SREE JAYAJOTHI CEMENTS PRIVATE LIMITED - MYHOME GROUP

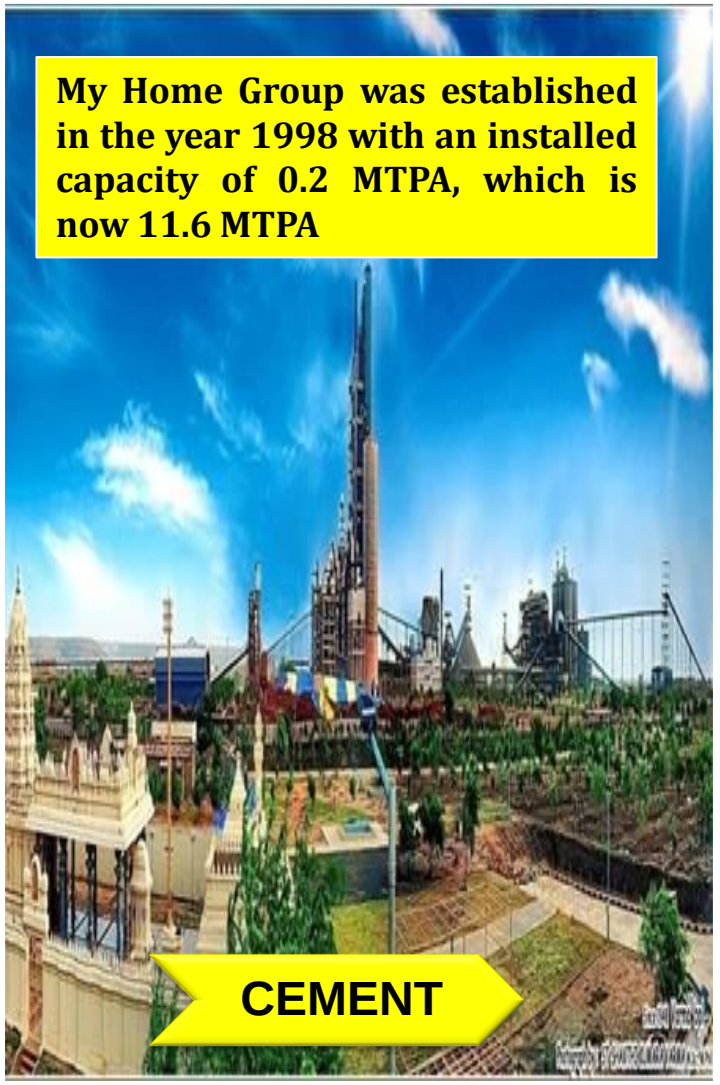
CII National Award for Excellence in Energy Management 2024

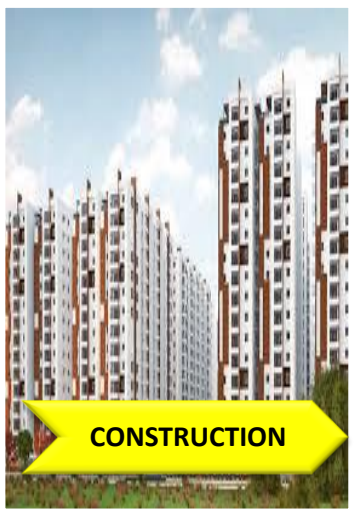
BRITISH SAFETY COUNCIL
Five Star Occupational Health and Safety Audit

GREEN COMPANY RATING SYSTEM
CII - SOHRABJI GODREJ GREEN BUSINESS CENTRE, INDIA
Greenco
GOLD

Presenting Team:
Mr.Narsi Reddy – Sr.DGM- Process
Mr. Raja Narsi Reddy – AGM- Elec
Mr. Suresh – Manager -Inst

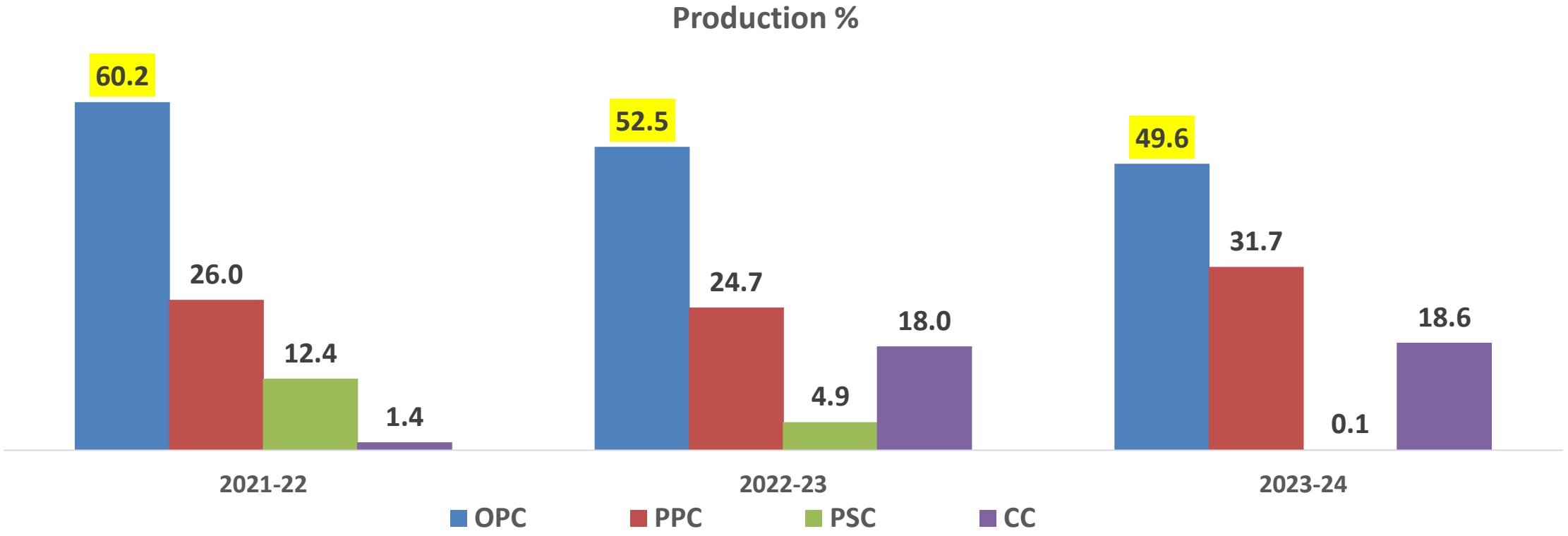
1.0 Group Profile





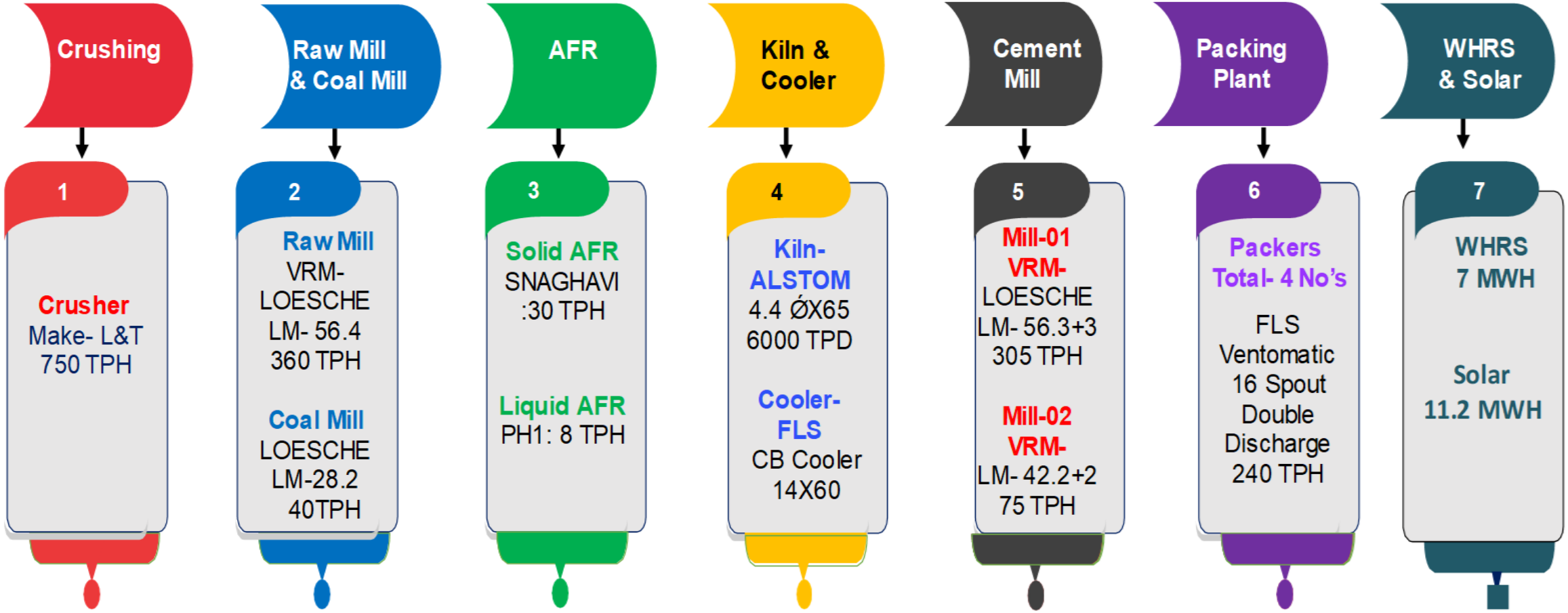
Location Wise	Capacity
Sree Jayajothi Cements Pvt Ltd -Nandyal	**3.2 MTPA**
Mellacheruvu Cement Works- Kodad	6.4 MTPA
Vizag Grinding Unit- Yalamanchili,Vizag	2.0 MTPA
Total	**11.6 MTPA**

1.1 Products



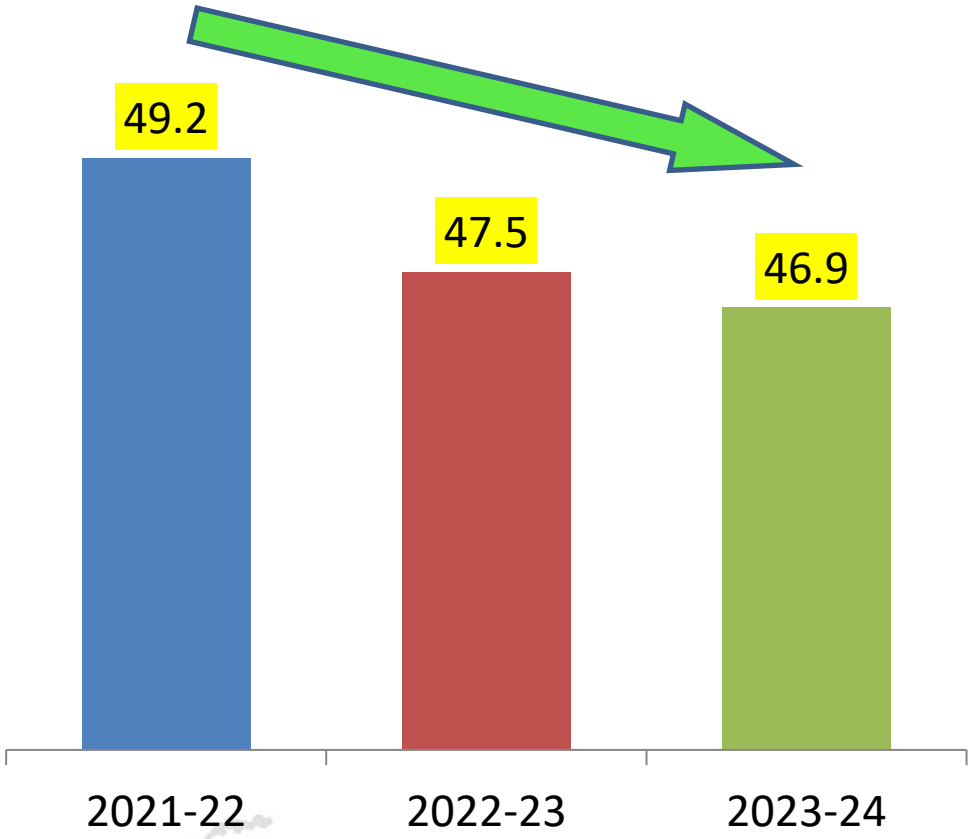
Blended Cement percentage increased from 39.8 to 50.4% (10.6% Rise) in Past three years

1.2 Technology & Major Equipment Specification



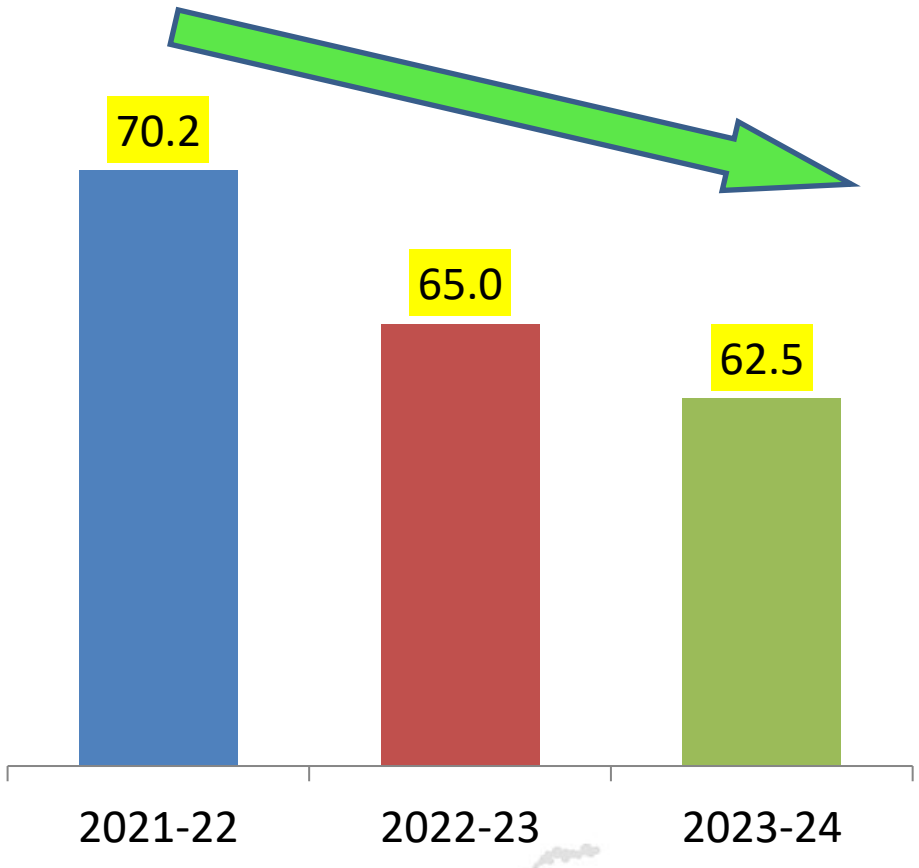
2.Power Consumption for last 3 years

Up to Clinkerization



Clinker Sp power reduced by 4.6%

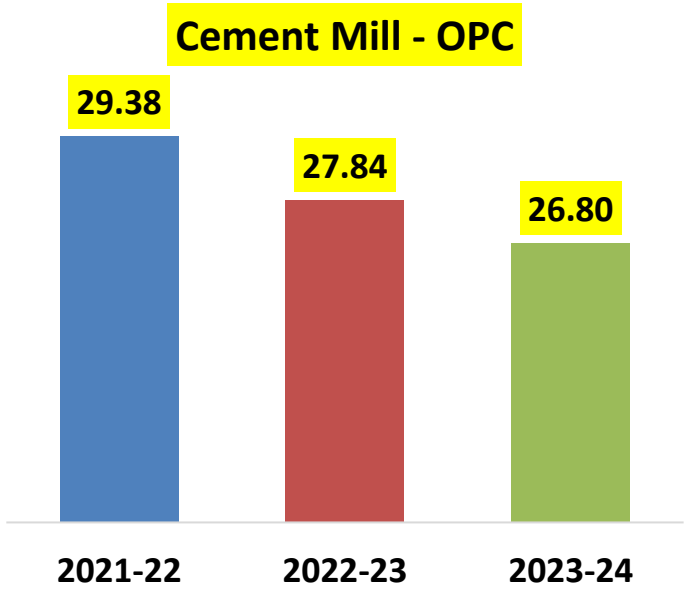
Overall Cement

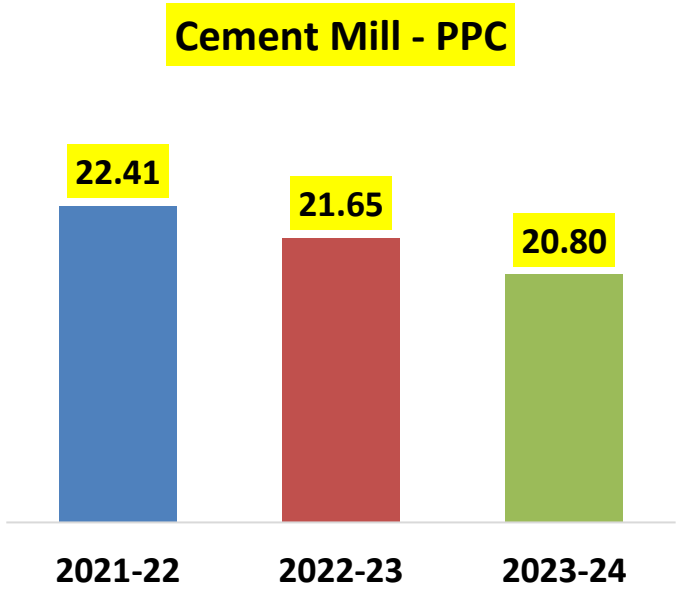


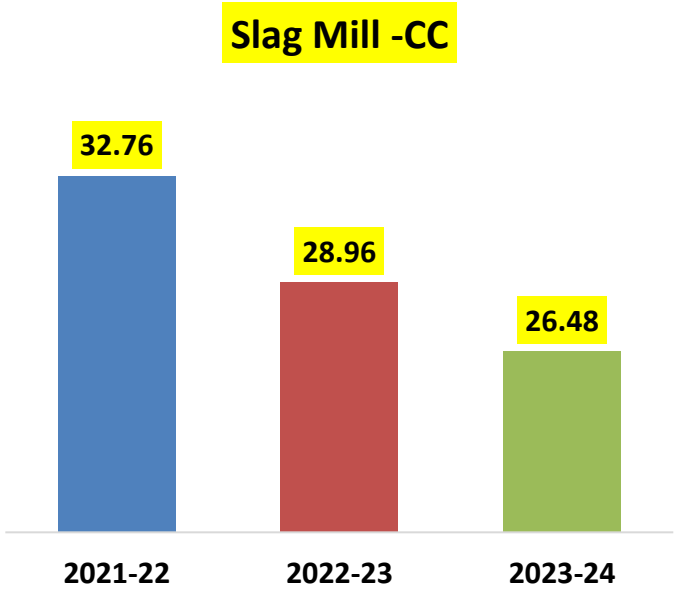
Over all Sp power reduced by 11.0 %

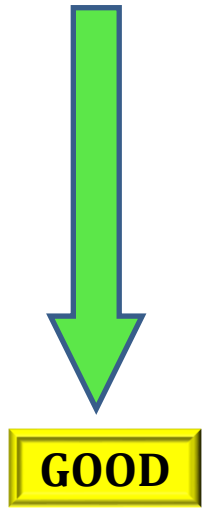
GOOD

2. Cement grinding - Product wise Sp Power









OPC Sp Power Reduced by 8.8%

Clinker factor : 91.2

PPC Sp Power Reduced by 7.2%

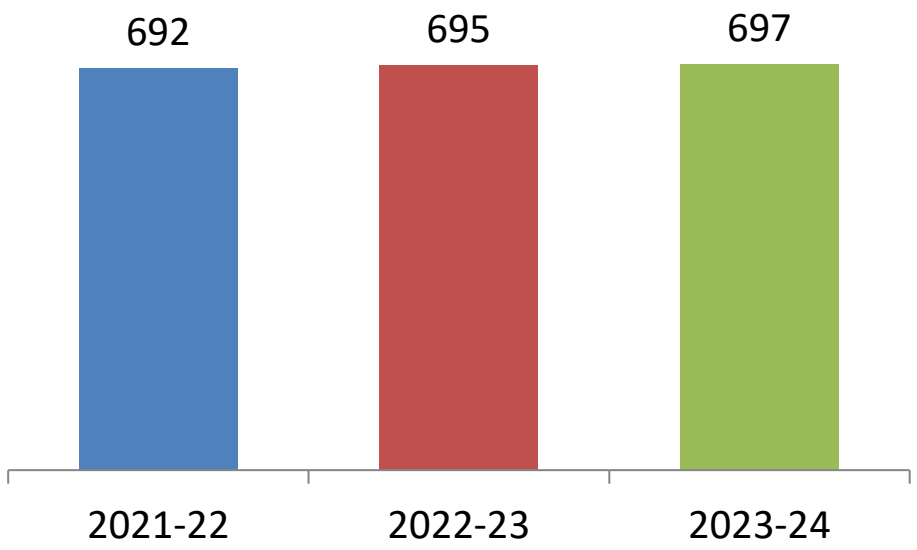
Clinker factor : 62.42
Total Fly ash : 34.1%,
(Wet: 6.6%, Dry: 27.5%)

CC Sp Power Reduced by 19.1%

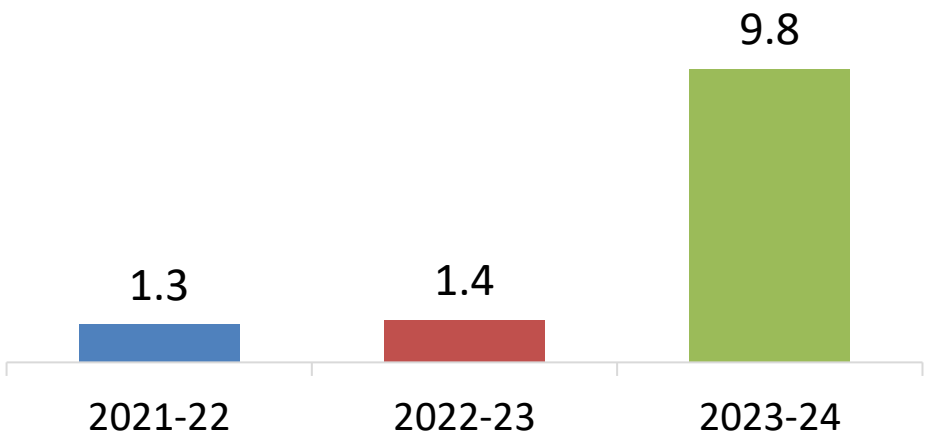
Clinker factor : 35.29
Slag : 36.2%
Total Fly ash : 25.1%,
(Wet: 4.6%, Dry: 20.5%)

2. Specific Heat Consumption for last 3 years

SHC

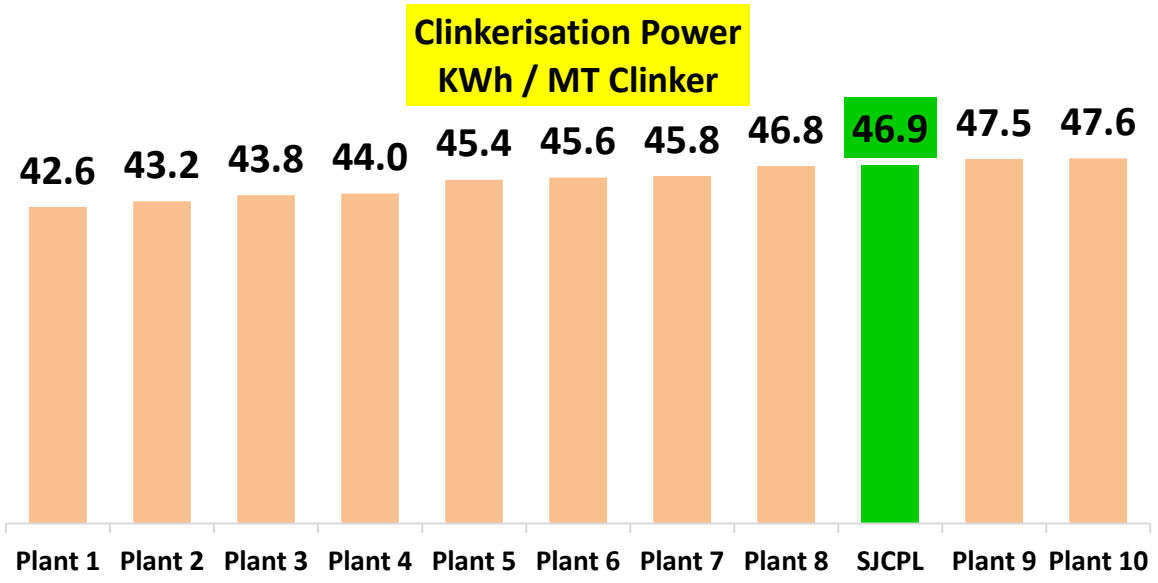


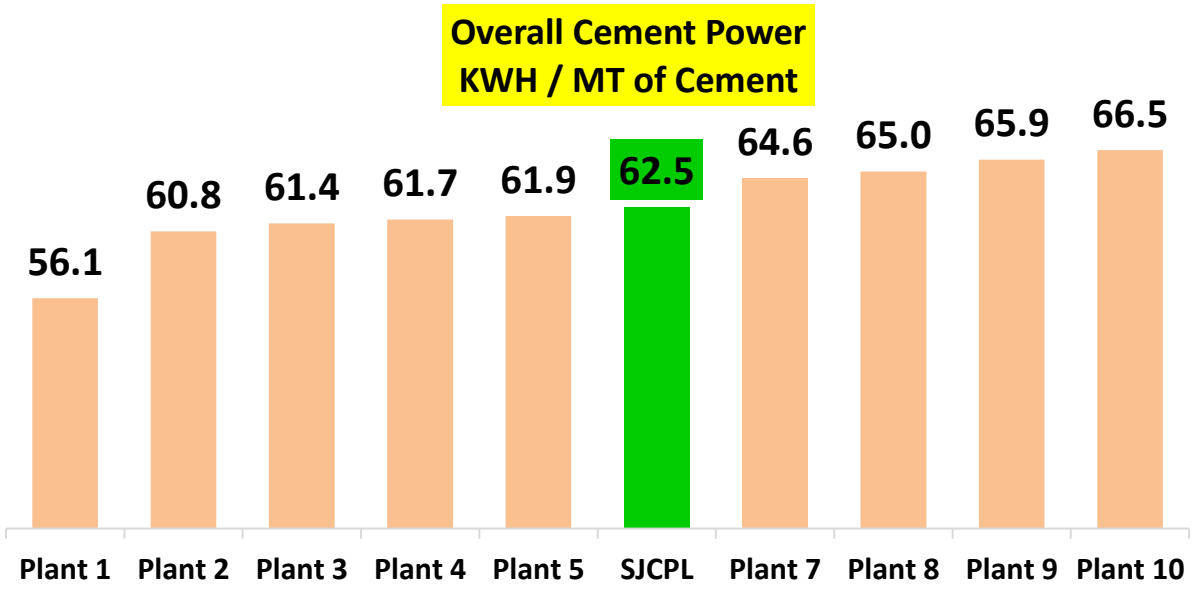
TSR



- SHC increased due to AFR usage increased from 1.4 to 9.8 % TSR

3.1 National Benchmarking





Source: CII Bench marking v 6.0

3.2 Short and Long term Target setting

Section	Particular	Units	Achieved (2023-24)	Target (2024-25)	Target (2025-26)	Target (2026-27)
Clinkerisation	Specific Energy Consumption	kWh/MT Clinker	46.9	46.7	46.5	46.0
Cement Grinding	Specific Energy Consumption	kWh/MT Grinding	25.2	24.8	24.4	23.8
Overall Power	Specific Energy Consumption	kWh/MT Cement	62.5	62.0	61.5	61.0
Kiln Sp Heat	Specific heat Consumption	Kcal/Kg Clinker	697	710	710	710
AFR	TSR	%	9.8	25	30	35

3.3 Road Map To achieve National Benchmark

- Clinker SPC : 42.5 Kwh/MT
- SHC: 682 Kcal/kg. clinker
- Over All SPC : 56 Kwh/MT

- Installation of Chlorine by-pass system to increase AFR usage further
- Increasing blended cements to 65%

- Increasing the calciner height
- Reduce Cut off clearance for 2 No's of identified 2 process Fans

- Replacement of Cooler grate plates, additional module in cooler to increase the Recuperation efficiency,
- Installation of Pfister pump for PC & KC coal conveying

- Process Optimizer Expert System by AI

- Conversion of Plant lightings with solar
- Green power Purchase from open access

3.4 Major Encon Projects planned during 2024-25

S.No	Proposed Major Energy Efficiency projects	Investment Rs. Lakhs	Estimated Savings (Rs. Lakhs)
1	Magnetic drum separator with vibro feeder arrangement for cement mill reject circuit	50	64
2	Slag mill fan outlet duct replacement with higher size to reduce the positive pressure	10	5.47
3	Slag Crusher installation to reduce the size of Slag and increasing mill output	75	32
4	Cooler fan 471 FN2 - Bell mouth modification to reduce pressure drop	0.5	6.78
5	Installation of Weigh feeder in Cement grinding circuit effective utilization of PI	25	12
6	Apply Heat resistant paint for kiln and preheater to reduce the radiation losses	40	25
7	Reduce header pressure of cooling water and avoid Over head tank pumping	5.0	9.1
Total		201	145

4.1 List of Energy Saving projects implemented in 2021-22

S.No	Name of Energy Saving projects	Investment (INR Million)	Electrical savings (Million KWh)	Thermal savings (Million Kcal)	Total savings (INR Million)
1	Cement mill Bag house fan inlet duct modification for reducing pressure drop	0.5	0.51	0	3.04
2	Slag mill Bag house fan inlet duct modification for reducing pressure drop	0.3	0.14	0	0.84
3	Coal mill booster fan VFD installation	1.5	0.28	0	1.71
4	Cement mill Booster fan VFD installation	8.0	0.39	0	2.37
5	Removal of Pre-heater fan inlet damper	0.2	0.21	0	1.27
6	Coal mill booster fan inlet cyclone bypass duct made in operation/Installation of VFD	0.1	0.23	0	1.38
7	Replacement of conventional fittings with LED	0.7	0.06	0	0.45
	Total	11.3	1.82	0	11.06

4.2 List of Energy Saving projects implemented in 2022-23

S No	Name of Energy Saving projects	Investment (INR Million)	Electrical savings (Million KWh)	Thermal savings (Million Kcal)	Total savings (INR Million)
1	Replacement of LED fittings	0.6	0.1	0	0.4
2	HAG coal burner modification	0.1	0	4051	3.8
3	Installation dust settling hopper for Raw Mill Bag house inlet	1.9	0.3	0	1.5
4	Installation of guillotine damper after AQC bypass damper	2.3	1.2	0	7.2
5	Modification of raw mill center feed chute	0.1	0.5	0	3.2
6	Cement mill (VRM) table stump cone modification	0.0	1	0	6.2
7	Coal mill booster fan inlet damper removal	0.0	0	0	0.2
	Total	5.0	3.1	4051	22.5

4.3 List of Energy Saving projects implemented in 2023-24

S.No	Name of Energy Saving projects	Investment (INR Million)	Electrical savings (Million KWh)	Thermal savings (Million Kcal)	Total savings (INR Million)
1	Dry fly ash distribution system arrangement for cement mill	0.05	0.20	0	1.20
2	Install RTD in hot well and interlock CT fan with hot well water temperature	0.05	0.00	0	0.02
3	VFD for cement mill booster fan	4.70	0.56	0	2.37
4	VFD for ACW pump at WHRS	0.80	0.01	0	0.41
5	Cement Mill Bag house Dust settling hopper provision	1.50	0.57	0	3.43
6	Slag Mill Bag house Dust settling hopper provision	0.50	0.02	0	0.14
7	Coal Mill Recirculation duct modification	0.50	0.07	0	0.43
8	Slag mill Slave Roller taken out to reduce the Pressure drop across the mill	0.13	0.21	0	1.25
9	Distribution box at calciner entry area of SAFR	0.10	0.00	32400	6.50
10	Pressure drop Reduction across coal mill outlet duct	0.10	0.12	0	0.60
	Total	8.43	1.76	32400	16.43

4.4. Summary of Energy Saving projects implemented in last 3 years

ENERGY

Year	No of Energy Saving projects	Investment (INR Million)	Electrical savings (Million KWh)	Thermal savings (Million Kcal)	Total savings (INR Million)	Impact on SEC (kWh /MT cement)
2021-22	7	11.3	1.8	0	11.1	0.9
2022-23	7	5.0	3.1	4051	22.5	1.4
2023-24	10	8.4	1.8	32400	8.0	0.7
Total	24	24.7	6.7	36451	41.6	3.0

5. Innovative Projects

5.1. Slag mill Slave Roller taken out

- **Problem in Slag mill (LM 46.2+2)**
  - Less maintenance area on Table
  - Higher pressure drop across the mill
  - Higher false air entry through slave rollers
- **Possible Reason**
  - Slave rollers are given by M/s Loesche for supporting the master roller to form stable grinding, But Slave roller lifted to 250mm and Kept idle as it is not giving any positive results in output.
- **Project Description:**
  - **Taking out the Slave roller**
  - **Making dummy for the slave roller area**
  - **Maintain same Nozzle ring area and velocity**
- **Results:**
  - DP across the mill got reduced by 40 mmwg
  - Mill main drive load reduced 120 Kwh/Hr
  - Over all Sp power consumption reduced by 0.57 KWh/MT of Product
- **Cost benefit analysis:**

- Annual Power saving : **2.08 Lakh Kwh**
- Annual Cost saving : **Rs. 12.48 lakhs**
- Investment : **Rs. 1.3 lakhs**
- Pay back period : **1 Month**

5.2. Distribution box at calciner entry area of SAFR

➢ Problem :

- While using Solid AFR, Material is dropping on Kiln inlet leads to high CO formation, Unable to increase AFR feed rate >10 TPH

➢ Possible Reason

- Higher size of Solid AFR
- Lower velocity in Kiln riser duct

➢ Project Description:

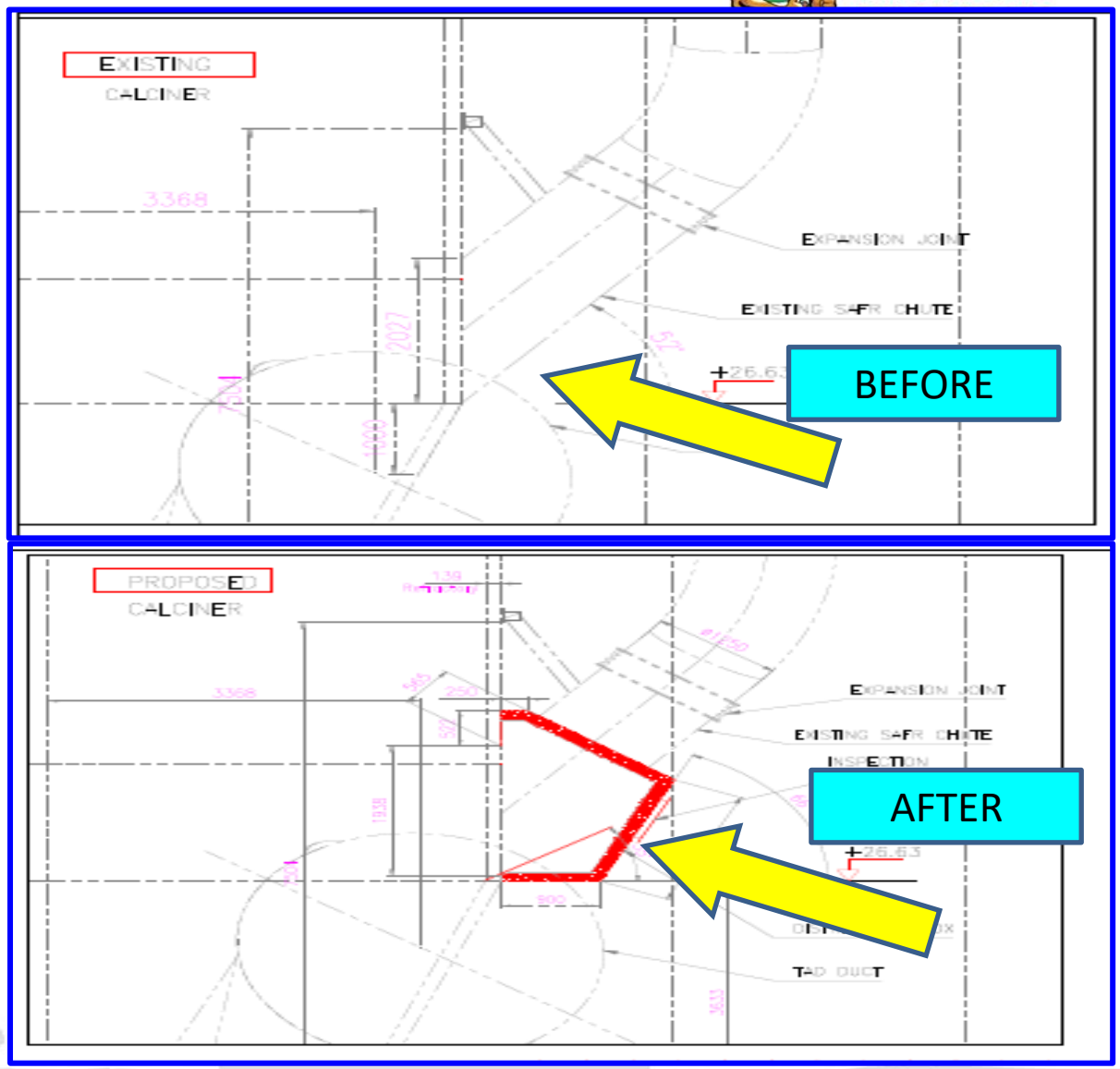
- **Installation of distribution box with SS plate to avoid direct fall of Material on Kiln inlet area**

➢ Results:

- CO formation at Kiln inlet is eliminated
- AFR feed rate can able to increase up to 16 TPH (20% TSR)

➢ Cost benefit analysis:

- Annual cost saving : 65 lakhs
- Investment : 10 Lakhs
- Pay back period : 1 Month



5.3. Pressure drop Reduction across coal mill outlet duct

- **AIM:**
  - Normally Coal mill outlet to Bag house inlet pressure drop will be around **50-75mmwg**, where as our case pressure drop is **105 mmwg**. So, we decided to reduce the pressure drop across the duct.
- **Project Description:**
  - Measured the pressure drop across the mill outlet duct, found pressure drop higher side at bend portion
  - Duct orientation changed Mill outlet bend to bag house entry area
  - False air across Mill outlet duct was arrested
- **Results:**
  - DP across the duct reduced by 25 mmwg
  - Sp power reduced by 0.5 Kwh/MT of material
- **Cost benefit:**
  - Annual Power saving : **1.18 Lakh Kwh**
  - Annual Cost saving : **Rs: 6 lakhs**
  - Investment : **Rs: 1 Lakh**
  - Pay back period : **2 Months**

6.1. Utilization of Renewable Energy

Solar Power Plant

Installed 11 MW Solar Power Plant
Online monitoring of Soiling Losses
Semi Automatic cleaning machine

Benefits

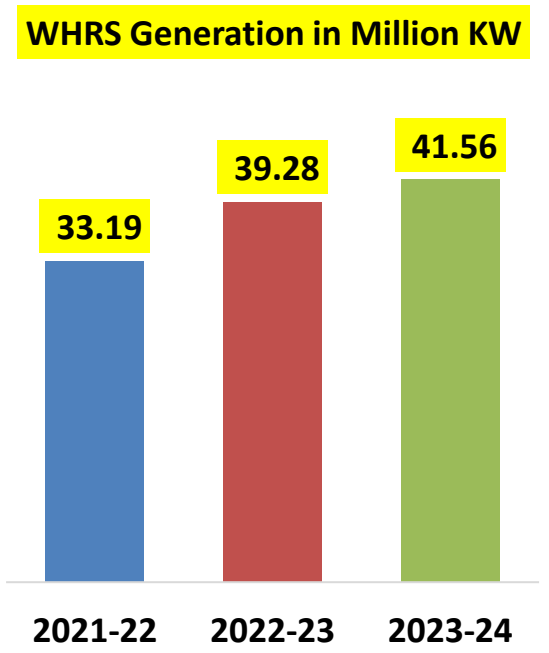
- Reduction of Green House gas Emissions
- Reduction of Global warming
- Conservation of Natural resources
- 12.5% of Electrical Energy replaced with RE

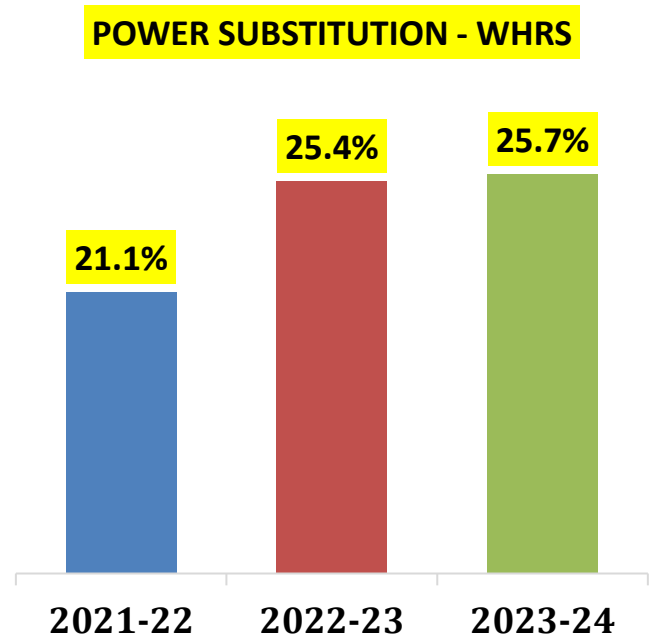
Year	Technology	Installed Capacity(MW)	Generation (Million KWh)	% of overall electrical consumption
2021-22	Solar PV	11.2	16.4	12.3
2022-23	Solar PV	11.2	18.2	12.3
2023-24	Solar PV	11.2	19.5	12.5

6.2 WHR PP-7.0 MW

38.0% of Total Plant Electrical energy requirement from Green Power in 2023-24

WHRS PLANT





7.1 AFR consumption for last 3 years

AFR Consumption							
		FY 2021-22		FY 2022-23		FY 2023-24	
S.NO	Material Name	AFR Qty (MT)	NCV (ARB)	AFR Qty (MT)	NCV (ARB)	AFR Qty (MT)	NCV (ARB)
1	HAZARDOUS SOLID WASTE PROCESSING SERVICE	5,663	2,439	2,326	2,326	3,177	2,187
2	HAZARDOUS LIQUID WASTE			2,048	2,048	15,838	2,341
3	AF RDF SHREDDED					40,810	1,525
4	AF MULTI LAYER PLASTIC WASTE					1,207	3,504
5	AF PAPERMILL PLASTIC WASTE					41	2,458
6	AF COIR WASTE COCONUT					1,471	1,174
7	AF FIREWOOD CHIPS					1,436	1,371
8	AF JAWAR HUSK					2,564	2,653
9	AF SHREDDED WOOD BARK					696	1,538
10	AF LOW GCV LIQUID					547	-
	Total	5,663	2,439	4,374	2,196	67,786	1,802

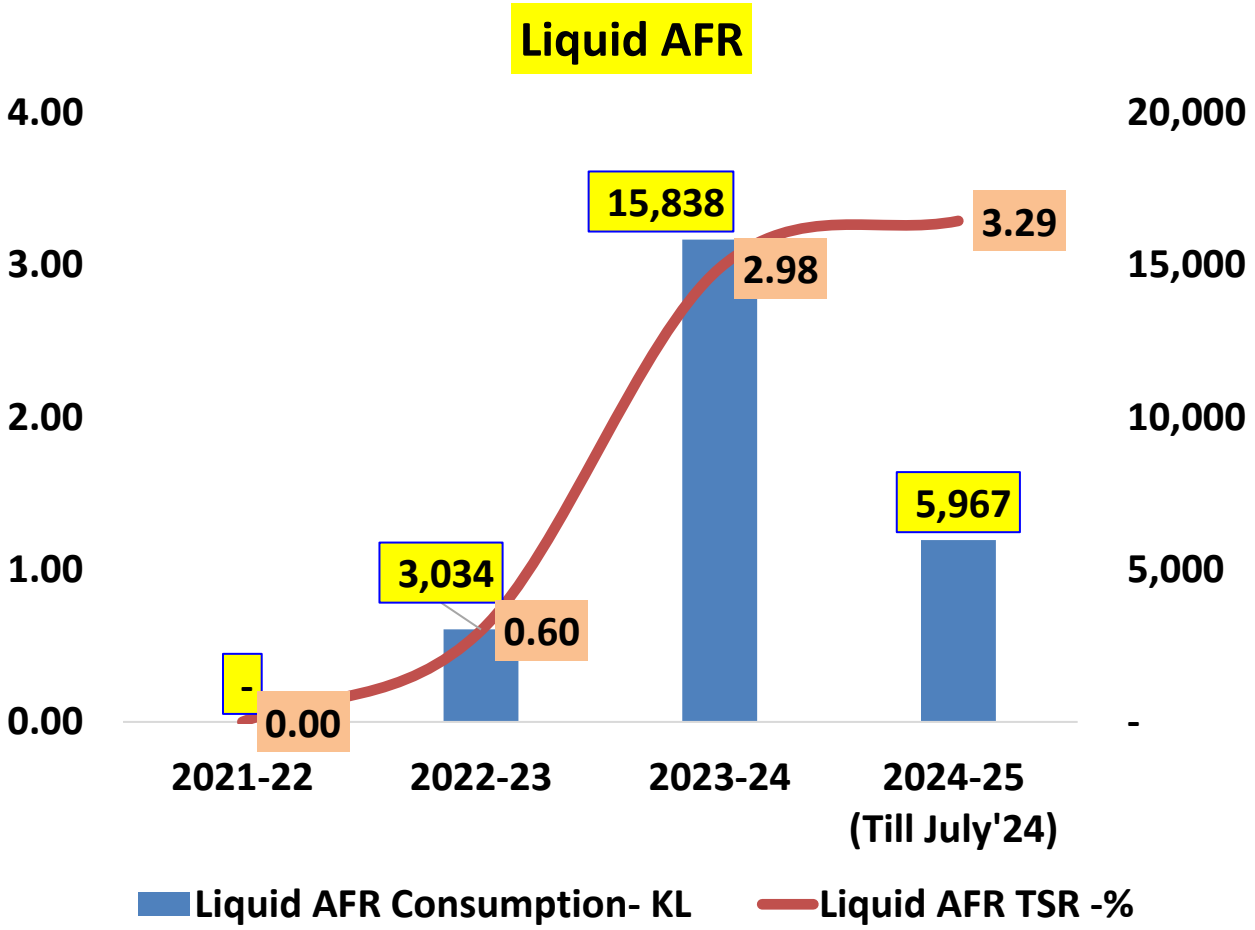
7.1 Alternative Raw material consumption for last 3 years

Alternative Raw Materials : Cement Grinding									
S.No	Year	Wet Fly ash	Dry Fly Ash	Slag	Chemical Gypsum	Cement Grinding	Total Alternative raw materials	%	WFA % in PPC
1	2021-22	48,238	1,53,253	1,83,854	53,018	20,60,766	4,38,364	21.3%	9.0%
2	2022-23	69,886	2,24,302	2,31,722	48,157	21,01,022	5,74,068	27.3%	13.5%
3	2023-24	99,995	2,98,955	1,95,664	51,455	24,07,377	6,46,069	26.8%	13.1%

Alternative Raw Materials : Raw Grinding						
S.No	Year	Total Raw Grinding	(EAF slag)	Red mud	LIME SLUDGE	Total
1	2021-22	24,76,959	1,381	0	0	1,381
2	2022-23	25,61,709	0	0	0	-
3	2023-24	27,10,129	0	32,445	374	32,819

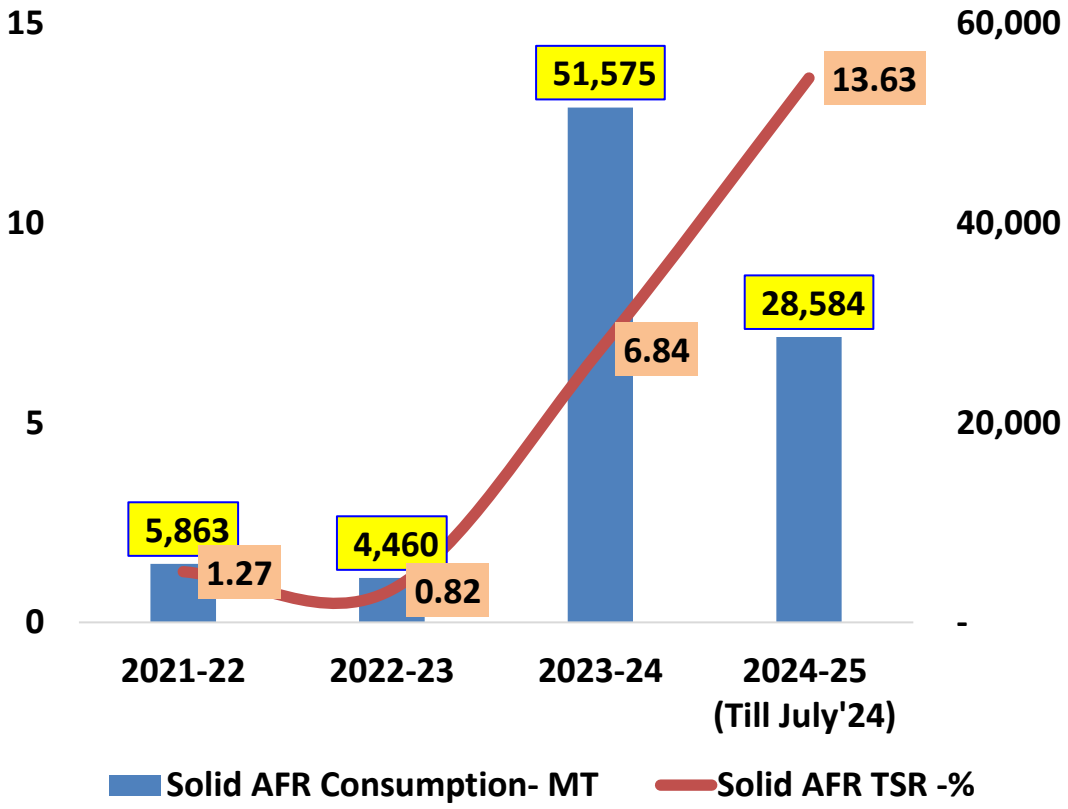
7. Waste Utilization

7.2 Liquid AFR system

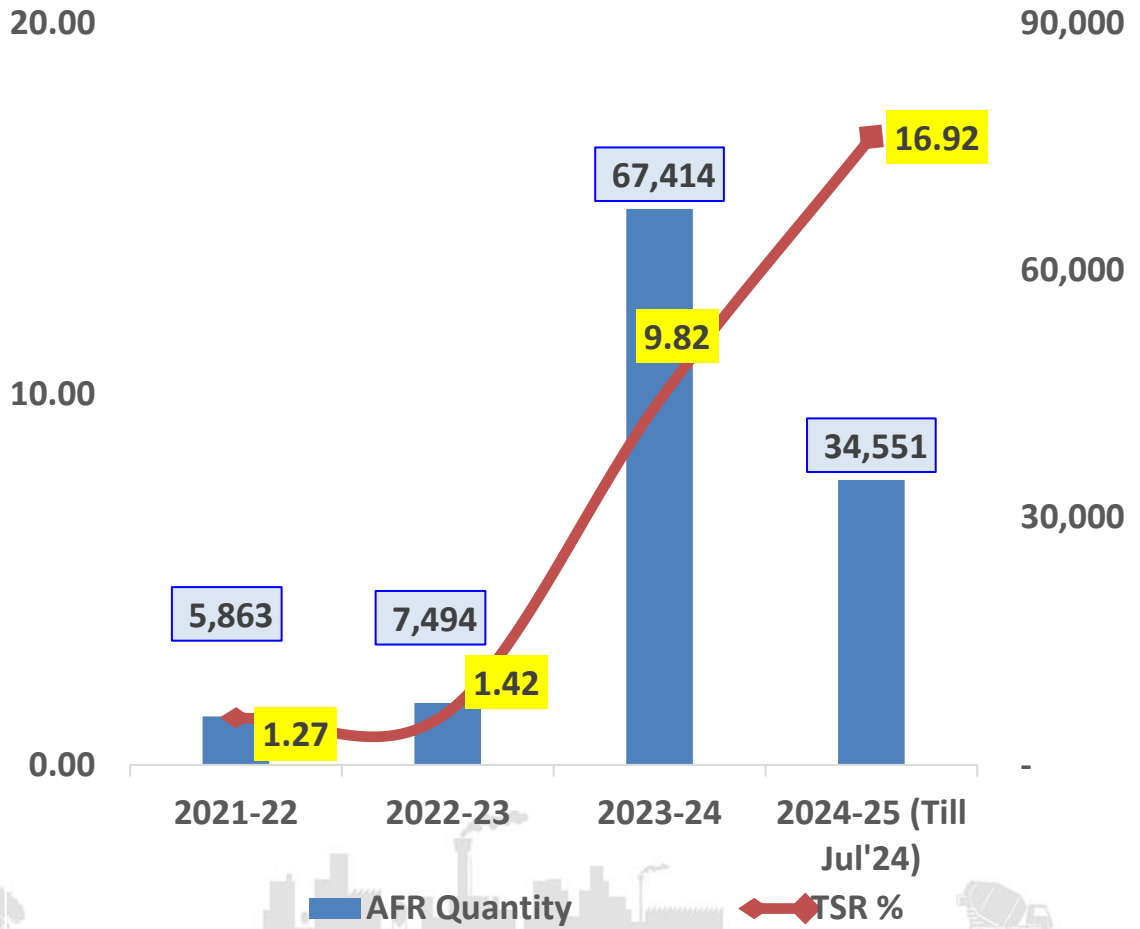


7.3 Solid AFR system

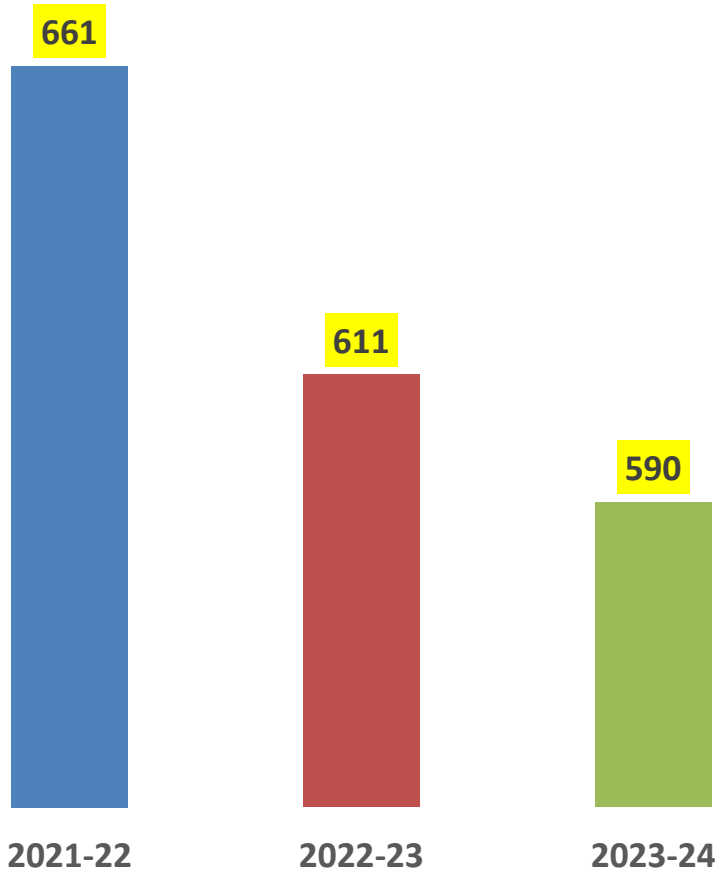
Solid –AFR



Total – AFR



8.1 GHG Emission intensity for last three years



S.No	Activity	Specific GHG		Specific GHG off sets	
		Kg/T Clinker	Kg/T Cement	Kg/T Clinker	Kg/T Cement
1	Total GHG emissions (Scope1, 2 and 3)	847	590	-	-
2	Scope 1 – Calcination	515	359	-	-
3	Scope 1 – Kin fuels	271	189	-	-
4	Scope 1 off sets – Kiln Afs	-	-	20	14
5	Scope 1 CPP fossil fuels	0	0	-	-
6	Scope 1 CPP offsets (biofuels and AF)	-	-	-	-
7	Scope 2 grid power	43	30	-	-
8	Scope 2 off sets (WHR & Solar)	-	-	19	13
9	Scope 2 off sets (Purchased RE power)	-	-	-	-
10	Scope 2 off sets (on site RE power)	-	-	9	6
11	Scope 3	17	12	-	-
12	Purchased and capital goods	6	4	-	-
13	Upstream and downstream transport	11	7	-	-

8.2 Short term/Long term plan for GHG emission reduction

S.No	LONG TERM TARGET	Scope	CO2 Emission Reduction- MT/Annum	TARGET Date
1	Increasing Blended Cement Production 5% over next three years.	Scope :1	37,188	Mar'26
2	Increasing Consumption of AFR up to 30.0% over next three years.	Scope :1	49,438	Mar'26
3	Usage of EV/ Bio fuels/Bio gas for vehicles (Mines , Internal transportation)	Scope : 3	353	Mar'26
4	Continuous Plantation of saplings, 5000 No's/year for next three years	Scope : 3	76	Mar'26
5	Manufacturing of LC3 Cement / Lime stone Cement	Scope :1	8,50,000	Mar'27
6	Use of latest technology to reduce CO2 emissions (Like carbon capturing and Storage)	Scope :1	4,50,625	Mar'28
7	Installation of Solar power plant off -Site (5 MW) /Purchasing Green power	Scope :2	7,004	Mar'28

9.1 Energy Management System

bsi.

By Royal Charter

Certificate of Registration

ENERGY MANAGEMENT SYSTEM - ISO 50001:2018

This is to certify that:

Sree Jayajothi Cements
Private Limited
Srinagar,
Yanakandla (V), Banaganapalle (M)
Kurnool Dist 518 124
Andhra Pradesh
India

Holds Certificate No: **ENMS 662693**

and operates an Energy Management System which complies with the requirements of ISO 50001:2018 for the following scope:

The Manufacture and Despatch of Clinker, Cement and Ground Granulated Blast Furnace Slag utilizing Electricity, High Speed Diesel, Solar Energy, Coal and Compressed air and Waste Heat Recovery System.

For and on behalf of BSI:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2017-04-21
Latest Revision Date: 2020-02-22

Effective Date: 2020-04-21
Expiry Date: 2023-04-20

Page: 1 of 1

...making excellence a habit.

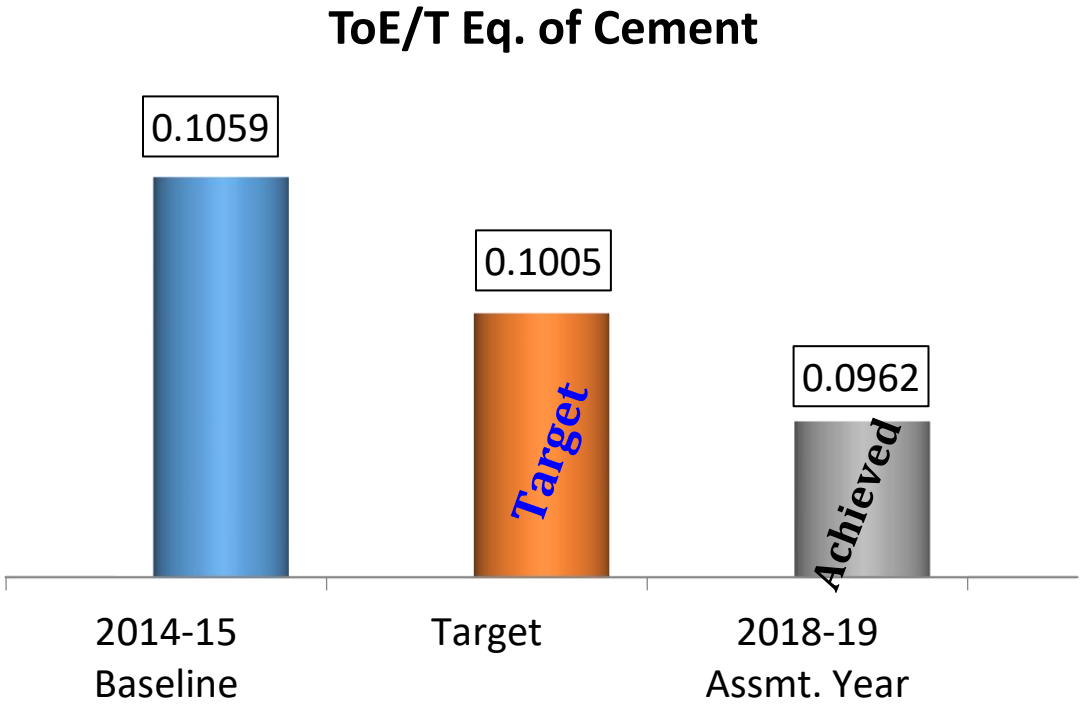
This certificate was issued electronically and remains the property of BSI and is bound by the conditions of contract.
An electronic certificate can be authenticated online.
Printed copies can be validated at www.bsi-global.com/ClientDirectory or telephone +91 11 2692 9000.
Further clarifications regarding the scope of this certificate and the applicability of ISO 50001:2018 requirements may be obtained by consulting the organization.
This certificate is valid only if provided original copies are in complete set.

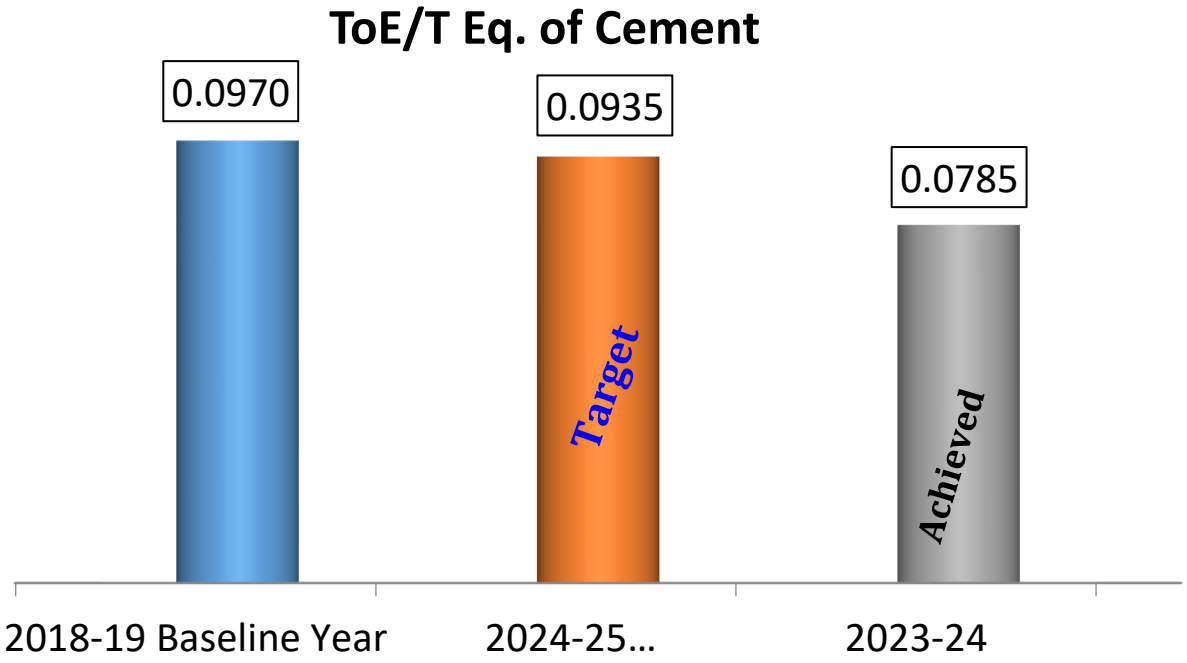
Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

- SJCPL installed digital Energy meters at different locations and monitoring through EMS.
- SJCPL having EnMS System (ISO 50001-2018)
- Daily production review (DPR) will be chaired by Plant head
- Monthly Review Meeting (MRM) will be Chaired by Director –Operations and Discuss on Energy performance, AFR usage and Energy saving projects
- **LCA Study conducted for the Plant operations Cradle to Gate in 2023 through CII**

EnMS (ISO 50001-2018)

9.2 PAT CYCLE





Target :5.09 % Reduction
Achieved :9.16 % Reduction
Ecerts :6103 Nos

PAT Cycle-II

PAT Cycle-VII

9.3 Green Co Certification

GreenPro

CII
Confederation of Indian Industry

CII-Green Products and Services Council

hereby certifies that

Maha Cement - Portland Pozzolana Cement (PPC)

(GPMHI355003)

Manufactured by Sree Jayajothi Cements Pvt Limited at Yanakandla Integrated Unit, Andhra Pradesh meets the requirements of GreenPro Ecolabel and qualifies as Green Product.

This certification is valid till ***December 2025***

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

Green Company- Gold Rating award

Green Product- Certificate (PPC, PSC & CC)

10.Net Zero commitment

GHG emission reduction Strategy

Carbon Neutral Approach Projects							
S.No	Scope of Emission	Present Specific GHG (2023-24)	Long Term Projects to Reduce GHG Emission	Specific GHG (2024-25)	Specific GHG (2025-26)	Specific GHG (2026-27)	Specific GHG (2027-28)
		Kg/T Cement		Kg/T Cement	Kg/T Cement	Kg/T Cement	Kg/T Cement
1	Scope 1 – Calcination	359	1.Carbon Capturing, Storage and Utilize the same 2. Manufacturing of LC3 Cement 3.Increasing Blended cement percent	323	323	287	251
2	Scope 1 – Kin fuels	189	Increase the Alternate fuel to 30%	151	141	132	132
3	Scope 1 CPP fossil fuels	0		0	0	0	0
4	Scope 2 grid power	30.1	1.Solar Power plant installation (5MW) off site 2. Green Power Purchase	30	27	24	21
5	Scope 3- Purchased and capital goods	4.3	1.GPS System for vehicles, 2.Clinker Wagon Loading, Railway siding	4	4	3	3
6	Scope 3 - Upstream and downstream transport	7.5	1.EV Vehicle/ Bio fuel/ Bio gas for the Upstream and Down stream transport	7	6	6	5
	Total GHG emissions (Scope1, 2 and 3)	589					434

RE 100: FY 2050, Carbon Neutral : FY 2060

Awards & Accolades

CII-ENERGY EFFICIENT UNIT AWARD-2018

CII-ENERGY EFFICIENT UNIT AWARD-2019

CII-ENERGY EFFICIENT UNIT AWARD-2023

Awards & Accolades

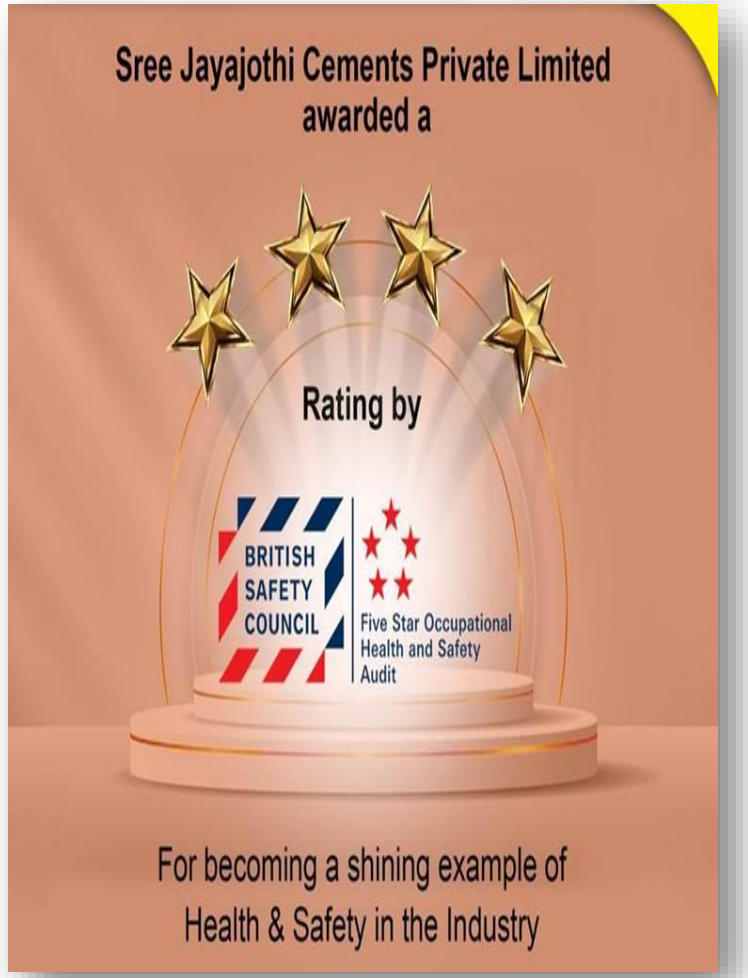
International Conference on Solid waste Management Excellence Award for Co-Processing 2023

National Award for Energy Excellence in Indian Cement Industry by NCCBM in 2022 at New Delhi

Awards & Accolades

AP State Energy conservation Award- Gold Award under Cement Sector category from APSECM

Gold Award from QCFI, Tirupati chapter 2023



British Safety Council with 4 Star Rating in Safety in 2024

SAVE
ENERGY & ENVIRONMENT