirement and saves energy.

VFD for compressor

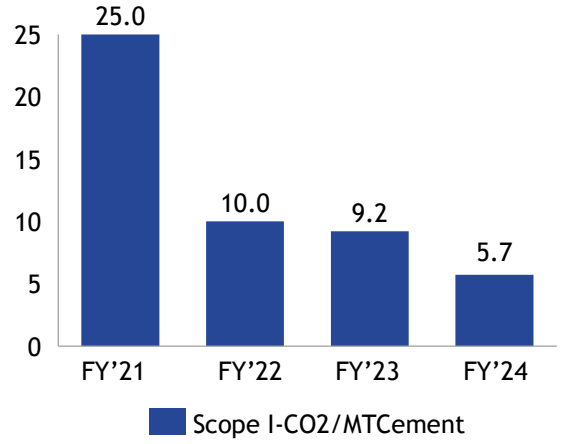
There is an opportunity to reduce compressor power by Installation of VFD to reduce the working load .After installation of VFD in 741CP200, Compressor load reduced by 6.7 kW.

Smart AC controller

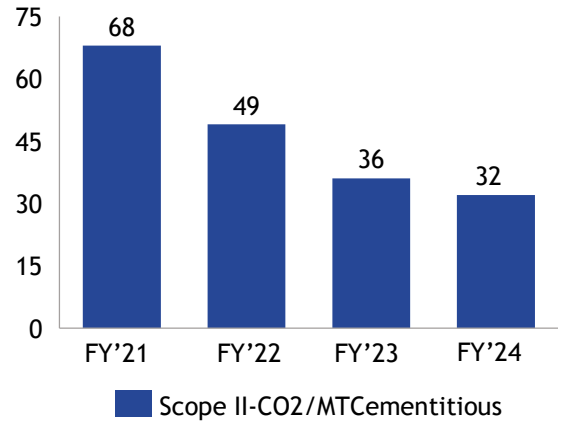
In Office and in CCR Building we have installed IR based sensor to control and optimize the AC operation thus saves energy.

GHG Inventorisation-JK Cement Works, Balasinor

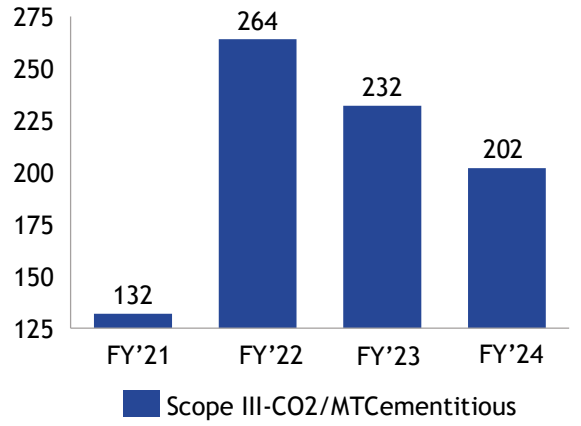
Scope I-CO2/MTCementitious



Scope II-CO2/MTCementitious



Scope III-CO2/MTCementitious



plant commencement in October 2020

CO2 reduction in FY24:

- AFR increased HAG uses increased.

Note:

- Scope III-CO2 emission is calculated by the vehicle movement for the up & down stream and employee local conveyance

GHG Inventorisation-JK Cement Works, Balasinor

Action Plan towards reduction of CO2 emission

Short Term

S.No.	Action plan
1	Maximization of AFR uses targeting for 90%
2	Clinker factor reduction by 0.70%
3	Avoid multiple handling of raw material.
4	Promotional and awareness drives to maximize the use of low CO2 emitting vehicles.
5	Implemented policy which incentives company employees additionally 20% to purchase EV across the organization.
6	Reverse logistics is being used for material transportation

Long term

S.No.	Action plan
1	73% Renewable energy uses
2	Increase green area from existing 35% to 38%.
3	Targeting to reducing the plant power consumption <25.8 kwh/Tcem.

Sustainability Commitments

JKCL is a member of prestigious global organisation, and our climate-related targets are aligned and validated by them.

SBTi

- Reduction of Sp. Gross (Scope 1+2) CO_2 emissions from **680** to **532** **kg CO_2/t** cementitious material *(~21.7% reduction)* **by 2030** from base year 2020 – including Scope-1 & 2.
- Targets approved in 2023
- In FY 25 (Q1), we have reduced Sp. Gross (Scope 1+2) CO_2 emissions to **567** **kg CO_2/t** cementitious material from base year 2020.

GCCA

- Global member of GCCA & joined UNFCC's "**Race to Zero**" initiative (2050), including reducing specific Net Scope-1 carbon emissions by 19.8% from **580** in base year FY20 to **465** **kg CO_2/t** cementitious material by FY30
- In FY25 (Q1). We have reduced specific Net Scope-1 Carbon Emissions to **519** **kgCO_2/t** cementitious material *(~19% reduction)* from base year 2020.

UN Energy Compact

- Increase Green Power Mix from **19%** (**FY2020**) to **75%** (**FY2030**)
- Submitted to Ministry of New & Renewable Energy, Govt. of India.
- In FY25 (Q1), We have increased Green Power to **53%** as compared to base year 2020.

JKCL collaborate with these National organizations for Decarbonisation Strategy:

Cement Manufactures Associations

National Council for Cement and Building Material

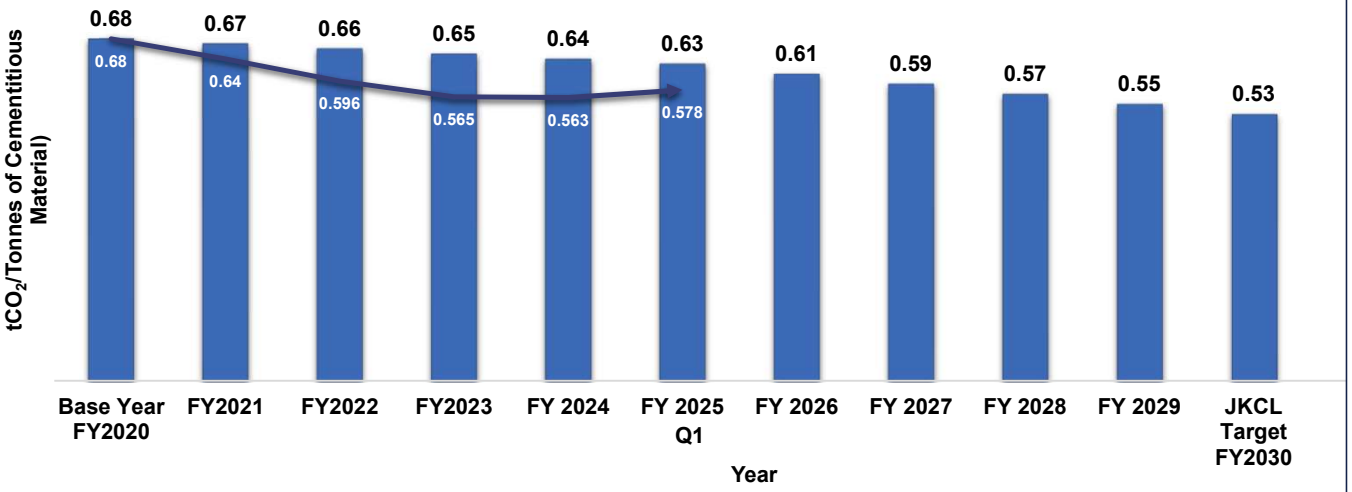
GCCA India,

Confederation of Indian Industry

JKCL Current Targets and Performance

JKCL Target and Performance (Till FY'25 Q1)

Gross- CO_2 emission per tonne of Cementitious Material



Note: Gross GHG emissions: Inclusive of all emissions of Scope-1 &2;
Net GHG emissions: Only Scope 1 (without Captive Power Plant, & AFR)

SBTi Near-Term Targets

(Based on "Well Below 2 Degree Celsius" Scenario)

JK Cement commits to reduce **Gross-CO_2 emission (Scope-1&2 emissions by 21.7%)** by 2030 from the 2020 base year.

Scope-1 GHG emissions reduction by **20.4%** per tonne of cementitious products within the same timeframe.

Scope-2 GHG emissions reduction by **44.7%** per tonne of cementitious products within the same timeframe.

Methodology for Target Setting in year 2020:

Base Year:	Most Recent Year:	Parameters:	Target Year
2020	2021	• Scope 1 and Scope 2 Emission • Total Cementitious Product	2030

*09 Units (NBH, MGR, MUDPR, GTN-1, GTN-2, Aligarh, Katni, Jharli, Balasinor are included)

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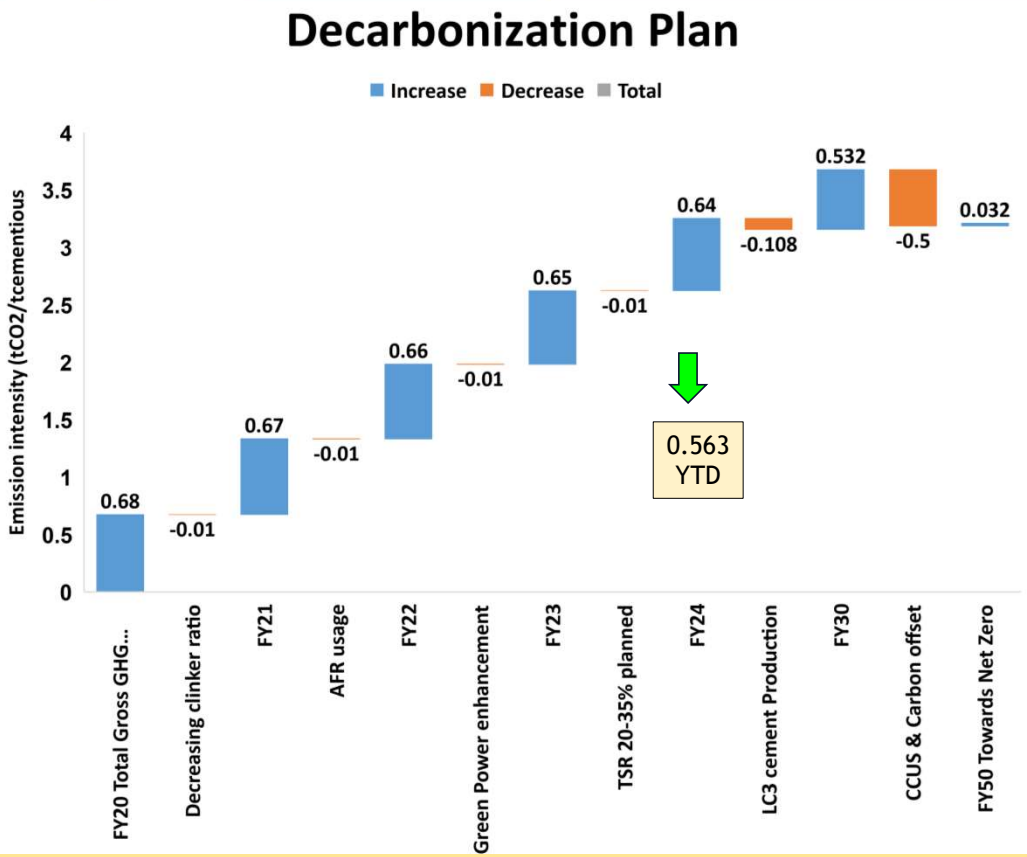
Decarbonization Road Map



Achieved – 17.2% reduction by FY2024 YTD from the base year FY 2020

We are working in collaboration with GCCA Global & India, CMA & SBTi for the Decarbonization of the Cement Sector. Cement sector which is Hard to abate in nature require new technology upgradation.

Following levers by which Decarbonization can be achieved.

1. **Energy Efficiency : (8 % of GHG Emissions)- Working**
2. **Material Efficiency: 2% of GHG Emissions- Working**
3. **RE & AFR: (22-23% of GHG Emissions)- Working**
4. **Carbon Management with long term technology CCU&S.**
5. **Green Hydrogen**
6. **Both 4&5 levers can decrease 67% of GHG emissions: Future**

Awards and Recognition

2021

"Gold Award"

Apex India Green Leaf Award for plant efficiency

2022

"Gold Award"

Apex India Occupational Health & Safety Award

2023

"Excellence Award"

CII National Award for Excellence in Energy Management

2023

"Appreciation Award"

FICCI Excellence in Maintenance Systems

JKCement

JK SUPER
CEMENT
BUILD SAFE

BUILD SAFE
#YehPuccaHai

Thank You!