25Th National Award for Energy Management

Plant: JSWCL, Salboni Unit,
Presenters: Santanu Bera & Bappaditya Gayen

Better Everyday

JSW Group, $23 Billion Conglomerate : Key Verticals

JSW Steel*

- **India's largest steel producer**
- Capacity of 28.5 mtpa, growing to 38.5 mtpa by 2025

JSW Energy*

- Capacity of 4.6 GW (Hydro, Renewable and Thermal)
- Growing to 20 GW by 2030 with **85% renewable portfolio**

JSW PAINTS

- Capacity of **130,000 klpa**
- Only fully-automated, water-based plant in India

JSW Infrastructure*

- Ports capacity of **153 mtpa**
- Operations across East, West & Southern coasts of India

JSW Cement

- Capacity of **21 mtpa,** growing to **25 mtpa** by 2025

JSW Foundation

- Social development arm of the Group, with footprint across 11 states and 15 districts
- **Reaching out to +1 mn individuals** around the operating locations

JSW Sports

- Aims at nurturing the sporting dream of India
- Trained **Olympic medal winners**
- Associated with champion teams like Delhi Capitals, Bengaluru FC and Haryana Steelers

JSW Ventures

- Early stage, tech focused **Venture Capital fund**
- Invests in companies building innovative solutions that leverage India's demographic dividend, consumption drivers and technological advancements

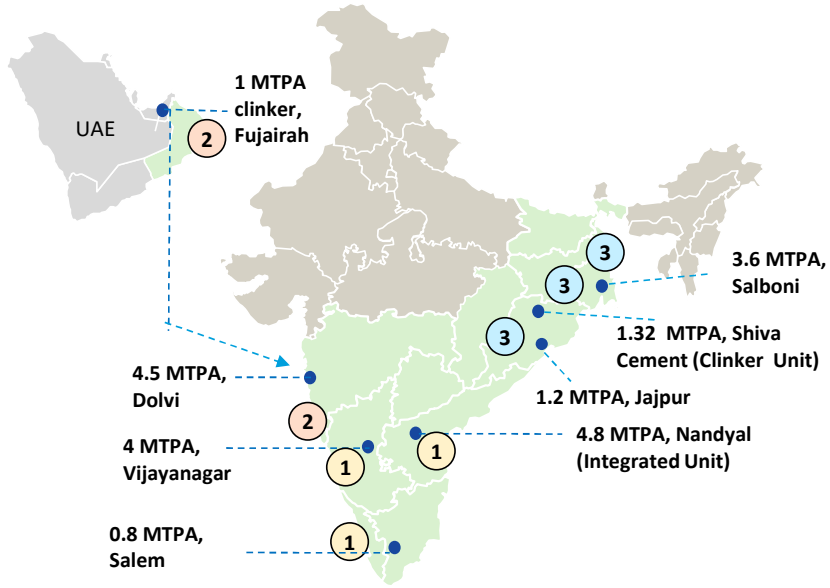
Note: * Listed company

JSW Cement : Leading Green Cement Company in India

JSW Cement, part of the diversified JSW Group is a leading cement producer in India, with current cement capacity of 21 MTPA

- Commenced operations in 2009 – among the fastest growing cement companies in India
- Scaled up platform with high quality network of assets
- Total of 21 MTPA of grinding capacity and 5.3 MTPA of clinker capacity as of FY23 across 8 locations
- Unique asset light approach – grinding facilities supported by clinker imports besides the captive clinker capacity across India
- Demonstrated strong innovation practices by pioneering the manufacture of GGBS in India
- Strong corporate governance and leadership team with deep domain expertise in the Indian cement sector

Manufacturing Footprint



1 South India
- Grinding Capacity: 9.6 MT
- Clinker Capacity: 2.9 MT

2 West India
- Grinding Capacity: 4.5 MT
- Clinker Capacity: 1. MT

3 East India
- Grinding Capacity: 5 MT
- Clinker Capacity: 1.4 MT

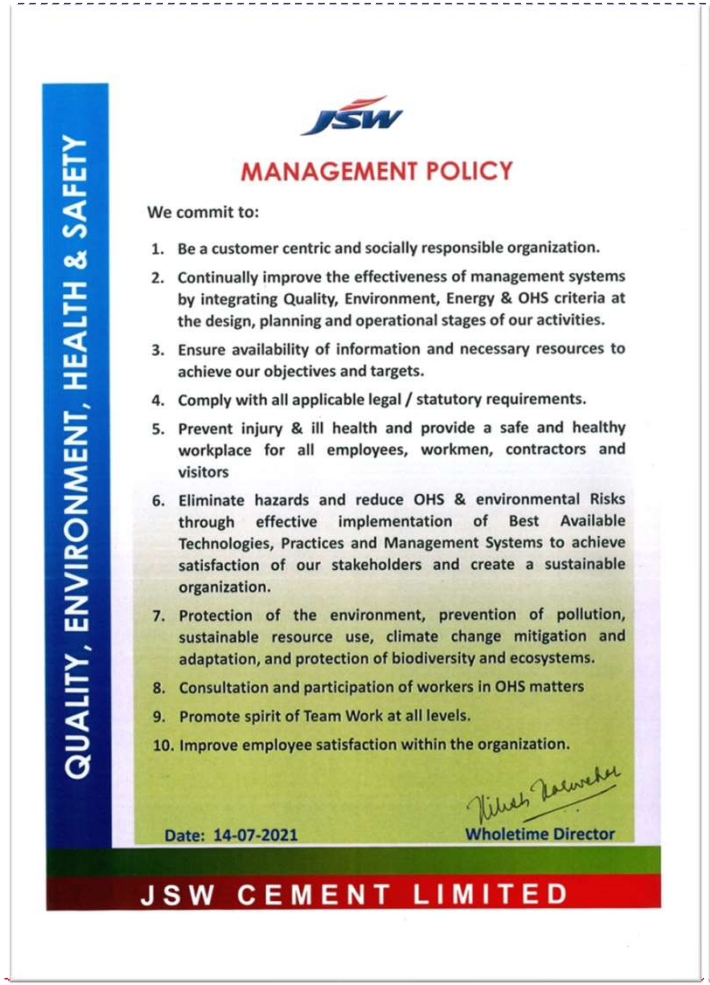
Indicates marketing presence

JSW CEMENT LIMITED – Salboni, W.B

Location & Salient features of this location

- LOCATION – SALBONI, WEST BENGAL (22° 37’ 48” N, 87° 11’ 24” E) 150 KM FROM KOLKATA; MSL – 25 M AVERAGE RAINFALL – 1300 MM; NEAREST RAIL STATION GODAPIYASAL(7 KM); DISTRICT HQ – MIDNAPUR (22 KMS); RAILWAY HQ – ADRA DIVISION (90 KM); NEAREST INDUSTRY – DCBL(Cement Plant), RBI MINT
- The plant is situated at Vill. – Jambedia, Saiyedpur, Paschim Medinipur – 721147, West Bengal.
- Plant Area 133.4 acres.
- The plant is authorized to produce 4.8 MTPA Cement and cementitious products and also to generate 18*2 MW thermal power generation.
- Present installed capacity is of 3.6 MTPA Cement grinding & 18 MW thermal power generation.
- Salboni plant is also having a 3.5 MW Solar power plant.
- Presently we are operating with 5 Nos. product licenses from BIS(OPC-43 & 53, PSC,PPC, CC & GGBS).

MANAGEMENT POLICIES



QUALITY, ENVIRONMENT, HEALTH & SAFETY

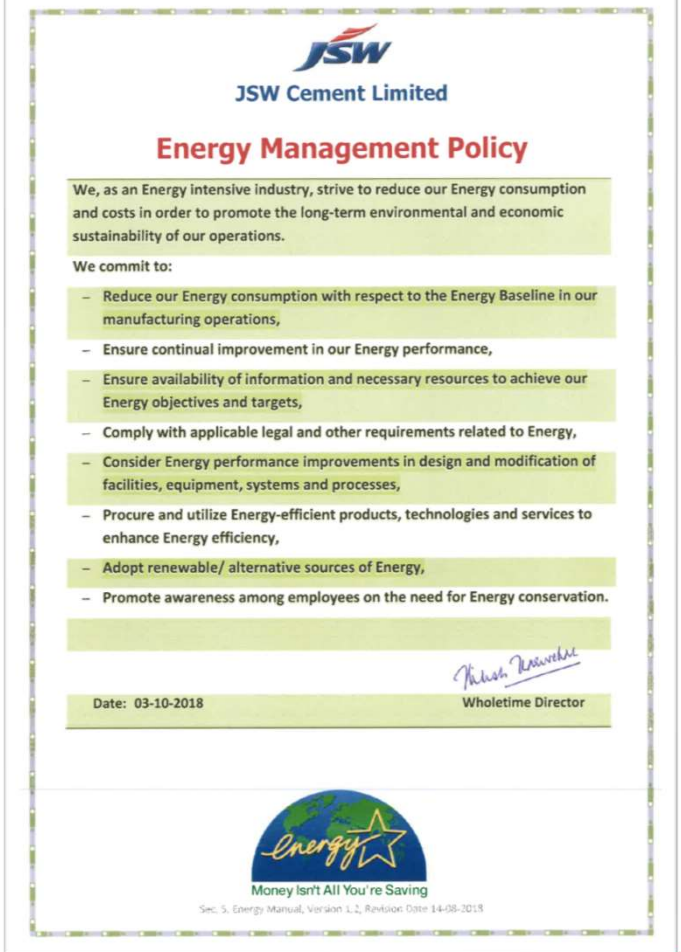
MANAGEMENT POLICY

We commit to:

1. Be a customer centric and socially responsible organization.
2. Continually improve the effectiveness of management systems by integrating Quality, Environment, Energy & OHS criteria at the design, planning and operational stages of our activities.
3. Ensure availability of information and necessary resources to achieve our objectives and targets.
4. Comply with all applicable legal / statutory requirements.
5. Prevent injury & ill health and provide a safe and healthy workplace for all employees, workmen, contractors and visitors
6. Eliminate hazards and reduce OHS & environmental Risks through effective implementation of Best Available Technologies, Practices and Management Systems to achieve satisfaction of our stakeholders and create a sustainable organization.
7. Protection of the environment, prevention of pollution, sustainable resource use, climate change mitigation and adaptation, and protection of biodiversity and ecosystems.
8. Consultation and participation of workers in OHS matters
9. Promote spirit of Team Work at all levels.
10. Improve employee satisfaction within the organization.

Date: 14-07-2021 Wholetime Director

JSW CEMENT LIMITED



JSW Cement Limited

Energy Management Policy

We, as an Energy intensive industry, strive to reduce our Energy consumption and costs in order to promote the long-term environmental and economic sustainability of our operations.

We commit to:

- Reduce our Energy consumption with respect to the Energy Baseline in our manufacturing operations,
- Ensure continual improvement in our Energy performance,
- Ensure availability of information and necessary resources to achieve our Energy objectives and targets,
- Comply with applicable legal and other requirements related to Energy,
- Consider Energy performance improvements in design and modification of facilities, equipment, systems and processes,
- Procure and utilize Energy-efficient products, technologies and services to enhance Energy efficiency,
- Adopt renewable/ alternative sources of Energy,
- Promote awareness among employees on the need for Energy conservation.

Date: 03-10-2018 Wholetime Director

Energy

Money Isn't All You're Saving

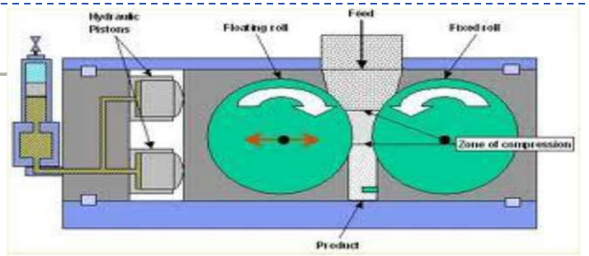
Sec. 5, Energy Manual, Version 1.2, Revision Date 14-08-2018

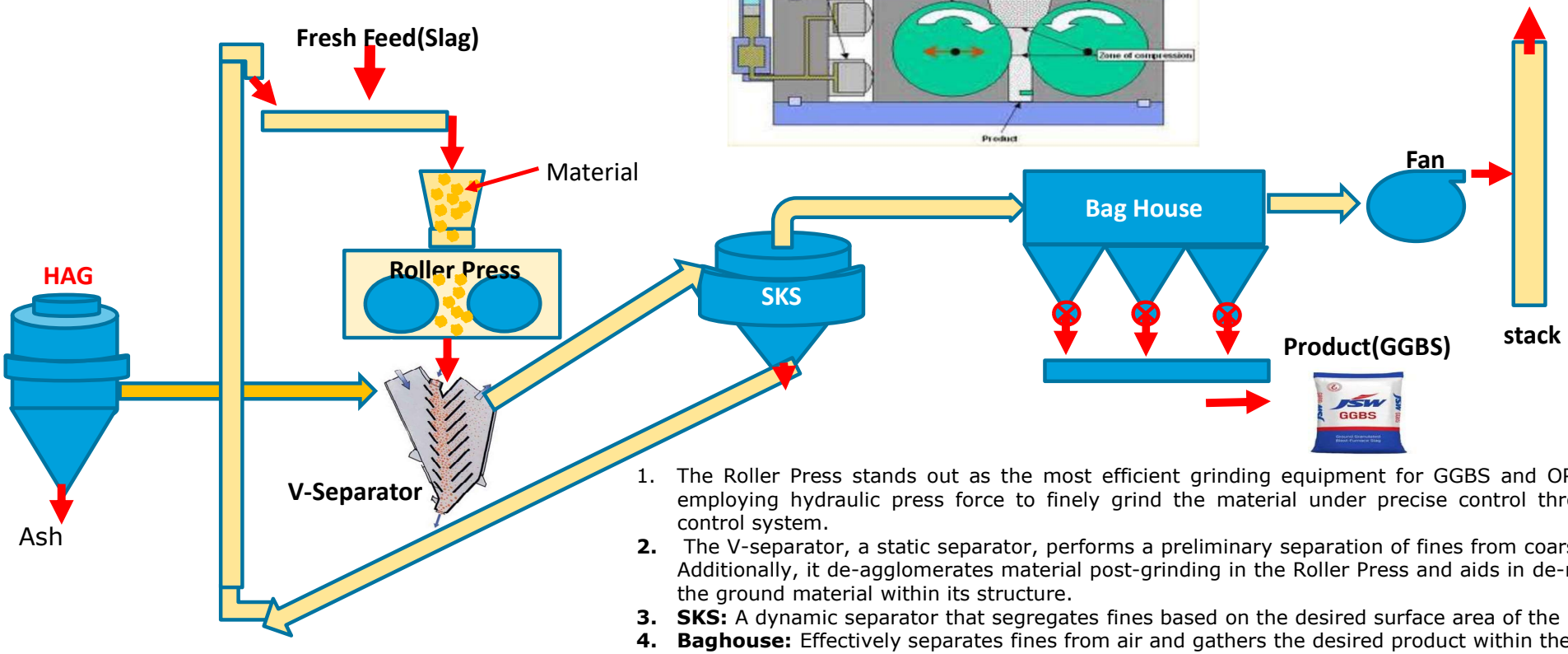
JSW, Salboni is an ISO 9001:2015, 14001:2015, 45001:2018 & 50001:2018 certified cement grinding unit.

PLANT SAFETY STATISTICS

PRODUCT LINE	CEMENT
NAME OF THE PLANT	JSW CEMENT PLANT, SALBONI UNIT
Reporting Period	FY' 2023-2024
PLANT LAGGING INDICATOR: 2023-24	
PARAMETERS	**NOS**
FATALITY	**0**
LOST TIME INCIDENT	**0**
MEDICAL TREATMENT CASES(MTC)	**0**
FIRST AID	**1**
LAST LTI DATE:	**19.02.20**
NUMBER OF LTI FREE DAYS:	**1502 (Best achieved figure 942 days)**
PLANT LEADING INDICATORS – 2023-24	
PARAMETERS	**NOS**
NEAR MISSES	**3599**
UNSAFE ACT/ CONDITION REPORTING	**10857**
H & S TRAINING HOURS	**24404**

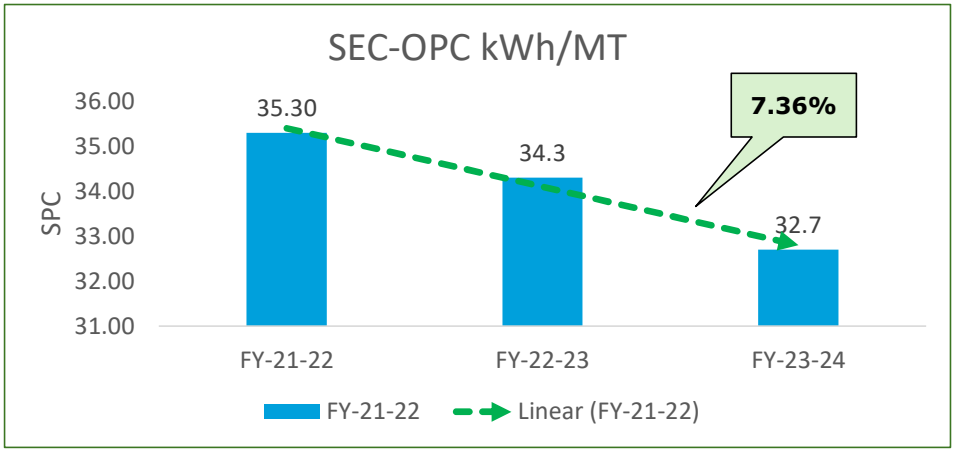
PLANT OVERVIEW

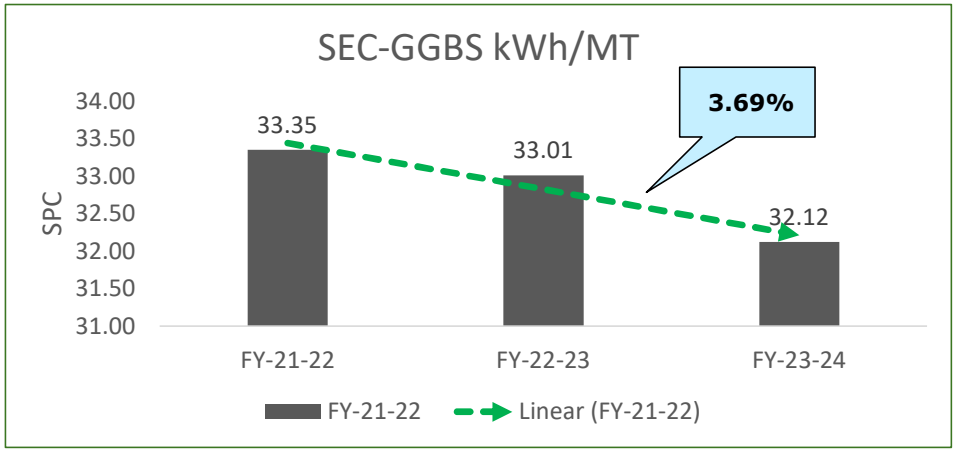


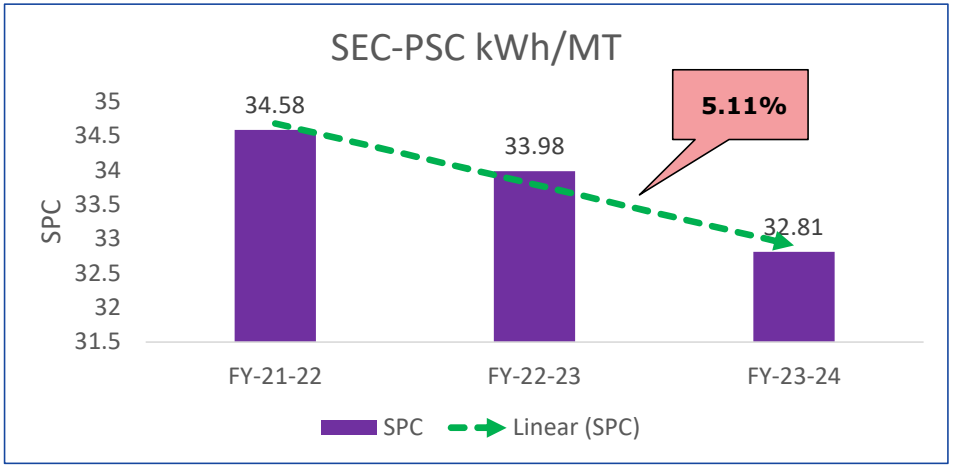


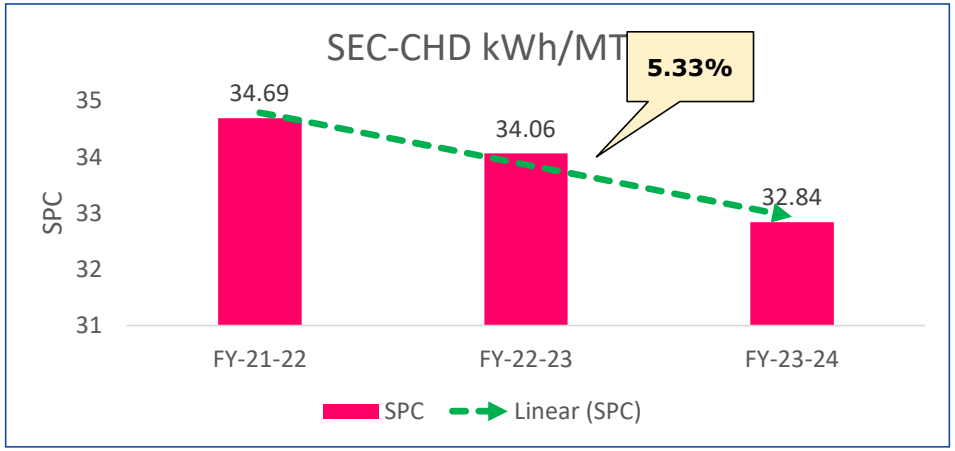
1. The Roller Press stands out as the most efficient grinding equipment for GGBS and OPC grinding, employing hydraulic press force to finely grind the material under precise control through a PLC control system.
2. The V-separator, a static separator, performs a preliminary separation of fines from coarse particles. Additionally, it de-agglomerates material post-grinding in the Roller Press and aids in de-moisturizing the ground material within its structure.
3. **SKS:** A dynamic separator that segregates fines based on the desired surface area of the material.
4. **Baghouse:** Effectively separates fines from air and gathers the desired product within the hopper.
5. **Elevator:** Employed for raising materials to a specific height or level.
6. **Air slide** : Used to Convey the fine materials.

SEC IN LAST THREE YEARS(FY-21-22 TO FY-23-24)

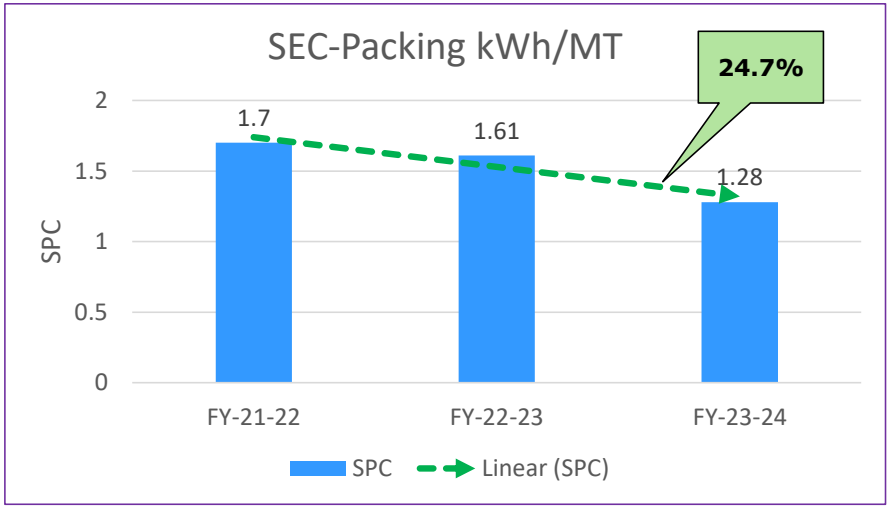


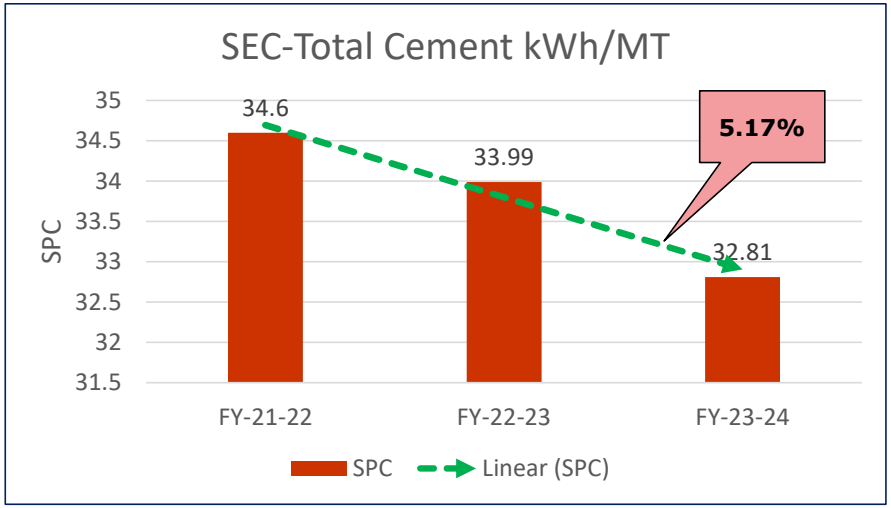




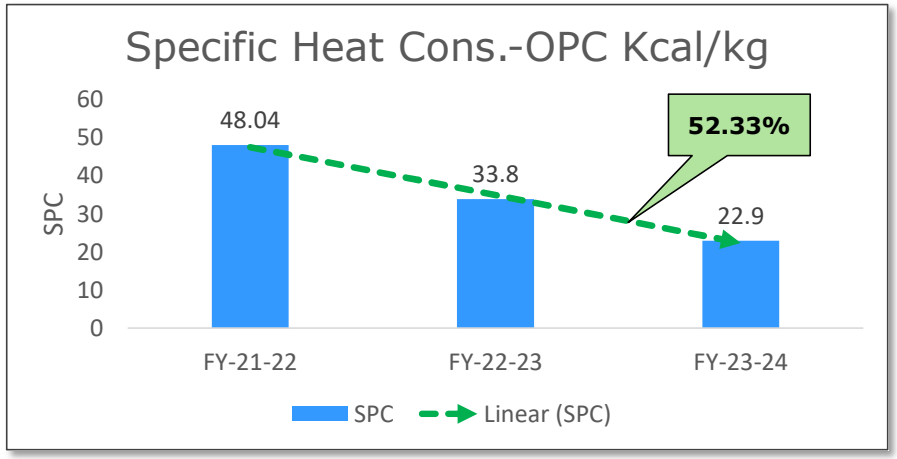


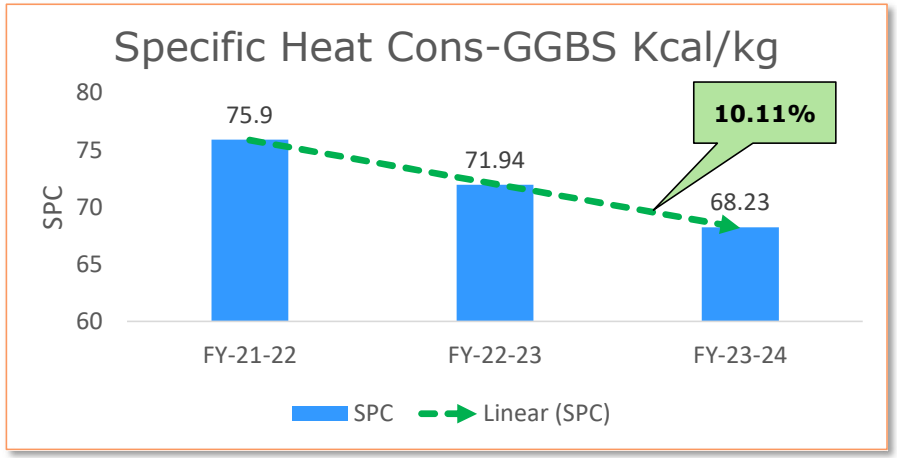
SEC IN LAST THREE YEARS(FY-21-22 TO FY-23-24)

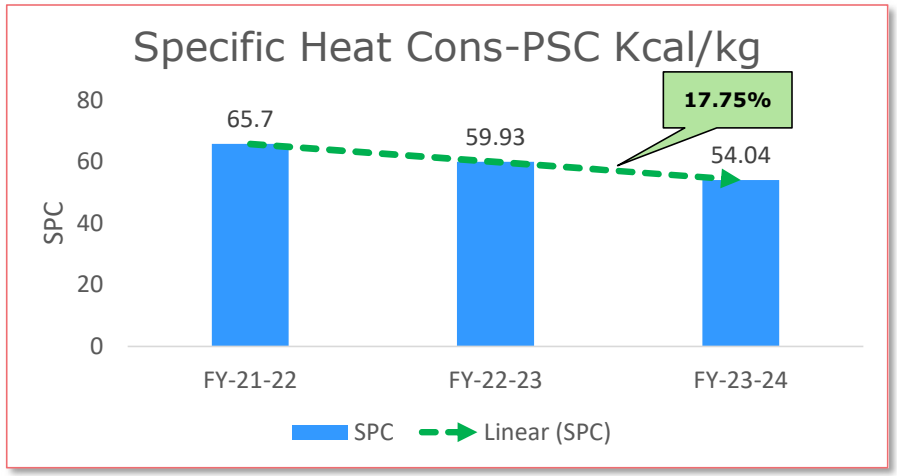


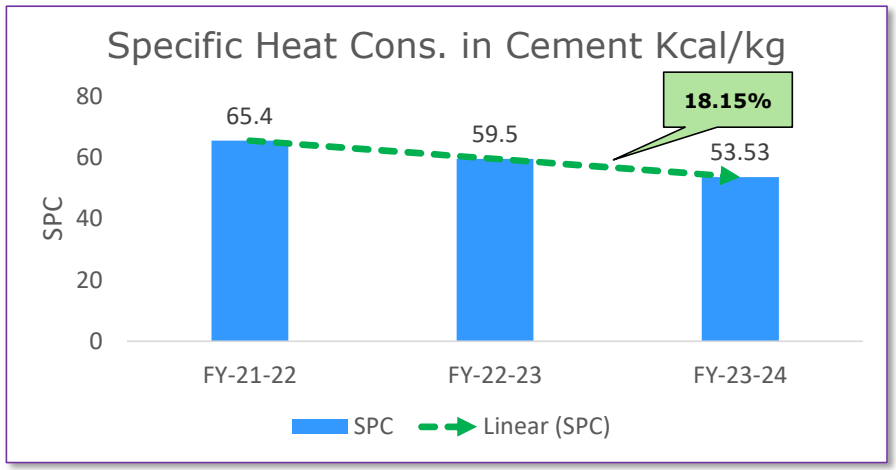


SEC IN LAST THREE YEARS(FY-21-22 TO FY-23-24)

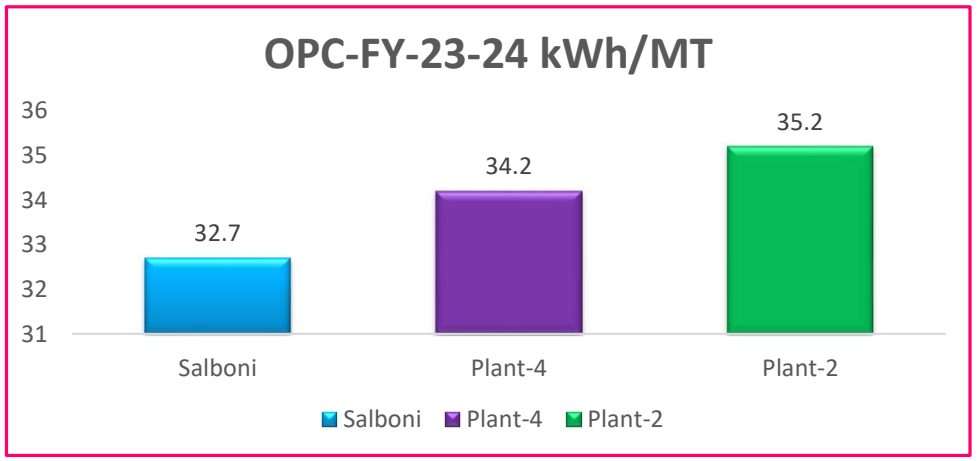


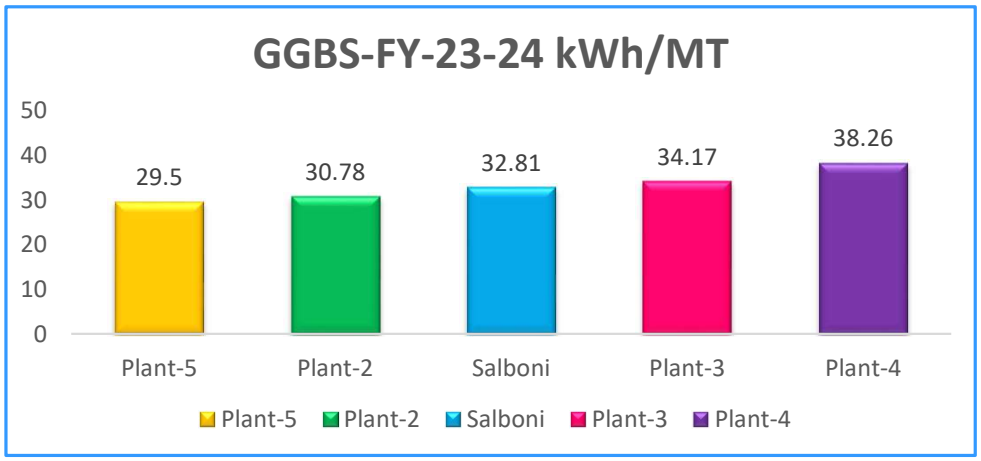


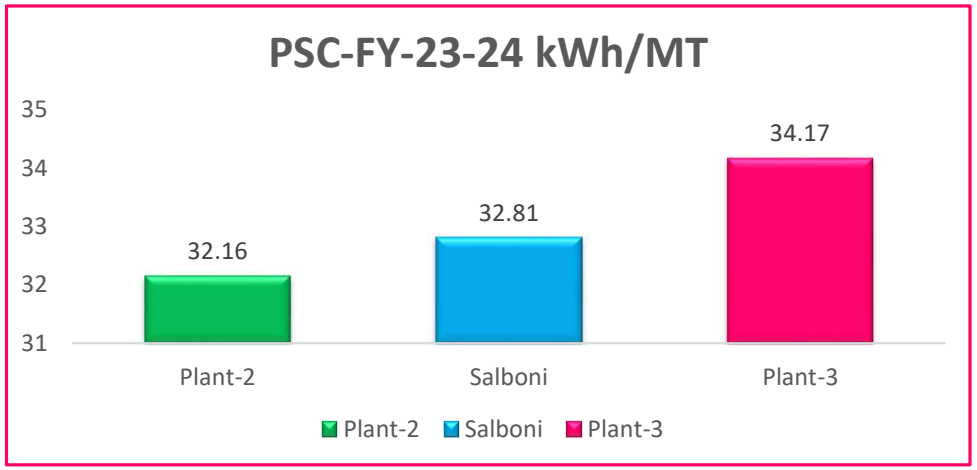


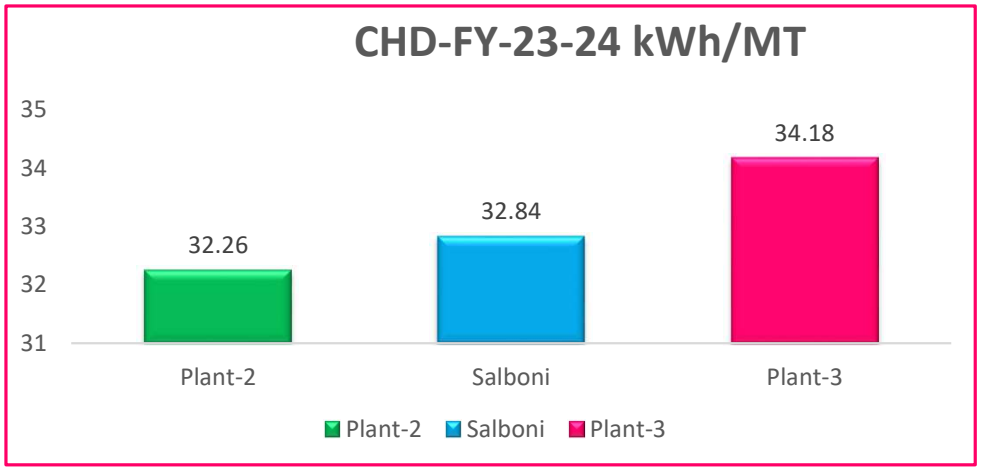


INTERNAL BENCHMARKING OF SEC IN ROLLER PRESS

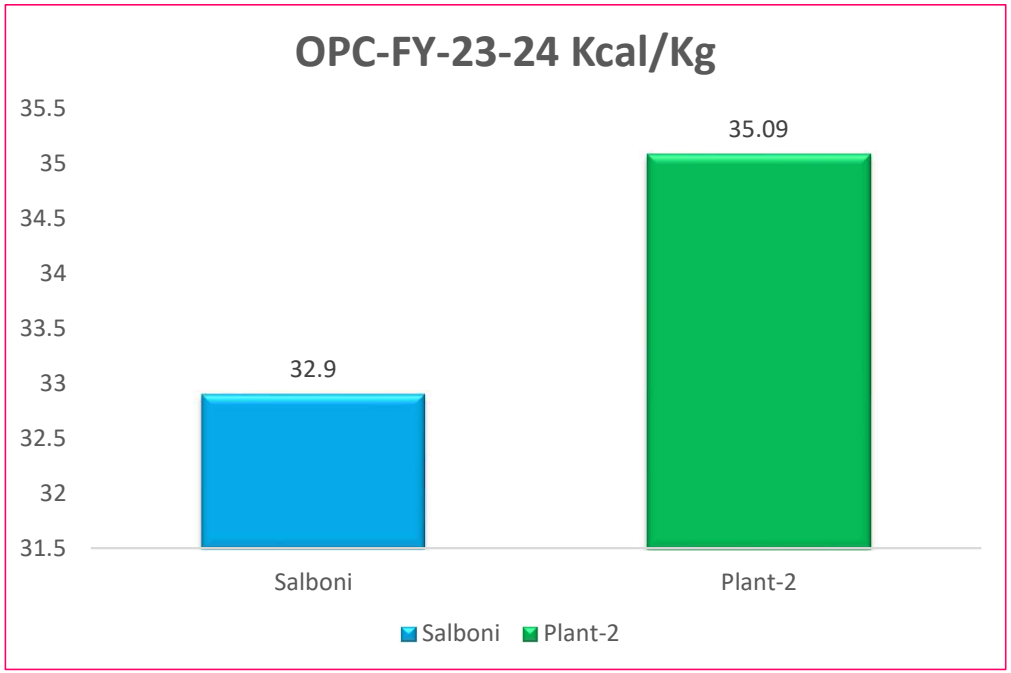


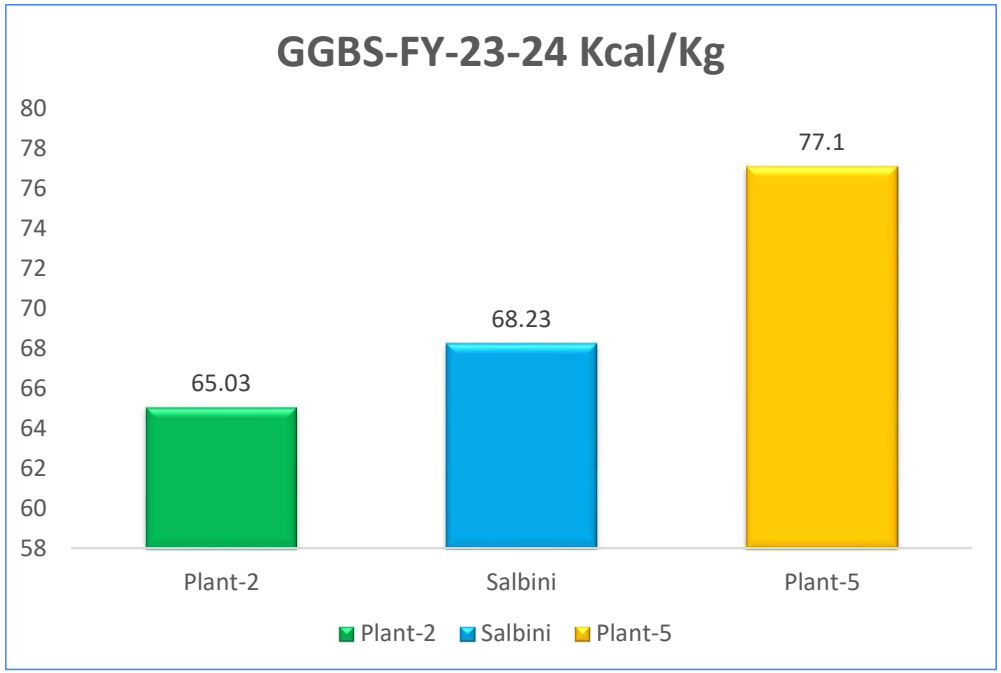






INTERNAL BENCHMARKING OF THERMAL SEC IN ROLLER PRESS





LIST OF MAJOR ENCON PROJECT PLANNED IN FY'24

	Title of the project	Annual Electrical Saving(Million kWh)	Annual Thermal Saving (Million Kcal)	Investment(Rs in Million)	Estimated Pay back Period (months)	Cost Savings INR-Million
FY'(24-25)	By installing a hot air duct from Unit-2 HAG to the Coal Mill inlet, the need to start and stop the Coal Mill HAG can be eliminated while HAG-02 is running. This modification will concurrently reduce heat and power consumption, and eliminate the operational risk associated with the Coal Mill HAG.	0.810	1512	2.8	4.4	7.56
FY'(24-25)	Reduction of Radiation heat Loss from V-Separator inlet by installing LRB ,120 density 75 mm thickness insulation.	0	635	0.23	2.7	1.02

ENERGY SAVING PROJECT IMPLEMENTED IN LAST 3 YEARS

Year	No of Energy Saving Project	Investment	Electrical Saving (Million kWh)	Thermal Saving(Million Kcal)	Total Savings(INR Million)	Impact on SEC/SHC Electrical kWh/MT Cement) or Kcal/kg cement
FY'21-22	8	7.97	1.857	3096	22.50	1.23 kWh/MT 2.05 Kcal/kg
FY'22-23	5	1.5	0.47	0	4.53	0.30kWh/MT
FY'23-24	8	1.15	0.61	1199	10.42	0.34 kWh/MT 0.67 Kcal/Kg

ENERGY SAVING PROJECT IMPLEMENTED IN FY'22

SL No.	Title of the Energy Saving Project	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Saving(Million Kcal)	Total Savings (INR Million)	Impact on kWh/MT Cement) or Kcal/kg cement
1.	Stoppage eliminated on account snub drum of pre bin feeding belt jam by introducing air bluster at the discharge chute	0.4	1.329	3096	17.78	0.88kWh/ MT 2.05 Kcal/Kg
2.	Installing 2 no's of 37KW VFD in coal conveying blower to control the flow	0.495	0.048	0	0.46	0.032
3.	Installing RPM controller in AHU with RTD feed back	0.12	0.078	0	0.74	0.052
4.	Installing 3nos. 55kW VFDs in packing plant and bag filter fan speed reduction up to 65%	1.599	0.264	0	2.51	0.175
5.	Installing 2nos. (22kW & 55kW) VFDs for chilled water pumps	0.966	0.063	0	0.60	0.042

ENERGY SAVING PROJECT IMPLEMENTED IN FY'22 CONTINUE....

SL No.	Title of the Energy Saving Project	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Saving(Million Kcal)	Total Savings (INR Million)	Impact on kWh/MT Cement
6.	Replaced 22 kw motor with, 7.5 kw motor for CWP in Unit-2 for 2 no's of RPs	0.75	0.031	0	0.29	0.020
7.	Removal of 5.5 kW Air slide Motor from Circuit by Shorting Air Flow in line	0.02	0.018	0	0.16	0.012
8.	Removal of 5.5 kW Motor From Bag Cleaning Blower	0.02	0.026	0	0.25	0.017

ENERGY SAVING PROJECT IMPLEMENTED IN FY'23

SL No.	Title of the Energy Saving Project	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Saving(Million Kcal)	Total Savings(INR Million)	Impact on kWh/MT Cement)
1.	Exclusive grinding of OPC (Self & Sale) by RP+BM combination, thus reduction in overall SPC by 1.82 Unit/MT	0.25	0.319	0	3.25	0.205
2.	Interlocks revised to avoid idle running in RP &Coal-Mill circuit	0.6	0.076	0	0.78	0.049
3.	Replacement of Conventional fixtures with LED light at street light	0.084	0.016	0	0.17	0.010
4.	Process water spray extraction pump connection changed to Raw water instead of filtered water tank.	0.5	0.003	0	0.33	0.002
5.	Modifications at Packing Plant blower lines	0.75	0.059	0	0.6	0.038

ENERGY SAVING PROJECT IMPLEMENTED IN FY'24

SL No.	Title of the Energy Saving Project	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Saving(Million Kcal)	Total Savings (INR Million)	Impact on kWh/MT Cement) or Kcal/kg cement
1.	The heat consumption in OPC grinding at RP-1 with the ball mill has been reduced by recirculating 20-30% of the ball mill SKS reject(80-90 degrees C temp.) back to the RP-1 circuit. This adjustment has facilitated heat recovery within the RP-1 circuit. Consequently, the total coal cons. during OPC grinding with the ball mill has been diminished by 2.28kg/MT of OPC.	0	0	997.43	1.8	0.56 Kcal/Kg
2.	False air reduction from 35% to 17 % in FY-24 for GGBS grinding resulting in a reduction of Coal consumption significantly by 0.74kg/MT of GGBS grinding	0.1	0	2029.44	3.11	1.13 Kcal/Kg
3.	Alternate direct Fly ash unloading system at ball mill fly ash bin	0.25	0.09	0	0.84	0.053 kWh/MT
4.	Chamber DP based (need base) purging for Bag House of RP 1 & 3	0.6	0.22	0	1.94	0.123 kWh/MT
5.	Replacement of Conventional Drain Valve with Zero Drain Valve - Unit 1 & Unit 2 18mtrs Air Receiver	0.084	0.02	0	0.21	0.013 kWh/MT

ENERGY SAVING PROJECT IMPLEMENTED IN FY'24 (CONTINUE…)

SL No.	Title of the Energy Saving Project	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Saving(Million Kcal)	Total Savings (INR Million)	Impact on kWh/MT Cement
6.	Reduction in Voltage from 6.75KV to 6.60KV from Jan-24	0	0.20	0	1.77	0.112
7.	Packer-3 CHD feeding BE air slide air line modified initially it was running by 02 fan and after modification running by 01 air slide fan. (2nd 7.5KW fan made as standby)	0	0.01	0	0.13	0.008
8.	Replacement of 78AC root blower by 5MK Root Blower (change 30KW to 15KW)	0.12	0.06	0	0.62	0.034

INNOVATIVE PROJECT IMPLEMENTED

Name of the Project Title :

Inclusion of GSM Based Relay Control for Admin VRF System

Brief description on why innovative:

Inclusion of GSM Based Control Relay System for Admin VRF Control –

This helps us to schedule the timeline of operation, Operation on GSM Text & Call.

Investment: 0.09 lakhs

Annual saving: 4.40 lakhs.

INNOVATIVE PROJECT IMPLEMENTED

Name of the Project Title :

Replace conventional ceiling fans with BLDC fans

Brief description on why innovative:

Installation of BLDC Fans for reduction of power consumption

Investment : 0.443 Lakhs

Annual Savings:0.23 Lakhs

Name of the Project Title :

Replacement of Conventional Drain Valve with Zero Drain Valve - Unit 1 & Unit 2 18mtrs Air Receiver

Brief description on why innovative:

Reduction In Air Consumption

Investment : 0.86 Lakhs

Annual Savings:1.90 Lakhs

INNOVATIVE PROJECT IMPLEMENTED

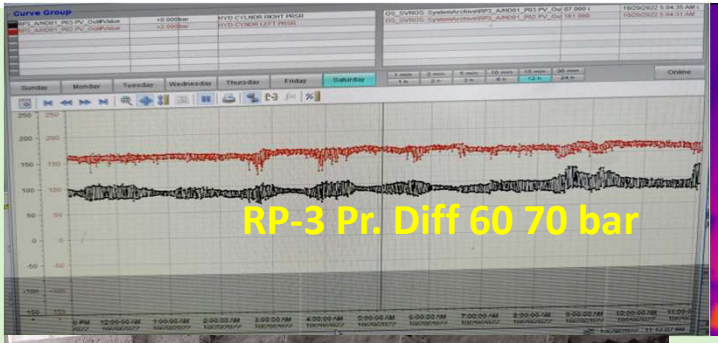
Background:
Roller press left & right side Pressure difference High > 60 bar

Challenges faced:
1.RP was running in lower output rate
2.Unstable operation of Roller press in slag grinding
3.High vibration in normal operation

Root cause found:
Material mixing was not adequate before entering into pre bin
2.Thermography of prebin revealed that fines was passing through one side (right side)

Modification Done:
1. One set of new claw installed on prebin feed belt
2.Water spray height changed ,It was from belt frame 750mm. Now modified to 850 mm and spray profile improved .

Benefits: 5 TPH enhanced
1.82 Million kWh savings, 12.74 Million INR Savings. Investment – 0.03 million(INR)



Fines passing at right side

Claw Installed

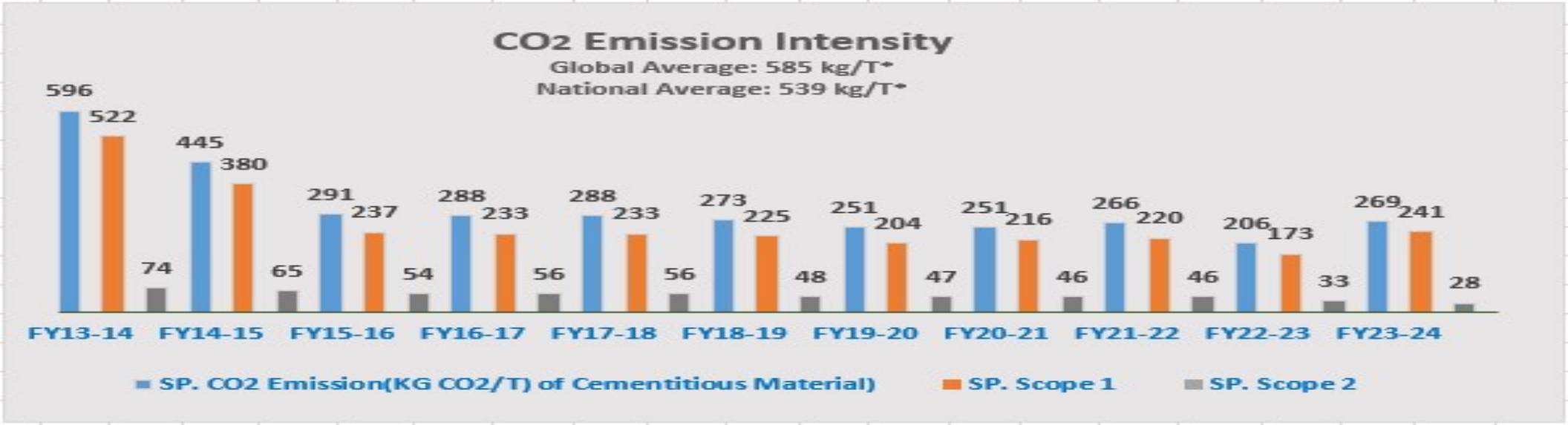
Pr. Diff Reduced

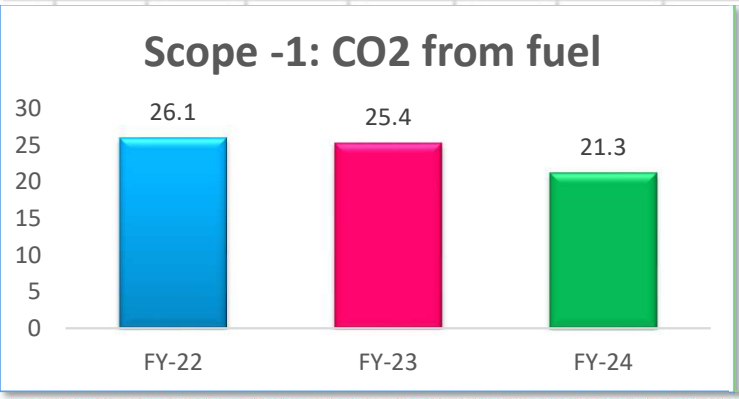
UTILIZATION OF RENEWABLE ENERGY SOURCES (OFF SITE)

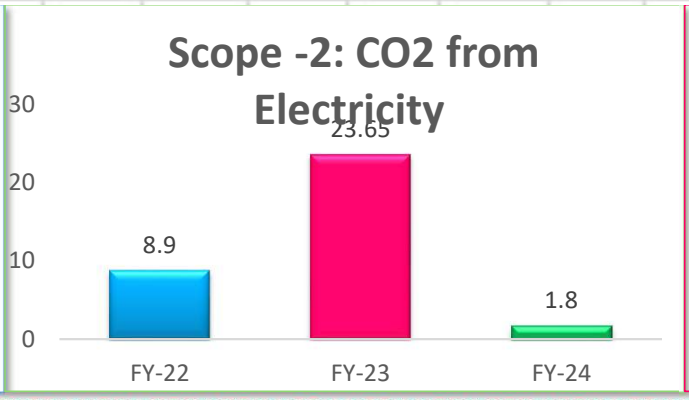
Off Site					
Year	**Solar**	**Total Off Site Installed capacity (MW)**	**Capacity Addition(MW)**	**Total Generation Million kWh**	**Share %w.r.t overall energy cons.**
FY 21-22	Ground Solar	3.5	0	6.12	10.11
FY 22-23	Ground Solar	3.5	0	6.36	10.74
FY 23-24	Ground Solar	3.5	0	5.44	8.16

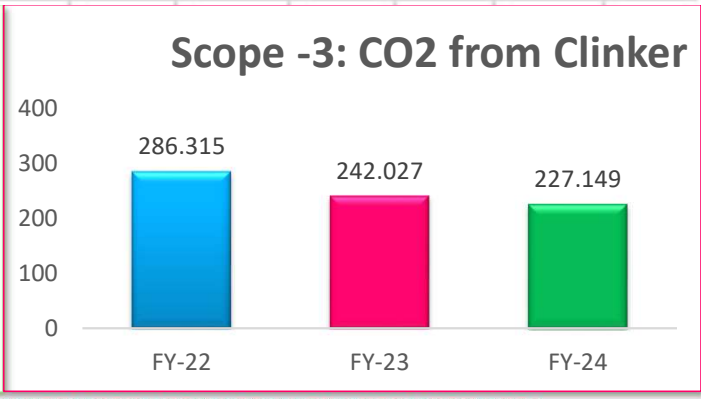
* In FY23-24 approx. 6month solar Plant was kept shutdown in order to avoid tripping of CPP ,CPP was running in islanding mode.

GHG INVENTORIZATION CARBON EMISSION REDUCTION





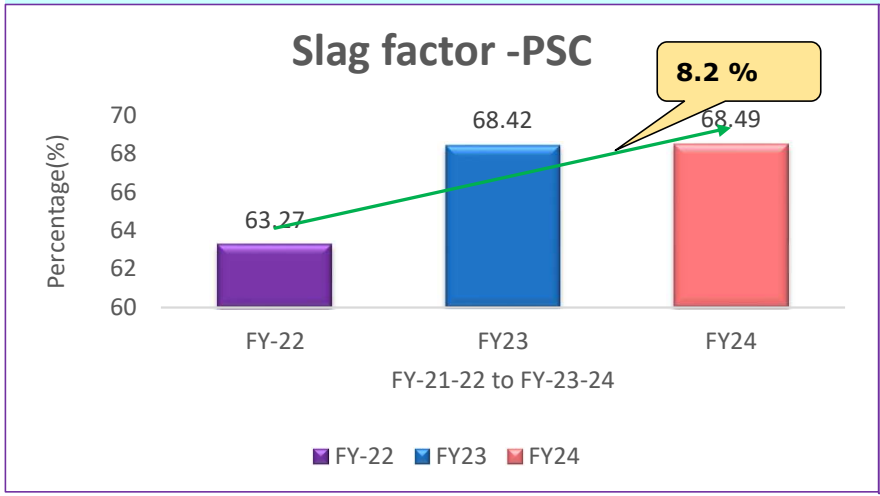


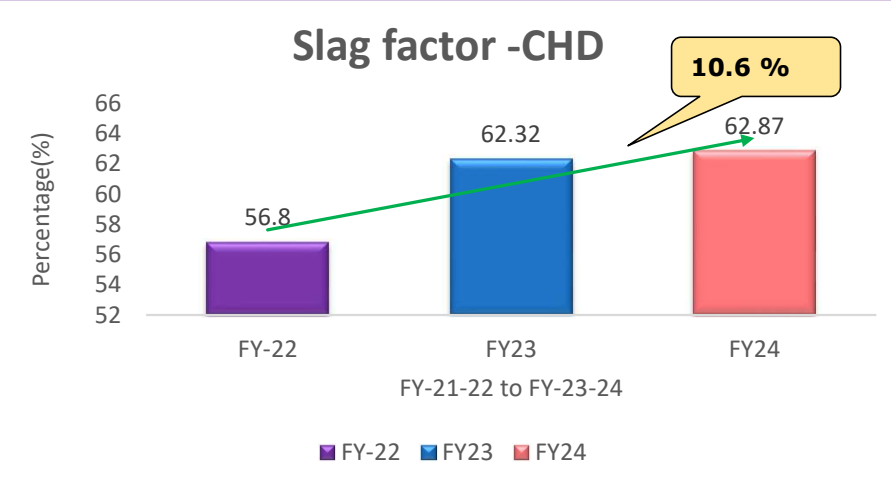


GHG INVENTORIZATION CARBON EMISSION REDUCTION

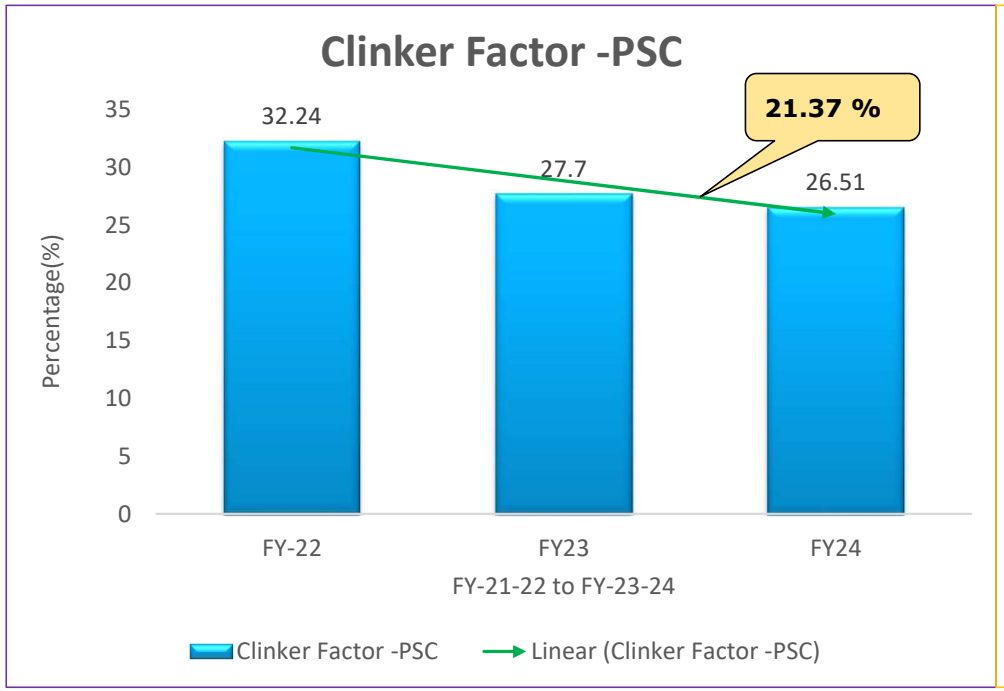
Initiatives to reduce carbon emission :

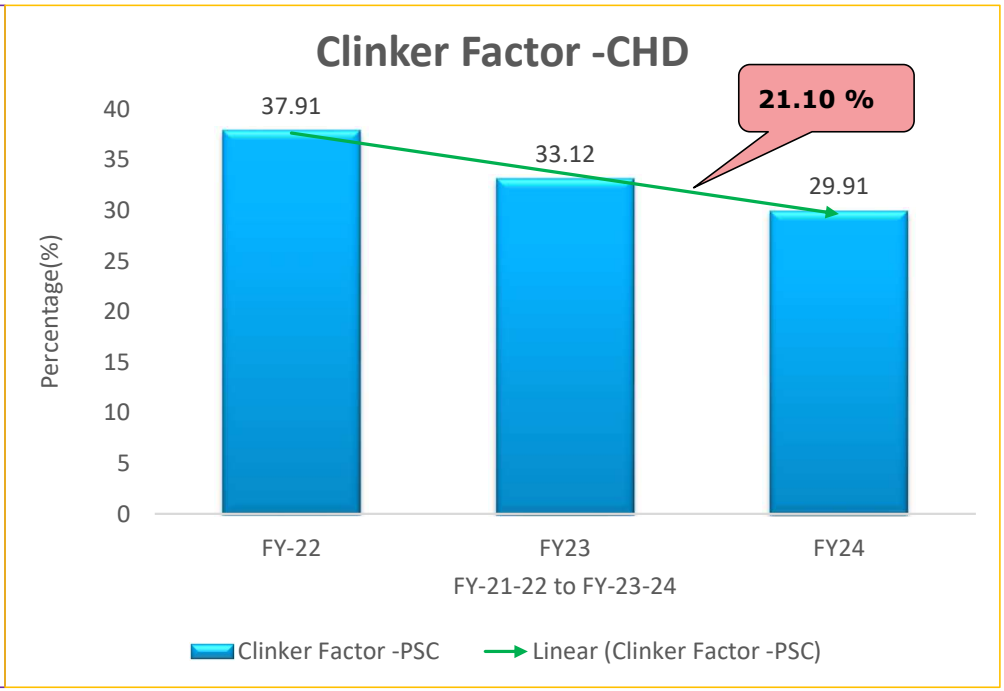
- Installation of 3.5 MW offsite solar power plant
- Reduction of total electrical energy consumption
- Improving clinker factor in cement.
- Reduction of raw material vehicle fuel consumption by change of mode from road to rail .





OVER ALL CLINKER FACTOR IMPROVEMENT





NET ZERO COMMITMENT

JSW Cement Sustainability Framework & Priorities

- **17 Focus Areas**
- **Climate Change**
- Reach Net zero goal by 2050
- **Resources**
- Conserve resources by increased utilization of waste (Circular Economy)
- **Biodiversity**
- No Net Loss for Biodiversity
- **Water Resources**
- Reduce in fresh water consumption
- Enhance Rainwater harvesting
- Local Considerations
- Business Ethics
- Indigenous People
- Cultural Heritage
- Supply Chain Sustainability
- Waste
- Sustainable Mining
- Employee Wellbeing
- Air Emissions
- Social Sustainability
- Promote safety and well being of Employees & empowering communities
- Human Rights
- **Energy**
- Enhance our Renewable Energy portfolio
- Reduce Thermal & Electrical Energy

NET ZERO COMMITMENT

Stack emissions	Units	Stack - 1	Stack - 2	Stack-3 (CPP)	Stack – 4 (Ball mill)
Actual	mg/Nm3	8.65	9.96	4.0	6.76
CPCB Norms	mg/Nm3	30.0	30.0	30.0	30.0

Ambient Emissions	Units	CPCB norms	Near Staff Colony	Near Panchayat Office	Near Labor Colony	Railway Siding	CPP	Near Godapiasal Village
Particulate Matter PM10	µg/m3	100	65.47	66.36	67.79	69.26	75.17	64.59
Particulate Matter PM2.5	µg/m3	60	35.53	35.11	34.91	37.96	40.79	34.42
SO2	µg/m3	80	6.46	6.71	6.66	6.98	7.54	6.89
NO2	µg/m3	80	29.68	30.94	32.19	31.01	36.81	32.70
CO	mg/m3	4	0.33	0.40	0.34	0.44	0.64	0.33

RAIN WATER HARVESTING AND STP

- Developed Rain water harvesting facility inside Plant to collect roof top water.
- Water from rain water harvesting pond used for Process & fire fighting purpose

Rain water Harvesting System	Capacity (KL)
RWH Pond	22000

- Domestic waste water from Toilet, latrine treated at Sewage Treatment plant
- Treated water from STP used for green belt & horticulture purpose

Domestic Waste Water Treatment	Capacity (KLD)
Sewage Treatment Plant	160

IMPROVEMENT INITIATIVE WITH 5S CONCEPT

5 S activity in Unit 2 18 M floor

Mainly focused:

- Sorting
- Rearranging & painting
- Cleaning
- Standardisation

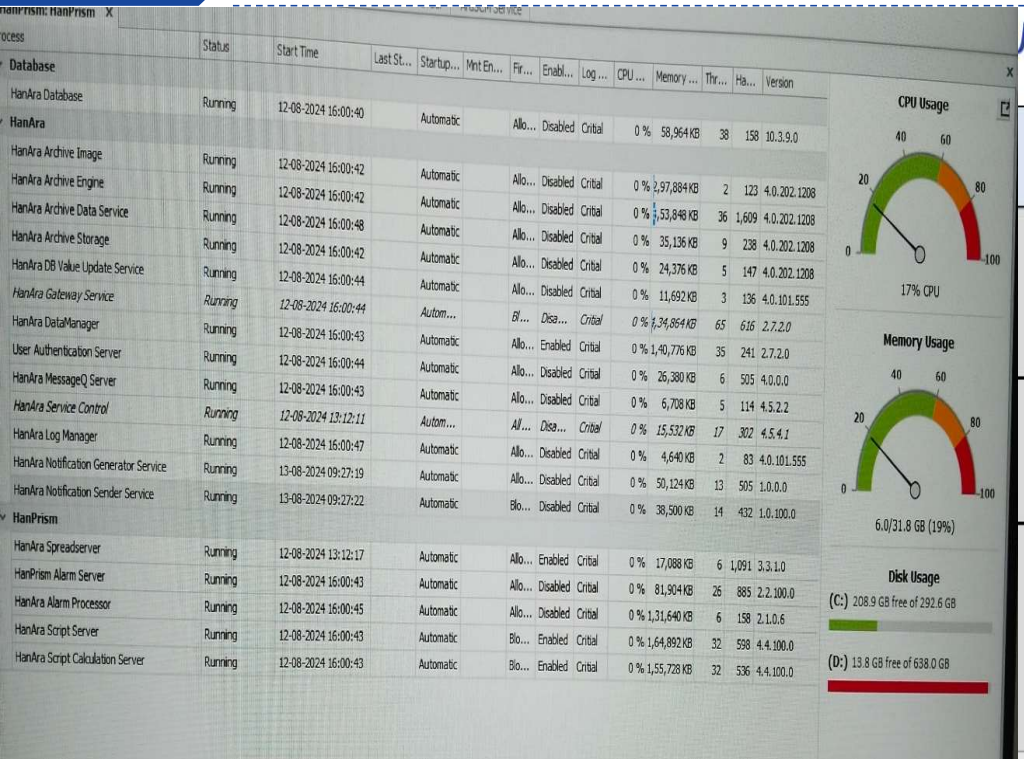
Maintained

RP4

RP3

RP4 SKS

EMS SYSTEM IMPLEMENTED & CERTIFICATES



EMS system Screen

JSW CEMENT LIMITED - ENERGY REPORT

24-Aug-2024

	Section-Wise Consumption	ON DATE	MTD	YTD FROM JUL
BALL MILL	Ball Mill Main Motor	0	181840	1763000
	Ball Mill iMCC	2	8371	58086
	Ball Mill ID Fan	3	15981	154732
	Ball Mill ID Sep.	5	2186	19072
	Ball Mill Vent Fan	3	1428	19617
	TOTAL-Ball Mill	14	209806	2014507
RP1+BM	Main Motor_RP-1 with BM	82	143571	749738
	BH+Sep _ RP-1 with BM	18	36213	188195
	BE_RP-1 with BM	7	14167	79877
	Auxillary Portion RP1 with BM	10	21515	48494
	Total RP-1 with Ball Mill(Hybrid)	117	215466	1066304
FINISH MODE	Auxillary RP - 1&2	959	95950	207251
	551FN1.M01_RP1	662	8512	32995
	591BE1.M01_RP1_OPC	669	9291	42454
	591BE1.M01_RP1_GGBS	0	0	0
	531BC2.M01_RP1	0	0	0
	Main Motor_RP-1	18878	311329	1625782
	Bag house+Sep _ RP-1	4082	78527	408095
	BE_RP-1	1655	30720	173210

7.2		ON DATE	MTD	YTD	GGBS ON DATE	GGBS MTD	OPC ON DATE	OPC MTD
INCOMING ENERGY	132kV GRID	1321	42619	721025				
	CPP	82000	3118400	5630896				
	SOLAR	1520	285460	1591480				
	DG	0	0	0				
	Total Incoming	84841	3446479	7943401				
Raw Material Unloading	Slag	1240	20806		1240	20806		
	Clinker	0	6995				0	6995
	FlyAsh	27	2135				27	2135
Raw Material Handling	Slag	677	26513		677	26513		
	Clinker	752	27313				752	27313
	FlyAsh	289	5700				289	5700
Grinding Section	Ball Mill	14	209806				14	209806
	RP 1	24722	614526				24722	614526
	RP 1 - Aux	2848	86323				2848	86323
	RP 2	30	665181		30	665181		
	RP 2 - Aux	6	60875		6	60875		
	RP 3	32125	378649		32125	378649		
	RP 3 - Aux	2889	61146		2889	61146		

Auto generated power report

IMPLEMENTATION OF ISO 50001:2018

ENERGY MANAGEMENT SYSTEM

Certificate of Approval

Issued by Indian Register Quality Systems

IRCLASS SYSTEMS AND SOLUTIONS PRIVATE LIMITED

Certificate No.
IRQS/241001092

To certify that the Energy Management Systems of

JSW Cement Limited

ADDRESS
Jambedia, P.O. – Saiyedepur Via Salboni,
Paschim Medinipur - 721147, West Bengal

has been assessed and found conforming to the requirement of ISO 50001 : 2018

INITIAL CERTIFICATION DATE	CURRENT DATE OF GRANTING	EXPIRY DATE
JULY 03, 2024	JULY 03, 2024	JULY 02, 2027

CERTIFICATION SCOPE

Manufacture and Dispatch of GGBS, Ordinary Portland Cement, Portland Slag Cement, Composite Cement and Portland Pozzolana Cement by Grinding , Blending & Packing

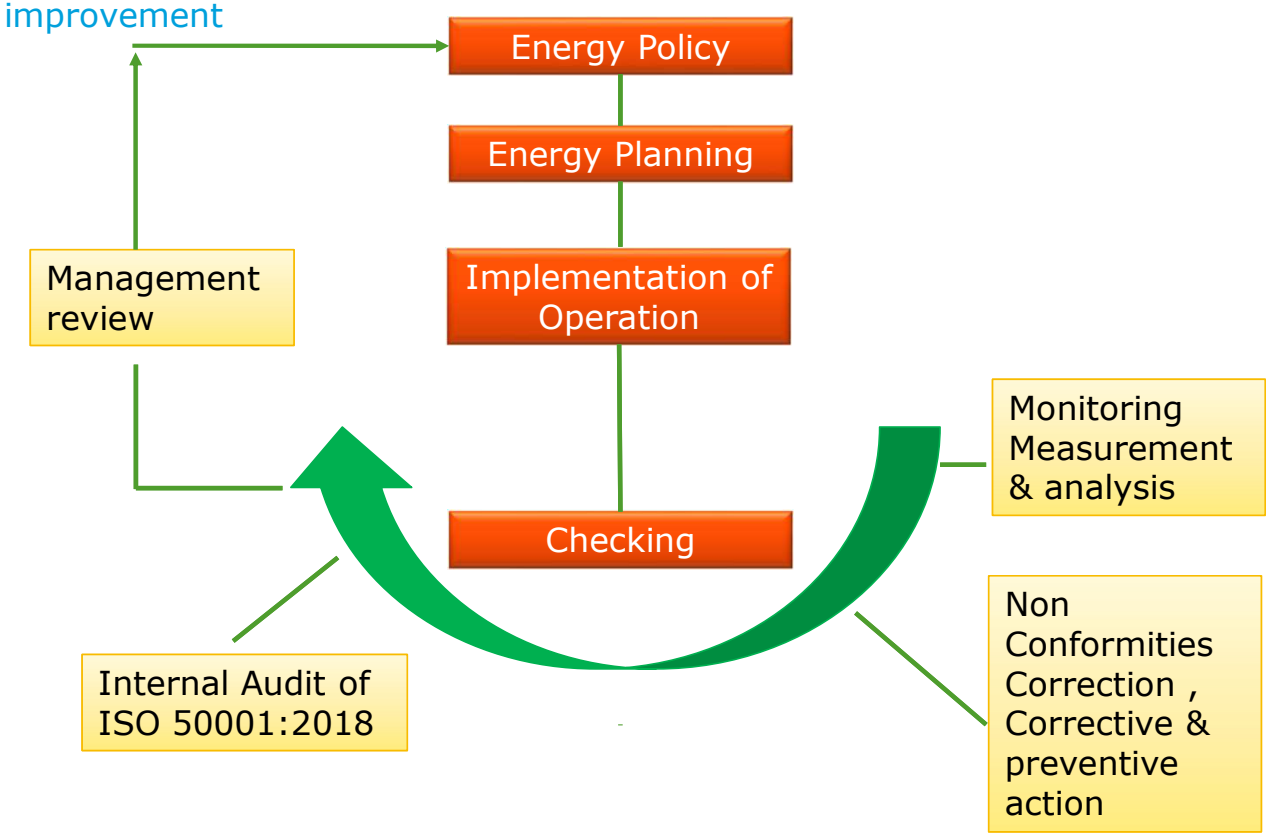
AUTHORISED CERTIFICATION BODY SIGNATURE

Shashi Nath Mishra
Head IRQS

Indian Register Quality Systems (A Division of IRCLASS Systems and Solutions Private Limited)

ISO 50001:2018

Steps followed for Implementation of 50001:2018



Green product Certification

Confederation of Indian Industry

CII-Green Products and Services Council

hereby certifies that

Portland Slag Cement

GPJSW015000

Manufactured by ***JSW Cement Ltd*** *meets the requirements of Greenpro Ecolabel and qualifies as Green Product.*

This certification is valid till ***Dec, 2024***

Jamshyd N Godrej
Chairman, CII-Godrej GBC

ParasuRaman R
Chairman, CII-Green Products & Services Council

K S Venkatagiri
Executive Director, CII-Godrej GBC

Supporting Council and Programmes

AWARDS & ACCOLADES

BCC & I Social Leadership Award 2023 under Special Jury Award Category

AWARDS & ACCOLADES

Greentech Foundation's Global Environment Health & Safety award 2024 under Environment Protection – Best Practices

THANK YOU

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7477612333

Bappaditya Gayen
Manager – Production
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