CII National Energy Award for Excellence in Energy Management 2023

Zuari Cement Limited
Solapur

Participant List – Zuari Cement Ltd, Solapur

Zuari Cement
HEIDELBERGCEMENT Group

CII National Energy Award for Excellence in Energy Management 2023 – Cement Sector , Grinding Unit

Mr. Deepak Kakkar
Plant Head

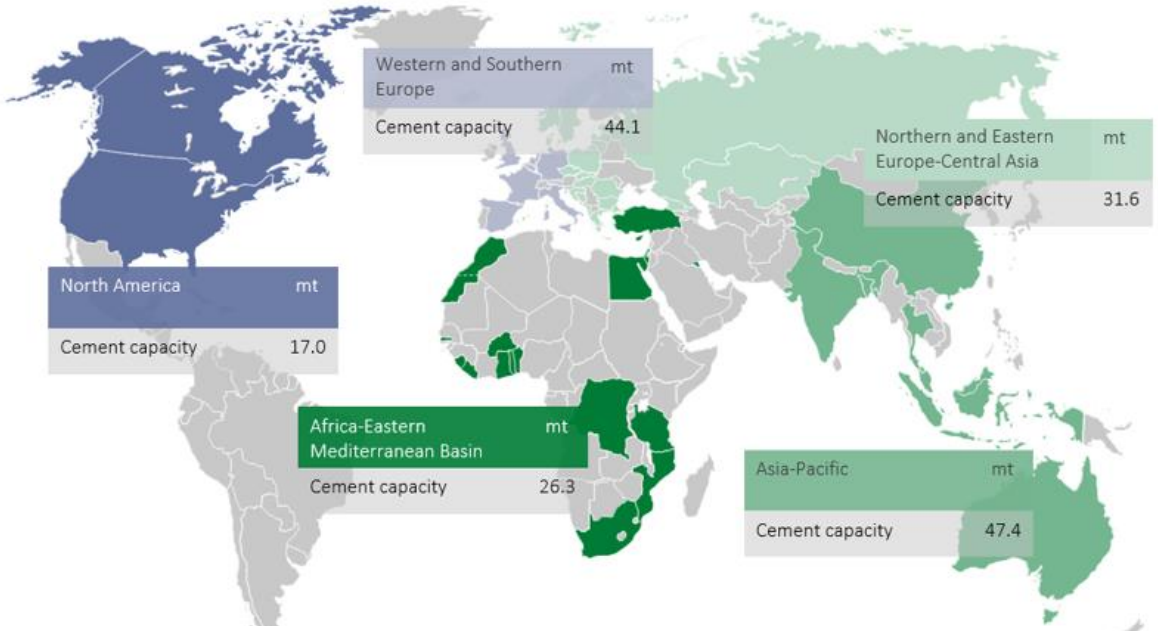
Mr. Rudramuni Aradhyamath
HOD Production

Mr. Nitesh Pidurkar
HOD Mechanical

1. Brief introduction Heidelberg Cement and Zuari Cement unit

Zuari Cement
HEIDELBERGCEMENT Group

Cement capacity of 184 mt (incl. joint ventures)

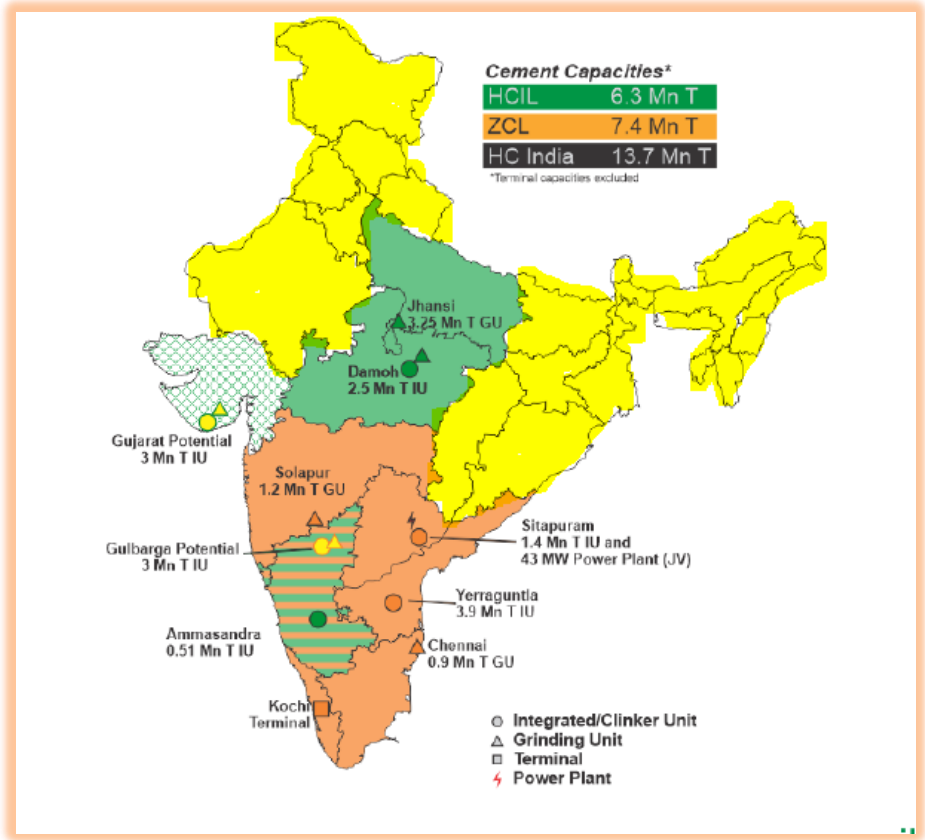


Heidelberg Materials is one of the world's largest building materials companies

51,000
employees
on 5 continents

3,000
locations
worldwide

Leading positions in: cement, aggregates, and ready-mixed concrete



Our Focus

- To be on on the path to carbon-neutrality.
- progressive minds with the ambition to drive transformation

HEIDELBERGCEMENT
INDIA

Unit Profile

- Cement Grinding Unit with installed capacity of **0.95 MTPA** , commissioned in 2015
- Dry Fly ash from Nearby NTPC super Thermal Power Solapur Grinding Unit is having
- **Art of technology** like High Efficiency motors, compressors, MV drives, VFD, IOT etc.
- Wagon loading system installed in Feb 2022

Major Equipment

- **Equipment Details:**

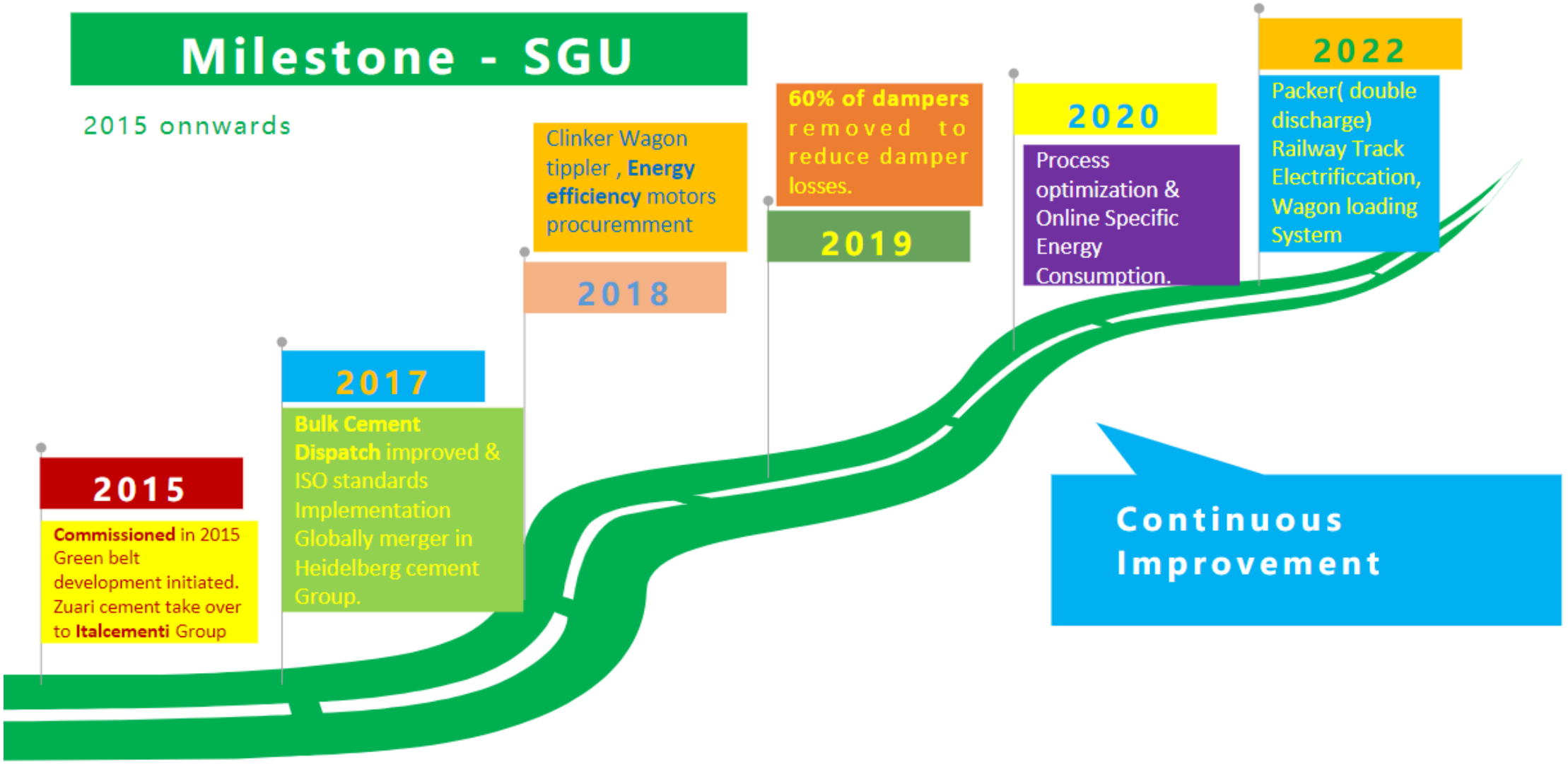
- **Cement Mill** : FLS Ball Mill,1No. Installed Capacity 110 TPH
- Running Capacity – 160 TPH
- **Packing Plant** : FLS Vento Matic Roto-Packer- 2Nos., 12 Spout each of 180TPH.
- **Wagon Tippler** : Elecon-1No. With capacity 25 Wagons per hour.
- Truck Loading – 3 Nos FLS , 180 TPH
- **Wagon Loading**: FLS, 8 Nos. of wagon loading machines with 120TPH each
- **Clinker storage Silo** : 20000 MT.
- **Cement storage Silos**:
- OPC silo 6000 MT.
- PPC silo 6000 MT.
- **Fly Ash silo** : 1500MT.

Clinker Silo | Fly ash Silo | Cement Silos

Packing Plant | Gypsum Yard | Wagon Tippler

Cement Mill | Wagon loading | Dry fly ash unloading system

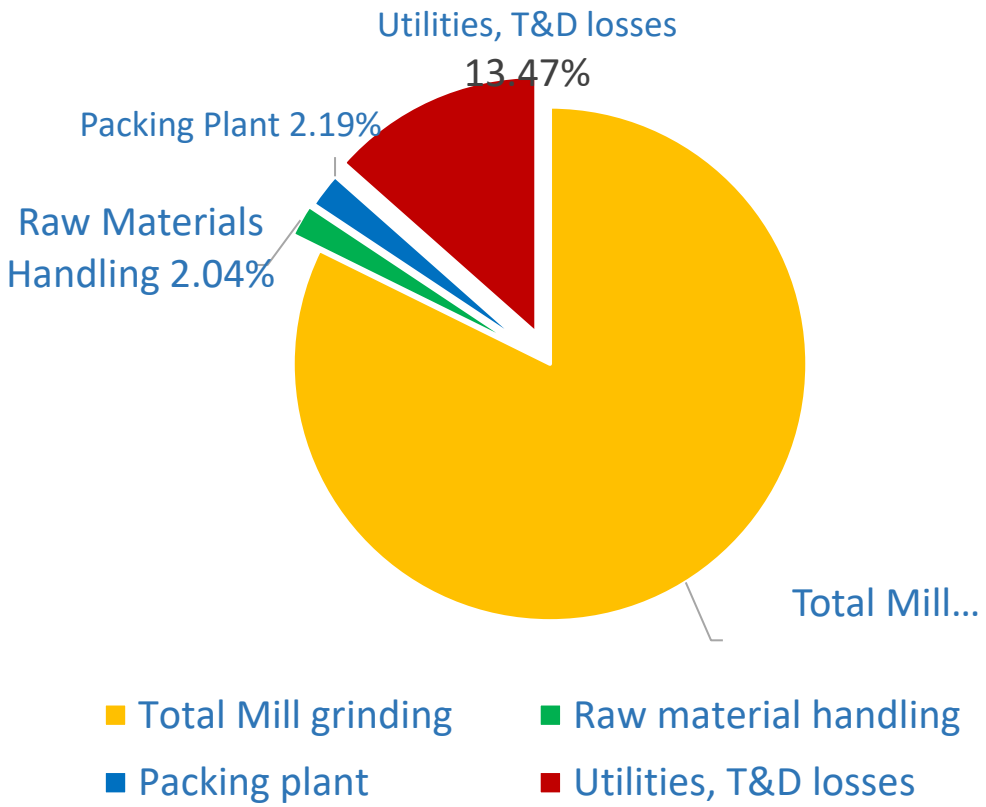
Solapur Unit - Milestone



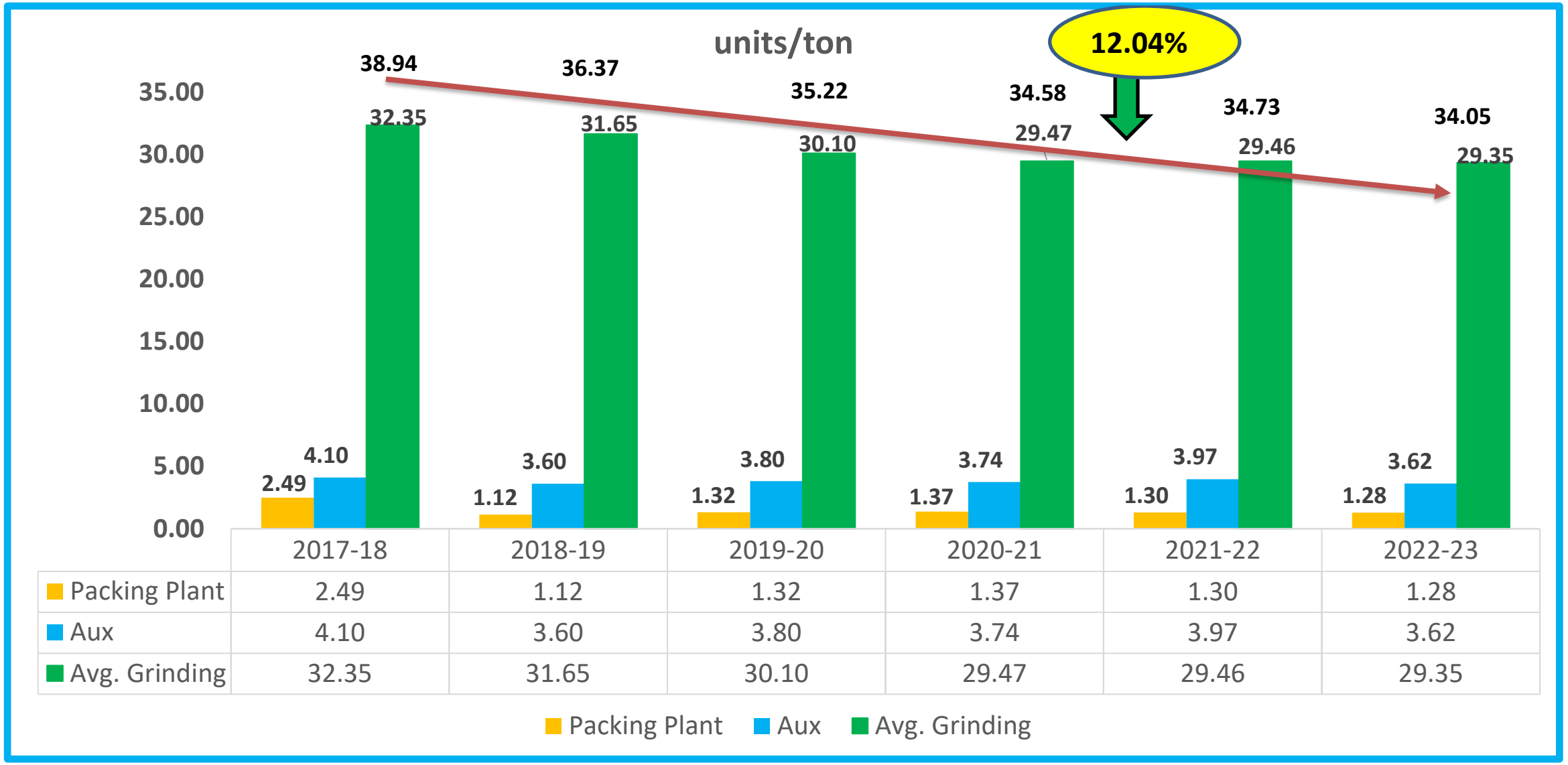
Major Power Consumption

Energy Consumption (Grid power)

- **Total Mill grinding**
- **Raw material handling**
- **Packing plant**
- **Utilities, T&D losses**

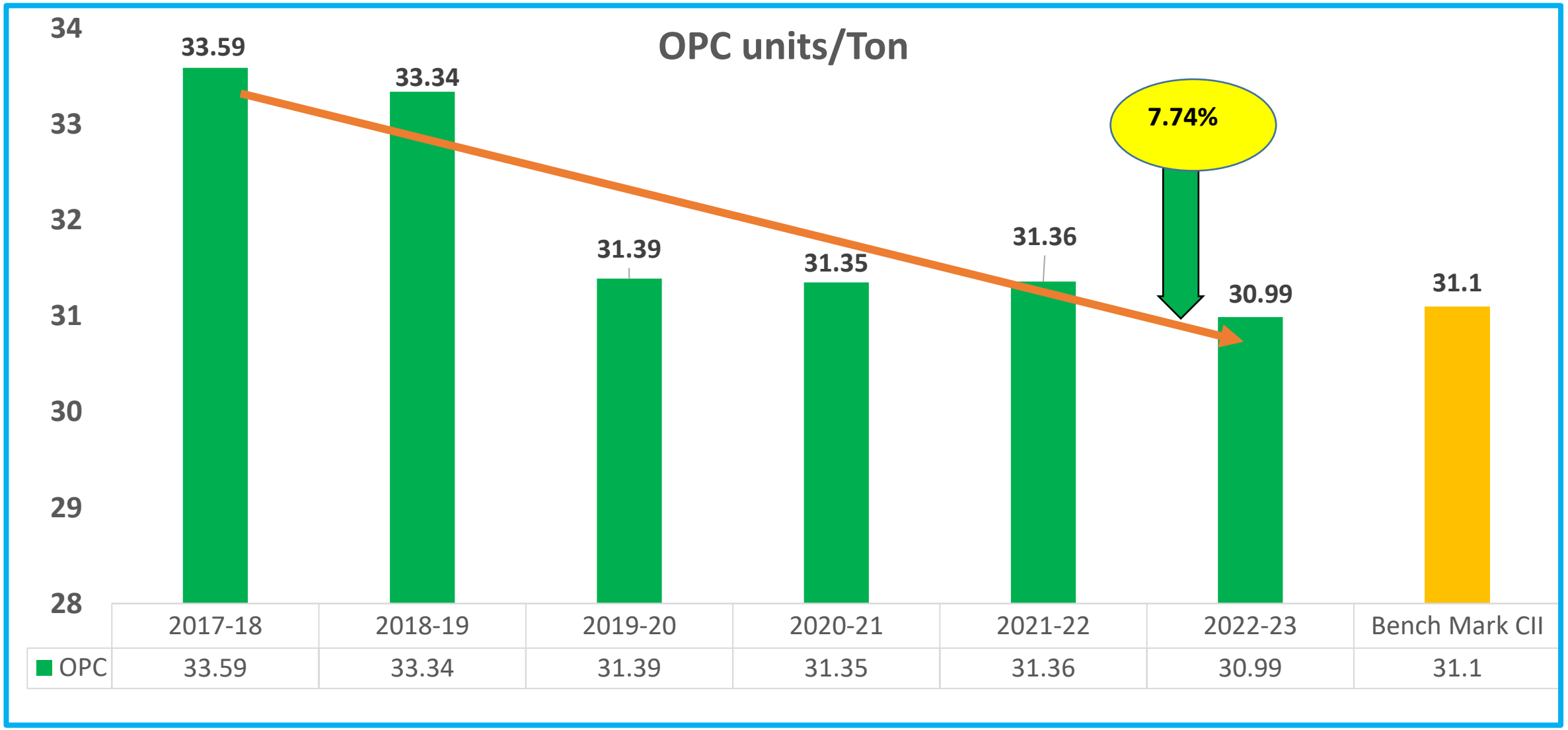


2. Overall Specific Power Consumption Kwh/T

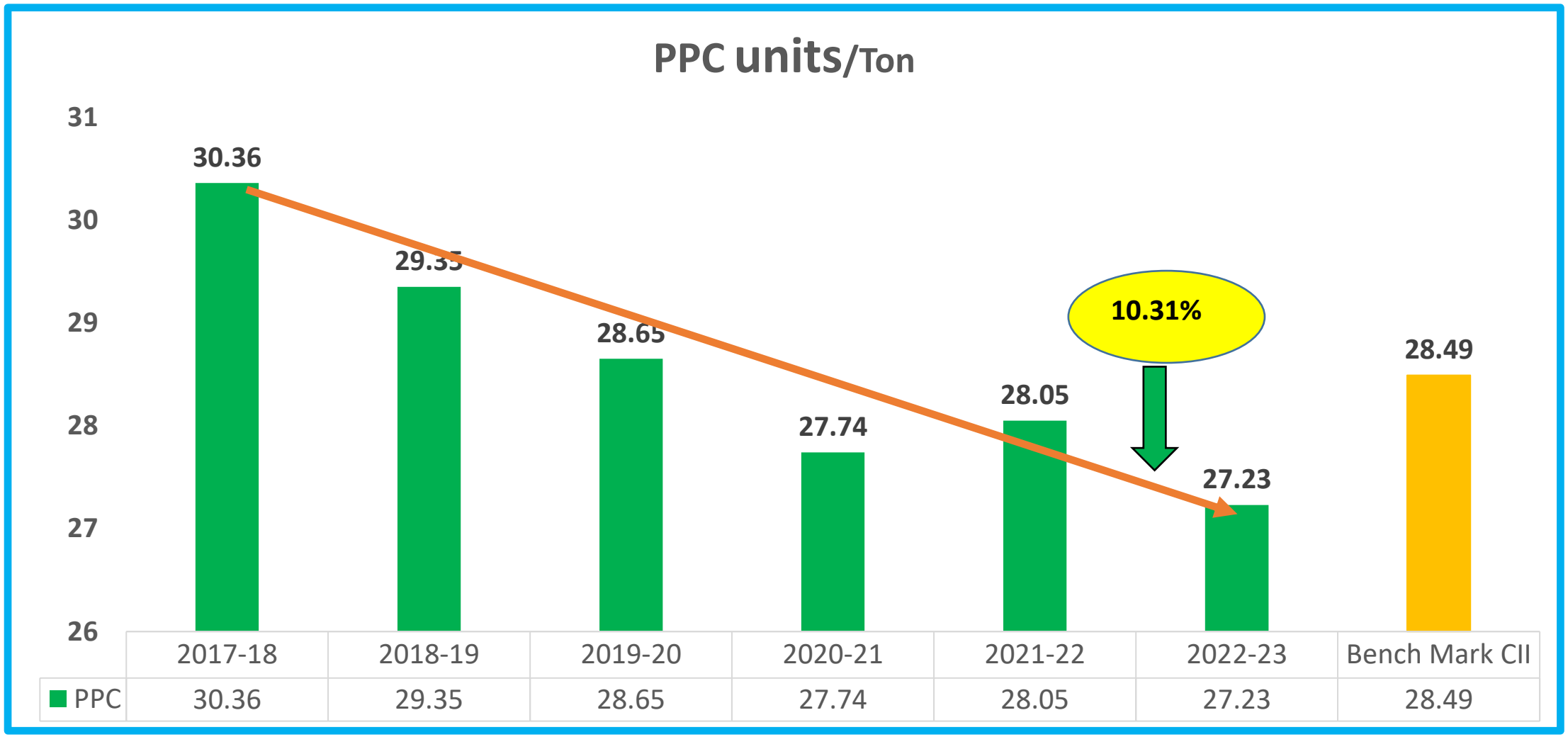


	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Packing Plant	2.49	1.12	1.32	1.37	1.30	1.28
Aux	4.10	3.60	3.80	3.74	3.97	3.62
Avg. Grinding	32.35	31.65	30.10	29.47	29.46	29.35

2. Specific Power consumption Trend OPC & Benchmark

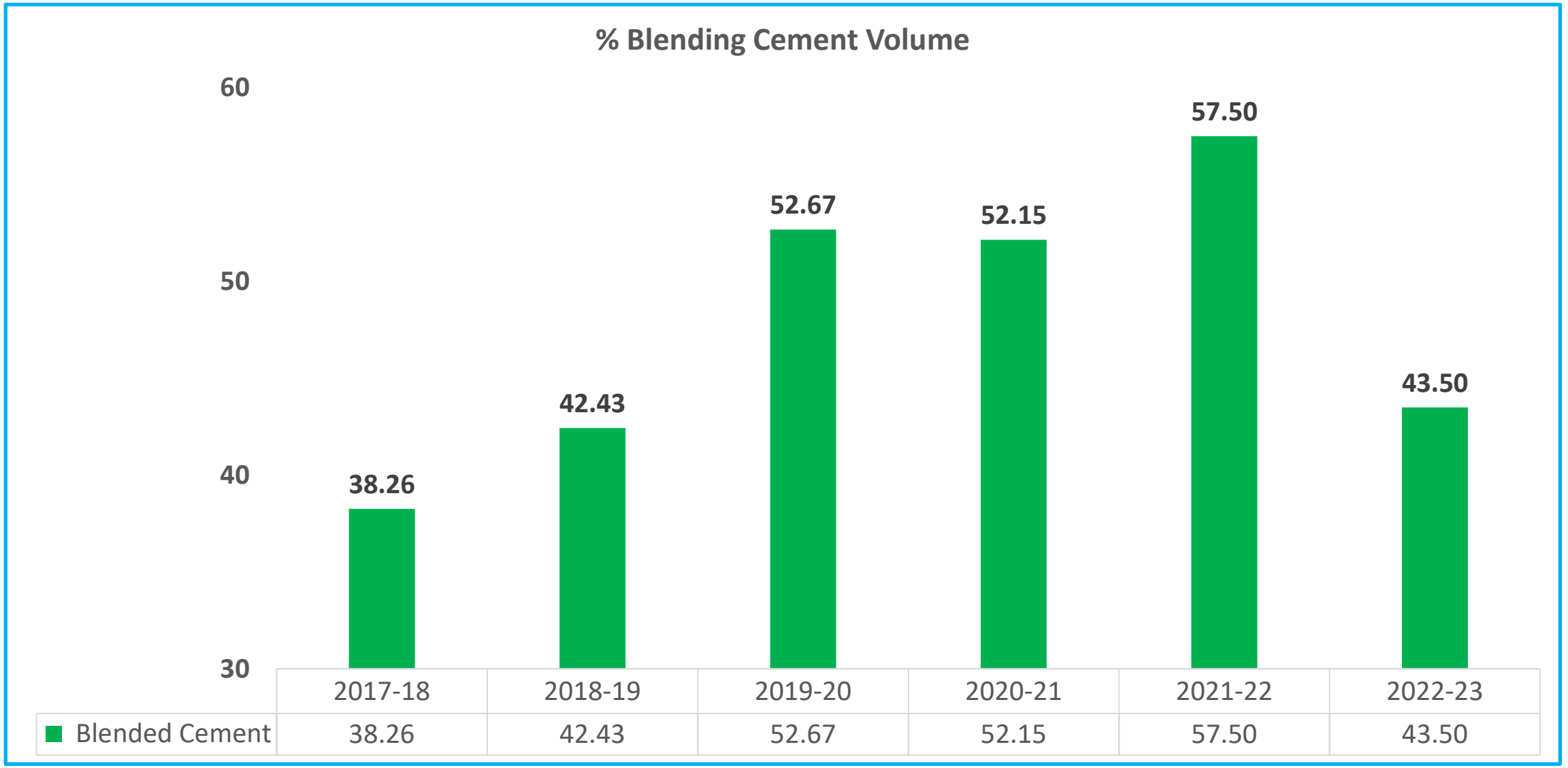


2. Specific Power consumption Trend PPC & Benchmark



Blending Cement Volume (%)

Zuari Cement
HEIDELBERGCEMENT Group



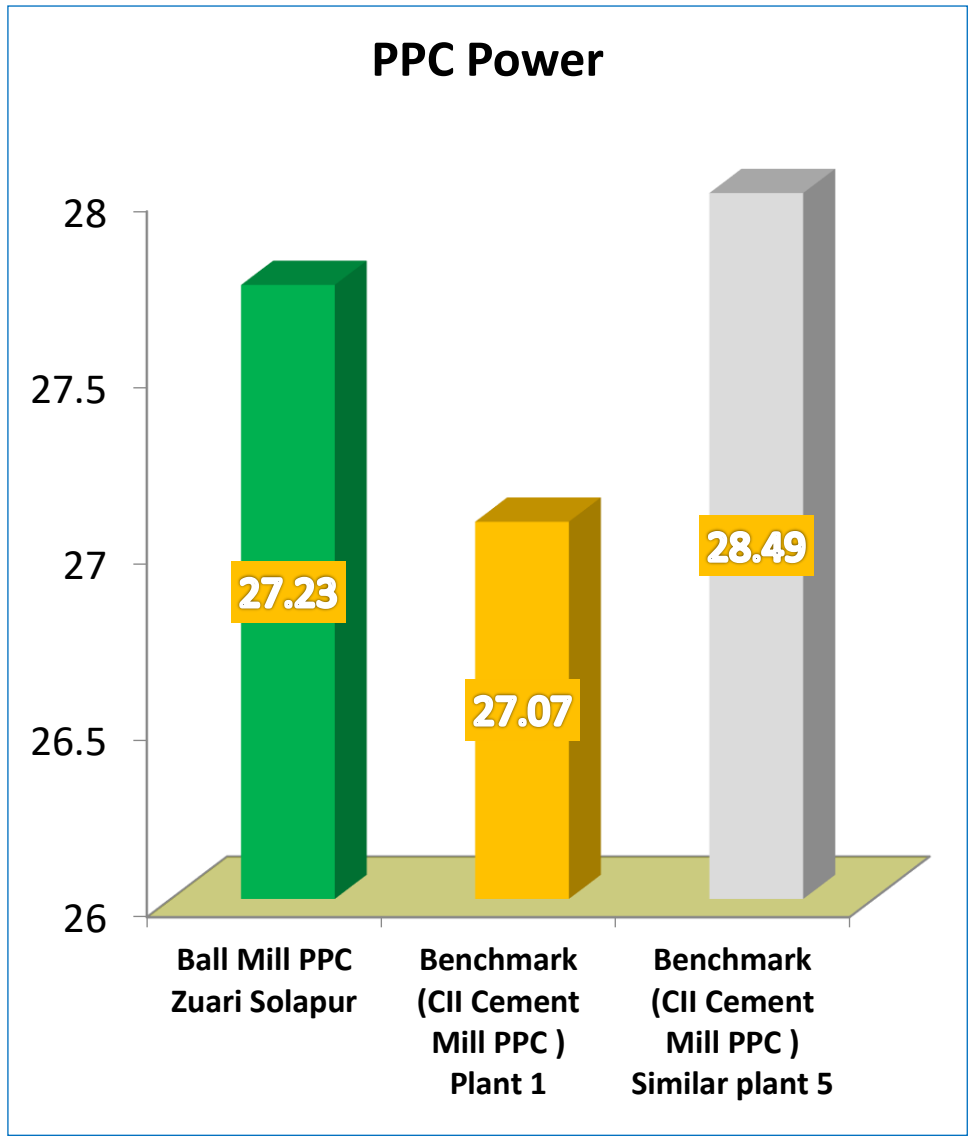
HEIDELBERGCEMENT
INDIA

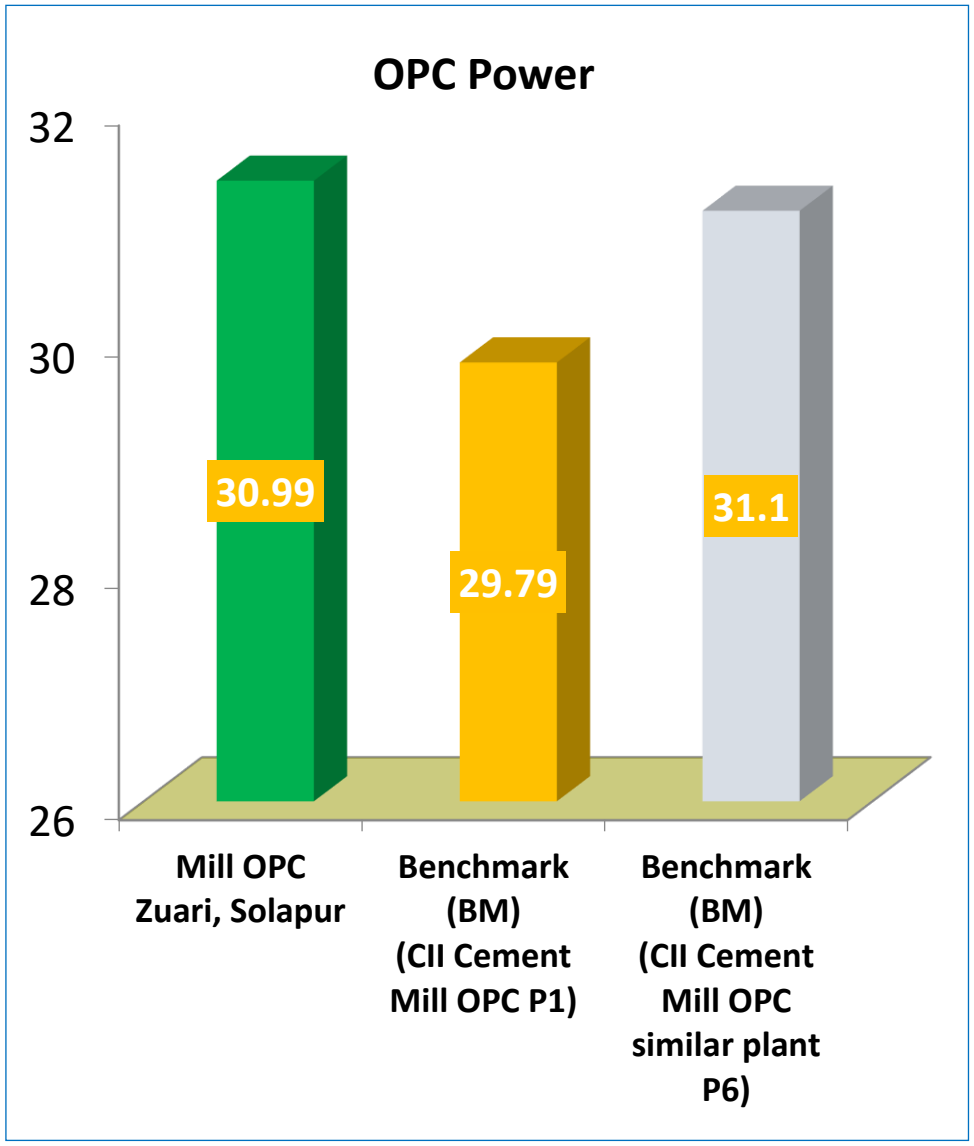
Zuari Cement

HEIDELBERGCEMENT

Benchmark & Road Map

3. Specific Power consumption Trend OPC & PPC & Benchmark

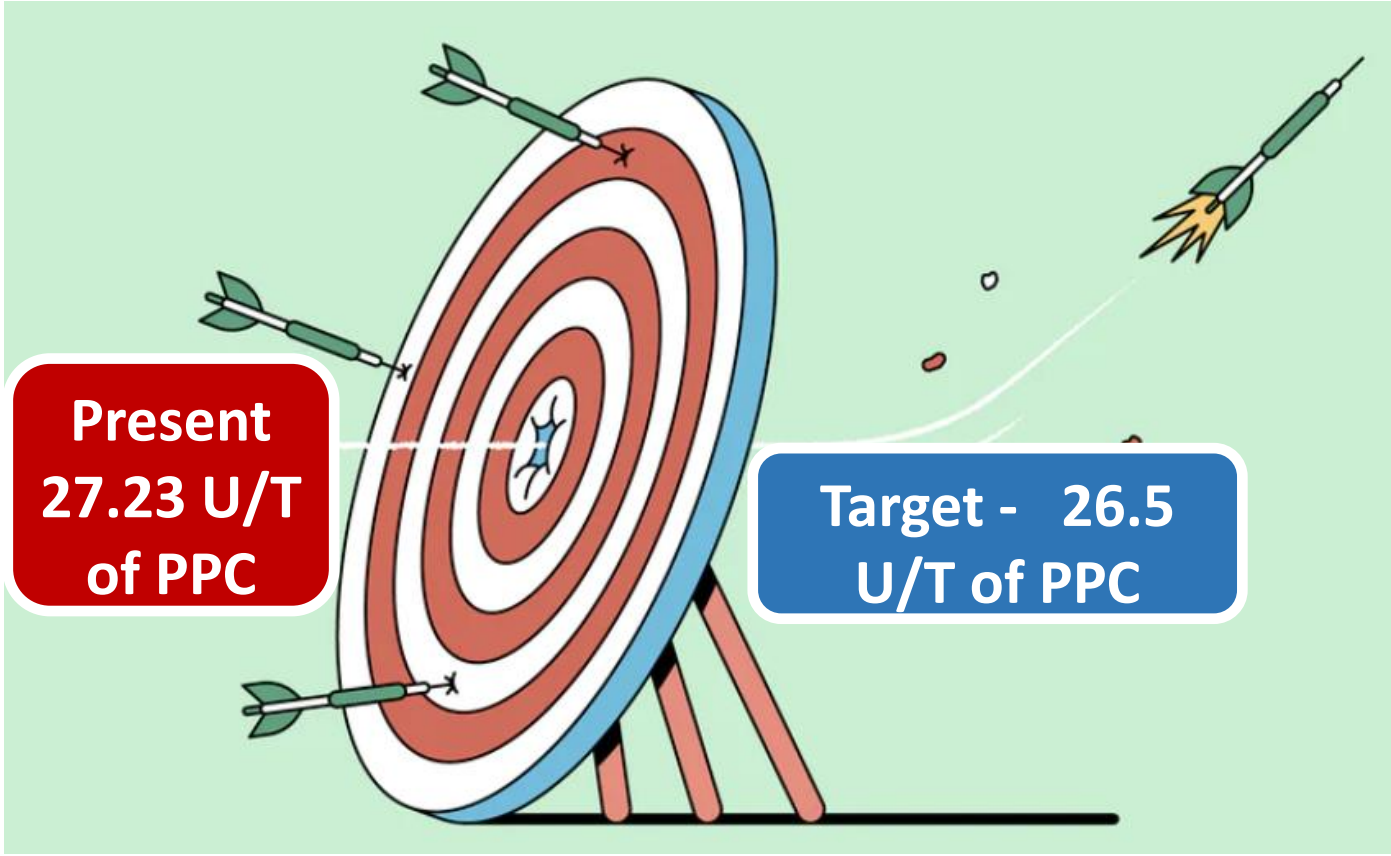




Road Map to achieve the Benchmark by Encon Projects

Zuari Cement
HEIDELBERGCEMENT Group

1. Fly ash Unloading compressor replace from HP to LP – PO released to be completed Dec 2023
2. Diverting of Mill vent Bag filter discharge to Silo feed Elevator – PO in process to be completed Dec 2023
3. **Packer 1&2 Screw Conveyor Replacement Air Slide - Packer 1 replaced, Packer 2 in progress**
4. Increase the **Blended Cement** sales
5. Separator Vent Bag Filter Screw Conveyor With VFD Drive



Zuari Cement

HEIDELBERGCEMENT

Energy Saving Projects

4. Energy Saving projects implemented in last three years

Zuari Cement
HEIDELBERGCEMENT Group

YEAR	No of Energy Saving Projects	Investment (INR Million)	Electrical Saving (Million Kwh)	Saving (INR Million)	Impact on SEC (Kwh/T of Cement)
FY 2018-19	6	0.112	0.035	0.281	0.07Kwh/T
FY2019-20	11	0.514	0.147	1.176	0.27Kwh/T
FY2020-21	6	0.51	0.614	4.91	1.50Kwh/T
FY2021-22	6	42.15	0.36	2.9409	0.30 Kwh/T
FY 2022-23	7	20	0.917	8.71	0.88 Kwh/ T
Total	35	56.286	1.823	15.6379	3.1 Kwh/T

Energy Saving Projects 2019-20

Zuari Cement
HEIDELBERGCEMENT Group

No	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Comments
1	System false air reduced from 25% to 21%	29200	0.234	0.2336	0.125	Air leakages arrested at Expansion joints & flanges
2	Compressor leakage reduced from 47% to 38%	21900	0.175	0.1752	0.1	leakages arrested by identified with soap water test
3	Bagfilters operation taken into DP mode(Mill section)	25550	0.204	0.2044	0.07	Purging mode changed
4	Spillage conveyor removed under the BC-32 after modification	8030	0.064	0.06424	0	spillage conveyor removed by modification of discharge chute
5	Wagon tippler two screw conyors stopped based on BF hopper level	2640	0.021	0.02112	0.07	Interlock developed with hopper high/low level
6	Main Bag House Purging operation changed from timer mode to DP Mode	6600	0.053	0.0528	0.035	purging mode changed
7	Mill Water spray system stopped	12210	0.098	0.09768	0	by adjusting sources of gypsum addition into the Mill
8	One Airslide blower permanently stopped by modification of airslide airline ducts	12210	0.098	0.09768	0.025	one airslide blower completely stopped
9	Interlock modified for Process water pump	16060	0.128	0.12848	0	modified the interlock with mill bearing temperature after Mill stop
10	Auto Drain provided for Air Receiver tank	5940	0.048	0.04752	0.045	Auto drain system provided for 9 compressed air receiver tanks
11	Replaced 20 No. LED street Light	6570	0.053	0.05256	0.044	20 LED street lights changed
	Total	146910	1.176	1.17528	0.514	

Energy Saving Projects 2020-21

Zuari Cement
HEIDELBERGCEMENT Group

No	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Comments
1	During PPC grinding, we stopped FK pump & Fly ash conveying blower by adding/diverting the fly ash to Mill outlet air slide.	511000	4.088	4.088	0.1	Flyash diverted to Mill outlet through airslide
2	Compressor leakage reduced from 38% to 28%	21900	0.175	0.1752	0.0265	leakages arrested by identified with soap water test
3	Air blaster(100liters) installed	29200	0.234	0.2336	0.125	Material is accumulated at horizontal duct between separator and cyclones.for avoiding of accumulation we installed the air blaster
4	Gypsum hopper &Clinker belt conveyors(BBC-9&10) vent line modification	18250	0.146	0.146	0.072	Vent lines modification
5	Bagfilters operation tanken into DP mode(Packing plant section)	21900	0.175	0.1752	0.105	Bag filter purging operation sequence changed from timer to DP mode
6	Replaced 35 No. LED street Light	11498	0.092	0.091984	0.077	LED lights installed
Total		613748	4.91	4.909984	0.5055	

HEIDELBERGCEMENT INDIA

Energy Saving Projects 2021-22

Zuari Cement
HEIDELBERGCEMENT Group

No	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)	Comments
1	Process optimization by sorting of Grinding media.	88800	0.71	0.71	2.5	42.25	Regrading of grinding Media
2	Replaced the chain bucket elevator to belt bucket elevator for Mill recirculation.	17760	0.142	0.142	10	845.07	Replaced recirculation Chain elevator by belt elevator
3	Cement wagon loading machines installed	10000	0.08	0.08	25	3,750.00	wagon loading system installed
4	Highmast convention replaced to LED	13687	0.1095	0.1095	0.15	16.44	Flood light replaced by LEDs
5	Power factor improved from 0.980 to 0.997	221000	1.768	1.768	2.5	16.97	Repair of capacitor banks and monitoring
6	conventional lighting replaced to LED panel lighting with motion sensor in admin building	16425	0.1314	0.1314	2	182.65	Conventional light replacement by LEDs
	Total	367672	2.9409	2.9409	42.15	171.99	

Energy Saving Projects 2022-23

No	Title of Project	Annual Electrical Saving (Million kWh)	Investment (Rs in Million)	Comment
1	Diverting of Mill vent Bag filter discharge to Silo feed Elevator	0.3	3	Feeding of Bag house return to Silo
2	Packer 1&2 Screw Conveyor Replacement With drag chain	0.01	2	replacing packer screw conveyor by drag chain/ airslide
3	Replacement of high pressure compressor for fly ash unloading	0.24	3.5	For dry fly ash unloading
4	Separator Vent Bag Filter Screw Conveyor With Drive	0.01	1.5	For Bag House
5	Solid Flow Feeder For Fly Ash Feeding	0.084	1.8	For dry fly ash addition
6	VFD 400 Kw For Separator Drive	0.023	1.2	Replacement of old VFD to Efficient VFD
7	Pond ash feeding system	0.25	7	Belt conveyor with weigh feeder

Reason for Specific Energy reduction over last three years

Zuari Cement
HEIDELBERGCEMENT Group

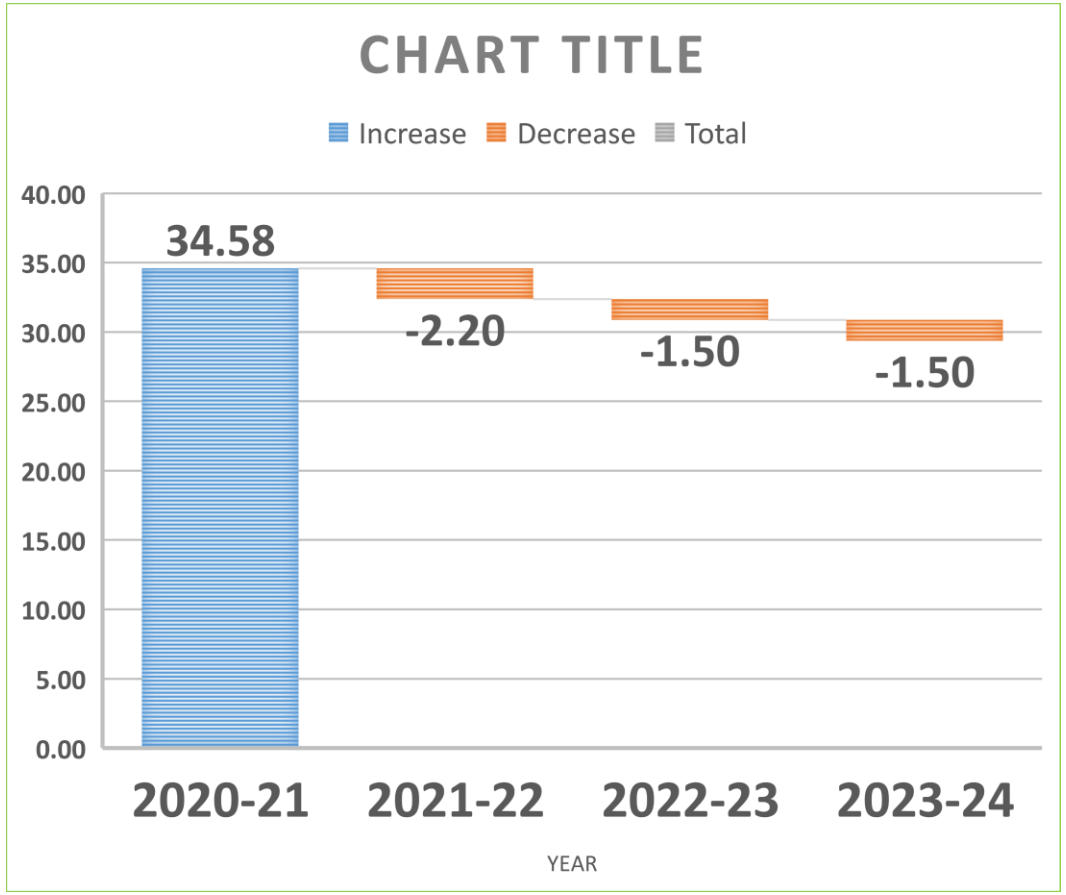
- Wagon Loading system for Packer
- Minimisation of frequent start stop
- Replacement of recirculation chain elevator to belt bucket elevator
- Packer double discharge from single discharge
- Grinding media regradation /Sorting on annual basis and quarterly recharge
- Two spillage conveyors removed by modified the vent lines & discharge chutes.
- Two screw conveyors stopped in Wagon tippler BH based on the Baghouse hopper level by providing interlock.
- Bag filters purging operation changed from timer mode to DP mode.
- Mill Water spray system stopped by **process optimization**
- System pressure drop reduced by providing air blaster in horizontal duct from Separator fan to Cyclones where the material is accumulated.
- Flyash conveying blower & FK pump stopped permanently by providing airslide from Flyash silo bin to Mill outlet.
- Compressor leakage reduced to 28%
- System false air reduced
- Replacement of conventional lights by LEDs.
- Motion sensors provided for plant & offices

List of Encon projects planned in FY2023-24

Zuari Cement
HEIDELBERGCEMENT Group

- Upgradation of DCS system
- Fly ash Unloading compressor replace from HP to LP.
- Diverting of Mill vent Bag filter discharge to Silo feed Elevator.
- Wet Pond Ash Feeding System for OPC Grinding.
- Increase the Blended Cement production.
- Separator Vent Bag Filter Screw Conveyor With Drive.
- VFD 400 Kw For Separator Drive.

Long/ Short Term Power reduction plan



- Optimisation of Mill Productivity by monitoring process variable / parameters and start / stop
- Shut off valve for packer compressed air line and silo
- Monitoring auxiliary power and plan reduction
- Installation of VFDs in Bag filter fan PL2023
- Replacement of Fly ash unloading compressor from HP to LP.
- Mill bag filter discharge material to be diverted to silo feed bucket elevator directly.
- Fly ash SFM capacity enhancement from 60MT to 90MT
- Volume of Blended cement increases to 100%
- Cement rake loading to be improve up to 30%

Innovative Projects

Innovative Project 1 – Installation of Intellivibe Vibration , Speed & Temperature Sensor on Cement Mill LGD Gear Box

Zuari Cement
HEIDELBERGCEMENT Group

❖ Monitoring of Equipment Healthiness to Avoid Major Breakdown:

- ❖ Installed 6 No's of Intellivibe sensor, on Cement Mill LGD Gear Box for monitoring of vibration, speed and temperature.
- ❖ Mounting Position : Motor Non-Drive end.
  Motor Drive End.
  Gear Box Input.
  Floating Shaft.
  Lower Pinion Shaft.
  Upper Pinion Shaft.

- ❖ As there was no such monitoring system was installed for gear box condition, Installing a Dialog system was a cost effective and budget constraint of approx. 35 lacs.
- ❖ So opted for these sensor along with the software with cost of Rs 1.55 lacs

Innovative Project 1 – Installation of Intellivibe Vibration , Speed & Temperature Sensor on Cement Mill LGD Gear Box

Zuari Cement
HEIDELBERGCEMENT Group

- By installing these sensor, the condition of Gear box is been monitored online for Vibration, speed and temperature through WIFI device.
- Alert notification is been sent to the maintenance team, in case of any abnormality.
- Monthly reports available.
- FUTURE ACTION PLAN: Plan to provide these parameter in DCS through RS 485 communication.
- ADVANTAGES : with the existing software, few more vibration sensors can be connected.
- Plan to installed few more sensors in other section, (Wagon tippler & Packing plant drives)
- Only Sensors need to procured.

Innovative Project 1 – Installation of Intellivibe Vibration , Speed & Temperature Sensor on Cement Mill LGD Gear Box

Zuari Cement
HEIDELBERGCEMENT Group

❖ Reports:

Monitoring Location

Sensor Name	Velocity H,A,V	Total Acceleration	Temperature	Sound	Network	Last Updated
Motor non drive end...	1.04, 0.71, 1.23,	1.68	43.44°C	87.37	Very Good (-49 dBm)	11-03-2023 | 11:35:13 AM
Motor drive end (ad...	0.79, 1.21, 0.89,	2.11	53.06°C	86.12	Very Good (-45 dBm)	11-03-2023 | 11:35:16 AM
Gearbox Input (ad976)	1.84, 1.62, 1.55	7.33	52.81°C	89.66	Very Good (-37 dBm)	11-03-2023 | 11:36:04 AM
Floating shaft (ad977)	1.73, 2.25, 2.36	8.29	62.50°C	93.98	Very Good (-42 dBm)	11-03-2023 | 11:35:42 AM
Lower Pinon shaft (...	2.09, 2.54, 2.24	8.97	53.56°C	87.81	Very Good (-48 dBm)	11-03-2023 | 11:35:33 AM
Upper Pinon shaft (...	2.55, 2.32, 4.51	13.46	49.44°C	90.76	Very Good (-46 dBm)	11-03-2023 | 11:35:17 AM

Innovative Project 2 – Inhouse Repair of belt of Mill Re-circulation belt Elevator

Zuari Cement
HEIDELBERGCEMENT Group

Problem -

- Initially observed Blister formation on elevator belt at two location within one month of installation. We have informed to OEM immediately. After some days, number of blister formation increased to 6.
- OEM reverted; this phenomenon is due to overloading.
- After few days, we observed, Belt corner is getting cut at both side and resulting blister formation.

Troubleshooting -

- Material density measured as 1.348 t/m3 and 1.24 t/m3 on different date crash stop. Bucket Filling level is 66%. There was no overloading as such, but OEM was not accepting.
- After thoroughly inspection, we found sharp edge of new buckets are piercing the belt at top even at empty condition.

Innovative Project 2 – Inhouse Repair of belt of Mill Re-circulation belt Elevator

Zuari Cement
HEIDELBERGCEMENT Group

Job Initiated for rectification –

- After finding the problem, Grinded the protruded bucket edge of buckets to avoid further damages to the belt.
- Cut the blisters from the bucket fixing surface and belt repairing was done by applying the Devcon putty.
- After that, no blister formation was observed.

Innovative Project 3 – Installation of flexible pipes to avoid the oil leakages for G110 Fly Ash unloading Compressor

Zuari Cement
HEIDELBERGCEMENT Group

Problem-

- Oil leakage from compressor Joint set sealing area
- Expansion joint rubber hardens due to high temperature results in leakage

Job initiated –

- Replaced all sealing joints with flexible pipes
- After installation, no oil leakage observed and running successfully

Before

Leakages from joint set sealing area.

After

Zuari Cement

HEIDELBERGCEMENT

Utilization of Renewable Energy sources

6a. Utilisation of Renewable Energy sources

Zuari Cement
HEIDELBERGCEMENT Group

Year	Technology (electrical)	Type of Energy	Onsite/Offsite	Installed Capacity (MW)		Generation (million)	% of overall Electrical energy
FY 2019 -20	Electrical	Solar PV	On site	0.005		0.01825	0.1
FY 2020 -21	Electrical	Solar PV	On site	0.005		0.0292	0.2
FY 2021 -22	Electrical	Solar PV	On site	0.005		0.0365	0.26
FY 2021 -22	Electrical	Solar PV	On site	0.005		0.0412	0.29

Year	Technology (Thermal)	Type of Energy	Installed Capacity million kcal	Usage (million Kcal)	% of overall Thermal energy
FY 2019 -20	Furnace	Thermal	Uninstalled	600	100
FY 2020 -21	Furnace	Thermal	Uninstalled	728	100
FY 2021 -22	Furnace	Thermal	Uninstalled	690	100
FY 2021 -22	Furnace	Thermal	Uninstalled	710	100

6b. Utilisation of Renewable Energy sources

Proposed solar Park for Group Captive Green Power

- PPA off site Group Captive 7.5 MW solar plant is in process for 100% Green Power utilization
- 7.5 MWp ground mount Solar Power plant
- estimated optimum renewable energy, annual generation from the Solar Power (photovoltaics) plant approximately 12.15 million Units per year at generation (Solar Plant Bus Bar) point

6b. Utilisation of Renewable Energy sources – Improving Day Light & Ventilation

Zuari Cement
HEIDELBERGCEMENT Group

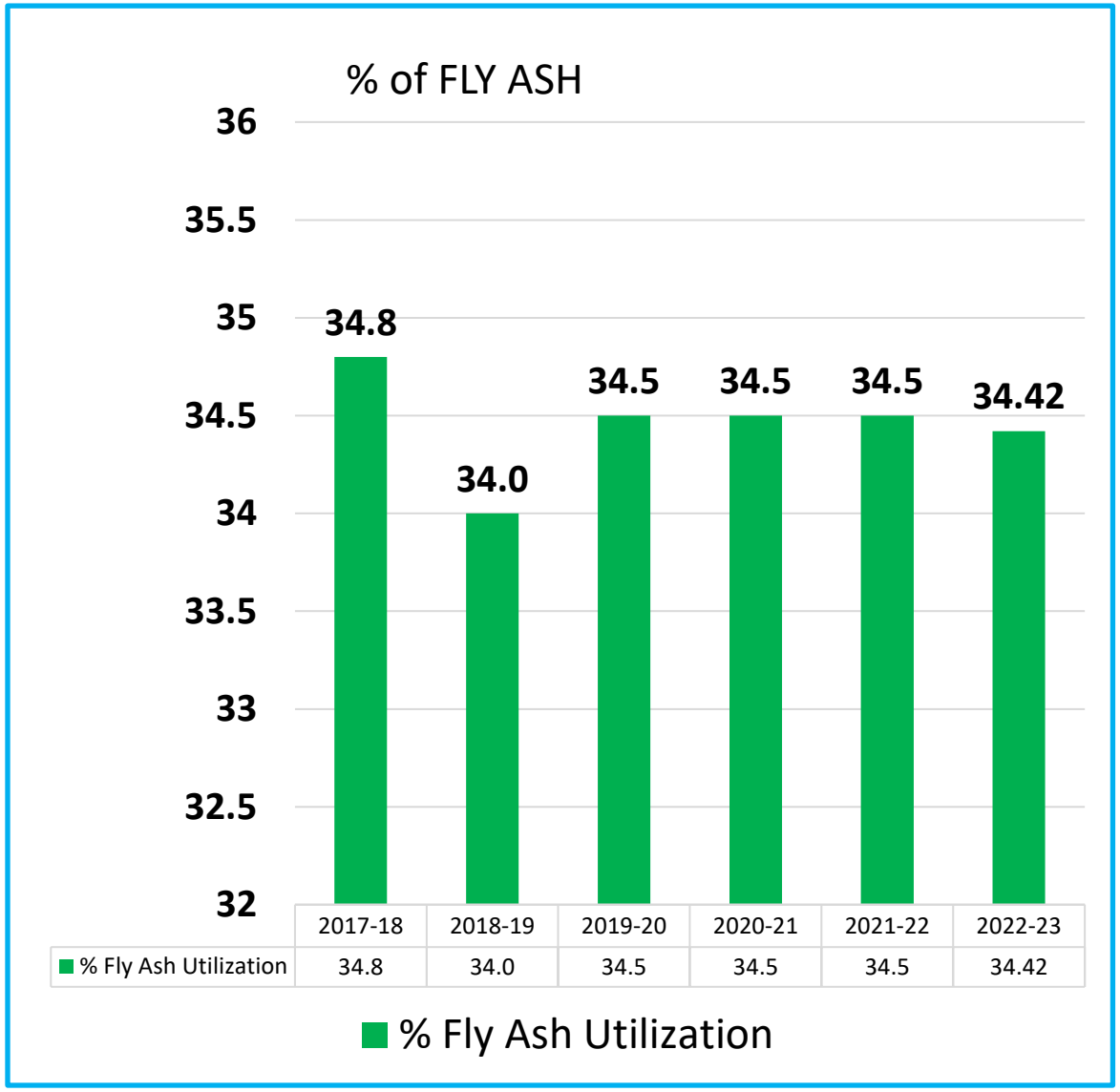
Transparent sheet and Turbo Ventilators have been provided in Mill Building, Packing plant Wagon tippler, Bag Godown, Store etc to improve day light and Energy saving

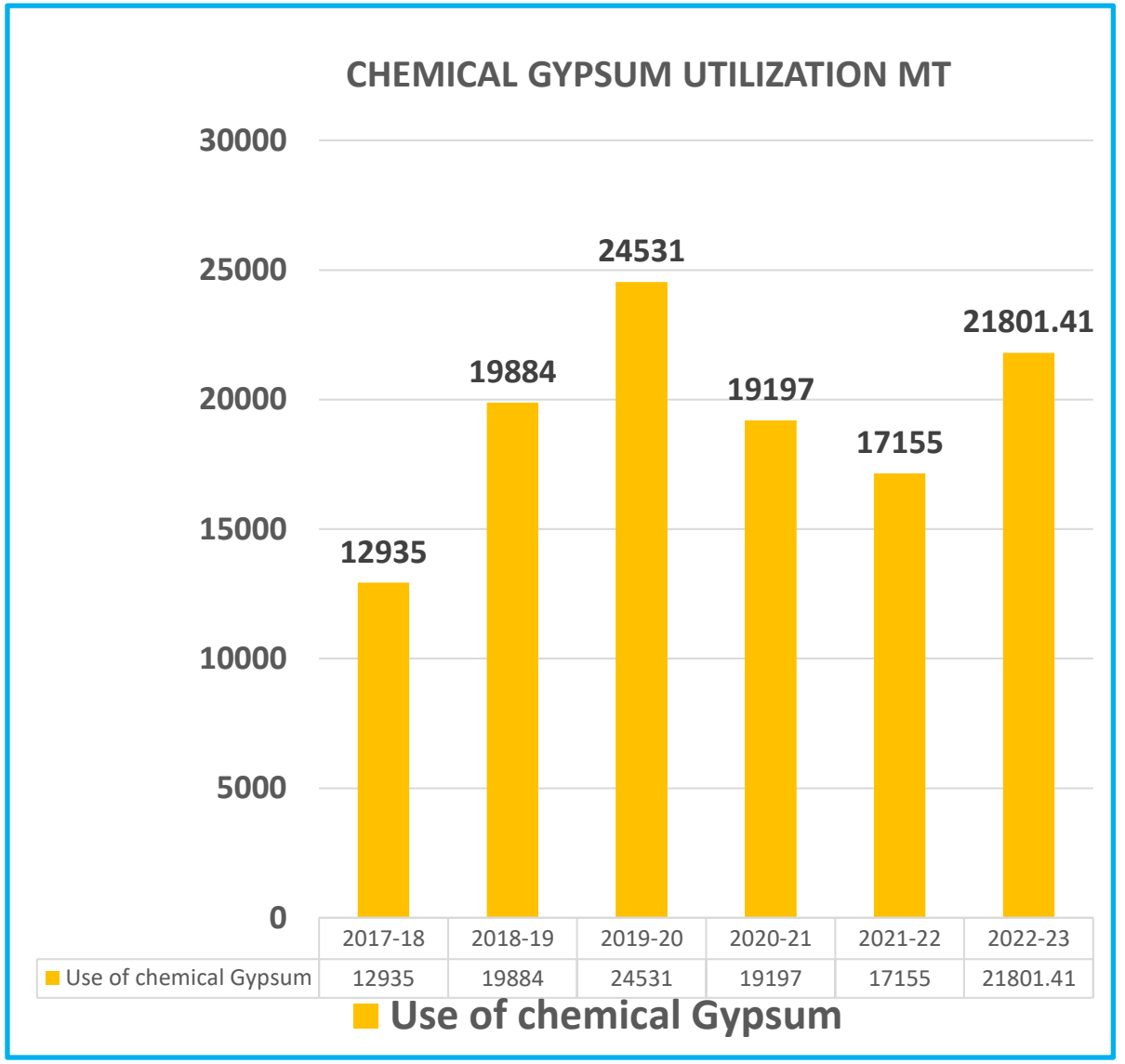
Zuari Cement

HEIDELBERGCEMENT

Utilization of Waste material

Use of Waste Material Fly Ash & Chemical Gypsum





Zuari Cement

HEIDELBERGCEMENT

GHG Inventorisation

Focus and Target

Zuari Cement
HEIDELBERGCEMENT Group

Sustainability Commitments 2030

Six topics characterise HeidelbergCement's commitment for sustainable growth, environment and society

SUSTAINABILITY COMMITMENTS 2030

Driving Economic Strength and Innovation

Achieving Excellence in Occupational Health and Safety

Reducing our Environmental Footprint

Enabling the Circular Economy

Being a Good Neighbour

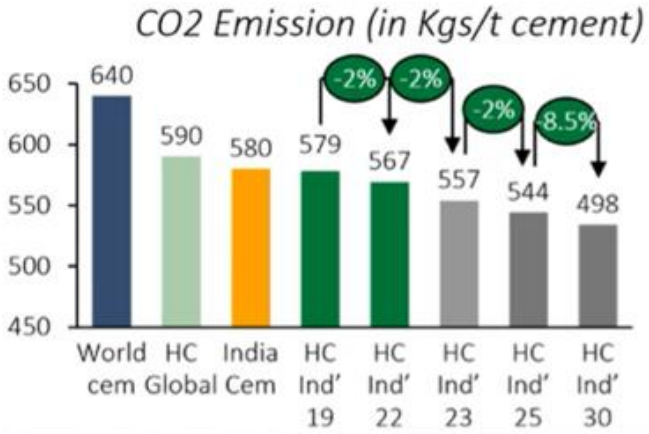
Ensuring Compliance and Creating Transparency

HC India Sustainability Dashboard

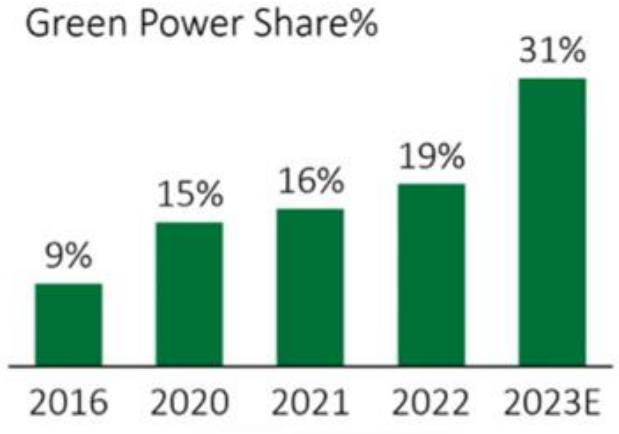
Zuari Cement
HEIDELBERGCEMENT Group

HC INDIA BEING ENVIRONMENTALLY RESPONSIBLE

Sustainability Dashboard



100,000+ trees Geo-tagged



Certifications
PPC & PSC GreenPro Certified
5 Plants are GreenCo labelled
All Units IMS Certified

Jhansi
Solar Power – 15 MW DC

YGL
5 MW – Solar (2026)
21 MW WHRS commissioned

Green Power
99.5% - AMSA
85% - CGU

Alternate Fuels - Increase in TSR to 10.4%.
50% Biomass YTD May.

-1.8 °C – Plants cooler than a Km away. CGU followed by Jhansi, SGU to surpass target

6.6x Water Positive

HC mines – a home to 117 bird species

1868 employees

0 Occupational fatality

Increase in CSR spending (52% inc in last 4 years)

NGH

13.5 MW -WHRS
5.5 MW – Solar
8 MW – Solar (2023)

HEIDELBERGCEMENT INDIA

Achieved > 2-degree reduction in temperature from 1 km away

Zuari Cement
HEIDELBERGCEMENT Group

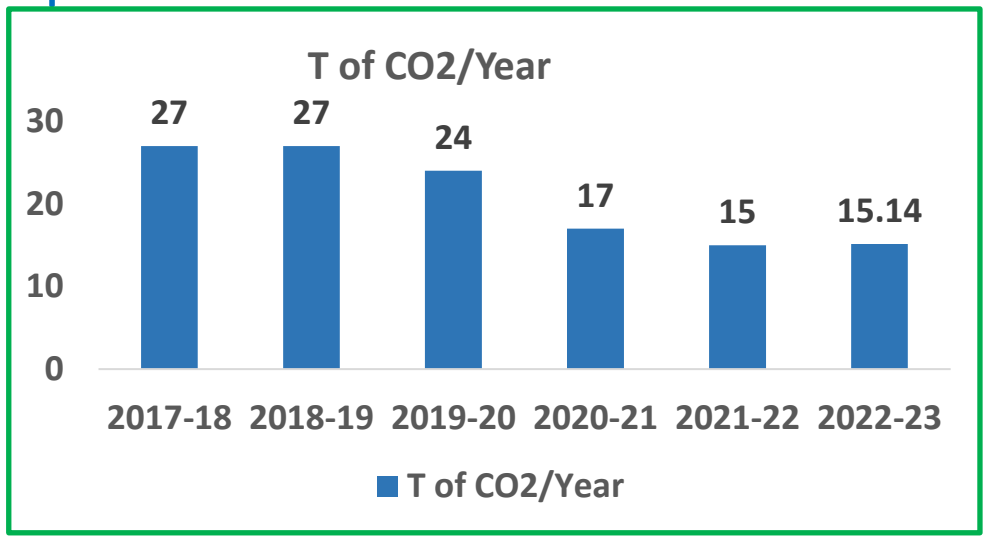
Being Environmentally responsible

HEIDELBERGCEMENT
INDIA

7. GHG Emission Intensity reduction 2017 -23 (Scope-1 and 2)

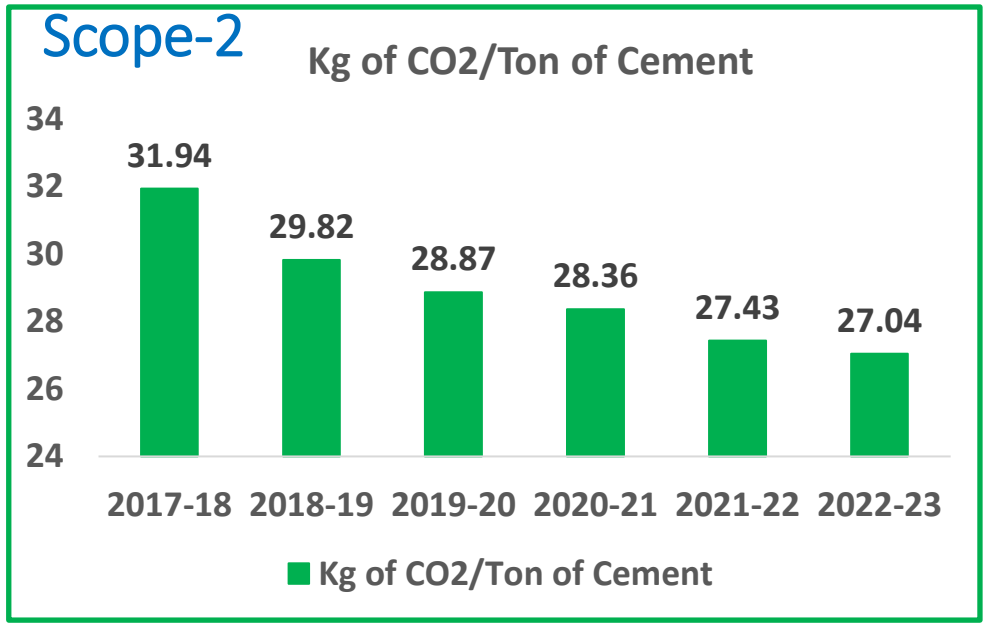
Zuari Cement
HEIDELBERGCEMENT Group

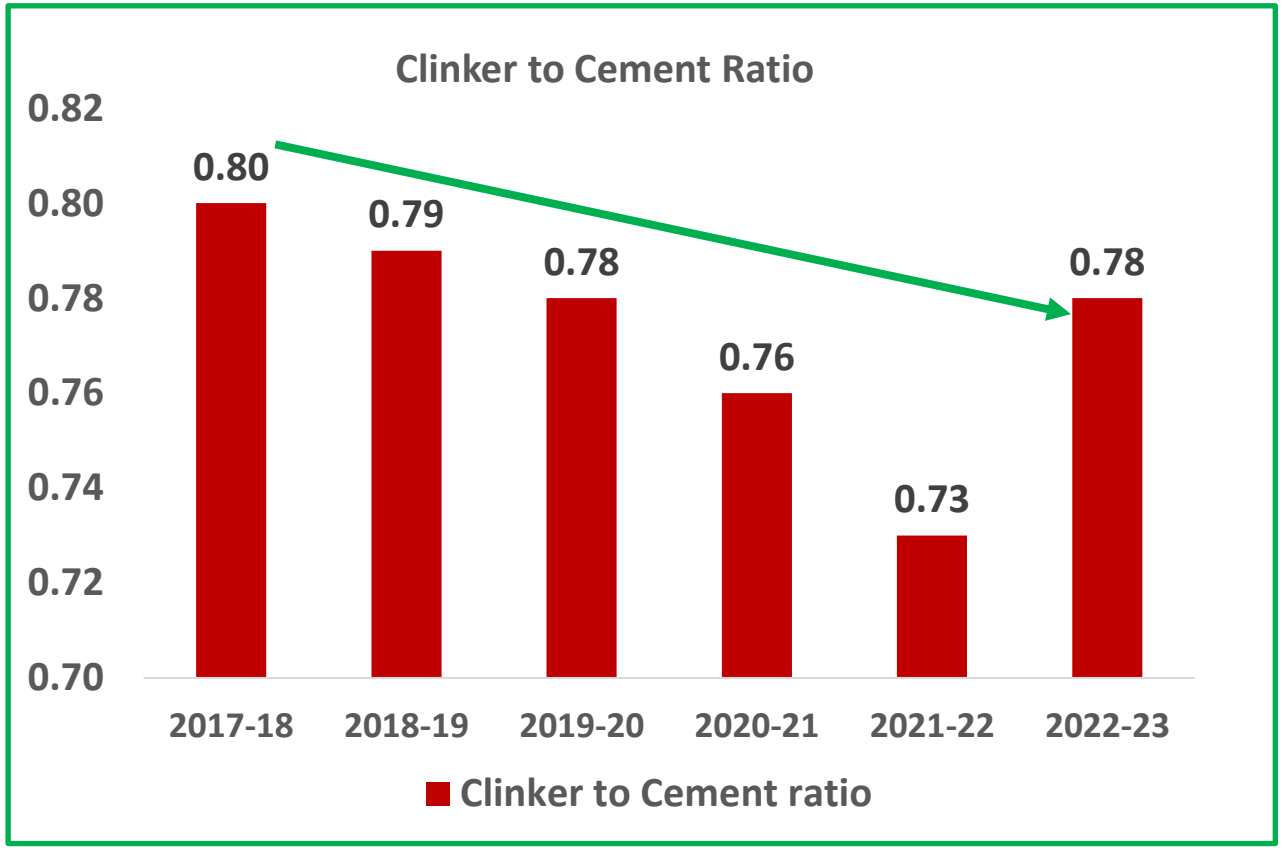
Scope-1



We are having one DG set with the capacity of 500KVA and being used only for lighting purpose when ever power cut.

Scope-2





HEIDELBERGCEMENT INDIA

7. GHG Emission Intensity reduction (Scope - 3)

Zuari Cement
HEIDELBERGCEMENT Group

Inbound Logistics

- Raw materials
- Clinker: Lead distance reduced from 730Kilometers to 300 Kilometers by swapping the Clinker with ACC Limited,Wadi.
- Chemical Gypsum: Lead distance reduced by 100Km by reducing the Vedantha Gypsum and increases the Bhageria Industries Limited.
- Dry Flyash: lead distance is 30Km
- Packing Bags: Lead distance reduced by 150Km by developing the local vendor.
- Spares Parts & Others: We developed the local vendors

Outbound Logistics

- Cement wagon loading system installed and plan dispatches by 30% through rail.
- Pool Vehicle for Employee shift travel operation
- Employee commuting and business travels have been drastically reduced since last one year.
- All the trainings and official works communicating through teams only.

GHG Emission Intensity reduction plan 2022-23

Sr. No.	Description	Saving	CO2 reduction (Ton)
1	Group Captive solar plant offsite	1000 K units/ month	9480
2	Packer Upgradation	0.3 Units/ ton	148
3	Upgradation of fly ash unloading system	0.8 Units/ ton	85.3
4	Grinding media degradation	0.3 Units / Ton	148
5	Plantation / Greenery development	4000 Tree / year	

Zuari Cement

HEIDELBERGCEMENT

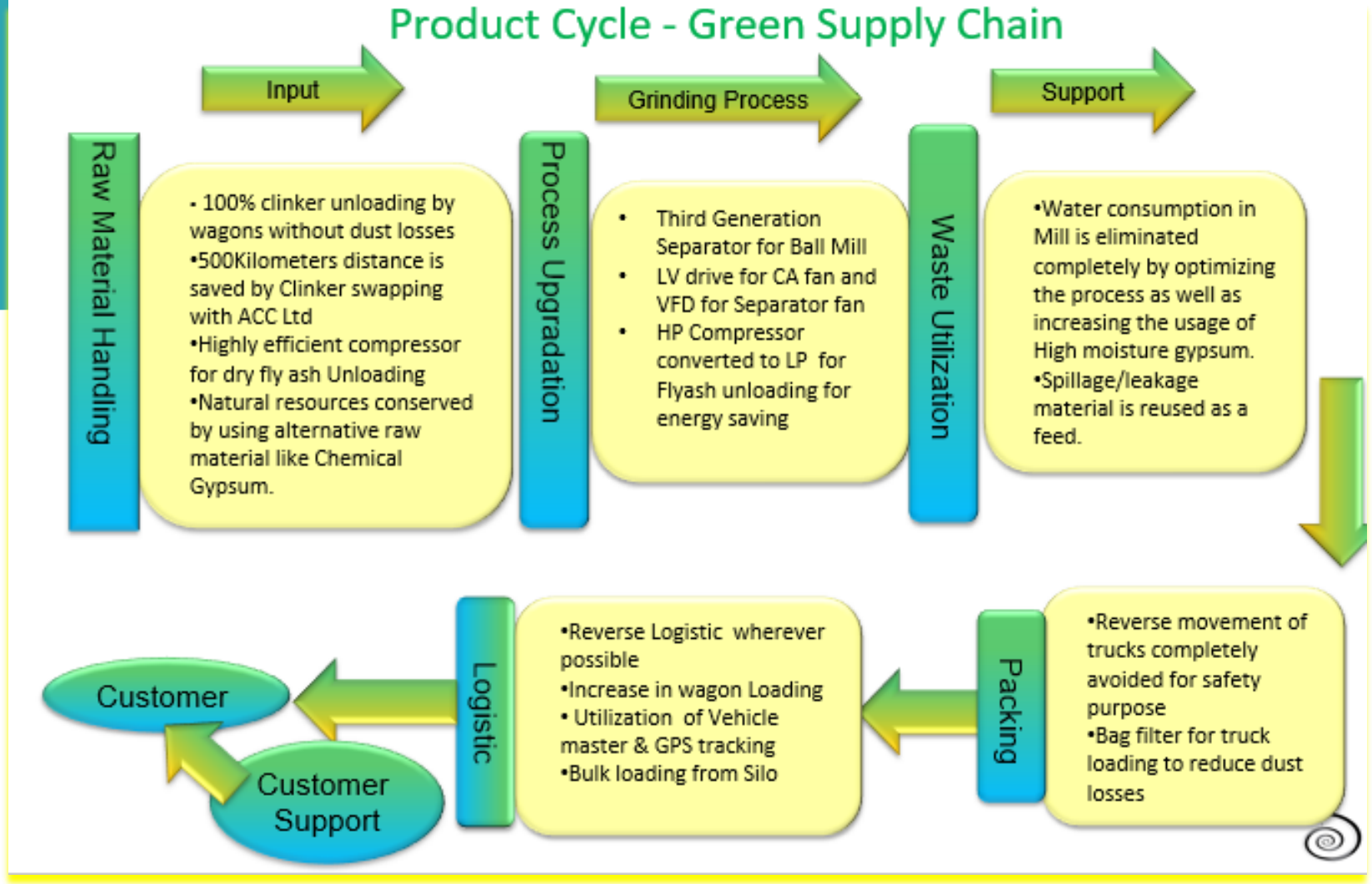
Green Supply Chain

Green Supply Chain

8.Green Supply Chain Management

Green Procurement Policy

- Procurement of Energy efficient motors IE3 .
- Purchase of LED lights only.
- Energy efficient product above 3 star rating



8.Green Supply Chain Project

Zuari Cement
HEIDELBERGCEMENT Group

Sr No.	Title of Project	Investment made in Million INR	Benefits description
1	Cement Bulk loading	2	20% of Cement dispatches through bulk loading which was saving 0.4Kw/T of electrical energy consumption & Minimizing the PP bags usages for environmental degradation/Waste minimization
2	Procuring FGD Gypsum From NTPC Solapur 10000 MT/Year	Same cost	Substitution of Alternative raw materials with Natural resources
3	Installation of Cement Wagon loading Machines	25	Substituting 30% of cement dispatches through rail.
4	OHE(Over Head Electrification) of railway yard	3	Diesel engine avoided which is used for 22 Kilometers of distance from railway station to Plant wagon tippler area.
5	Clinker quantity swapping with ACC Ltd Approx: 4 lakh/Year	0	Clinker rake transportation reduced by 500Kms (from destination to destination) after swapping with nearby plants. Each Clinker rake 500Kms transportation saving. Minimum 100number of Clinker rakes received from ACC Ltd through swapping per Year.

Green Supply Chain

Zuari Cement
HEIDELBERGCEMENT Group

Fly ash utilisation

- **Maximization of fly ash blending up to 35%** by using dry fly ash by operation and maintenance & long-term contracts with NTPC
- Mineral conservation due to usage of fly ash

Machinery & spare procurement

- **Encouraging local vendors** to reduce carbon footprint & inventory
- Vendor Stocking to have just in time concept i.e., Lubricants , PP Bags, etc
- **ARC contract for fast moving spares**
- **Procurement of Energy Efficient Motors for Plant** & Technology upgradation
- LED lights installation and solar panel procurement
- **Drip irrigation to reduce water consumption**

Scrap Disposal

- Carbon foot reduction through **paper less working** -E auction, RFQ Ease Portal

Inbound Logistic

- **Swapping of clinker rakes with ACC**
- Transport pooling to reduce carbon footprint

Zuari Cement

HEIDELBERGCEMENT

Team Work, Employee Involvment and Monitoring

9.Teamwork, Employee Involvement & Monitoring

Zuari Cement
HEIDELBERGCEMENT Group

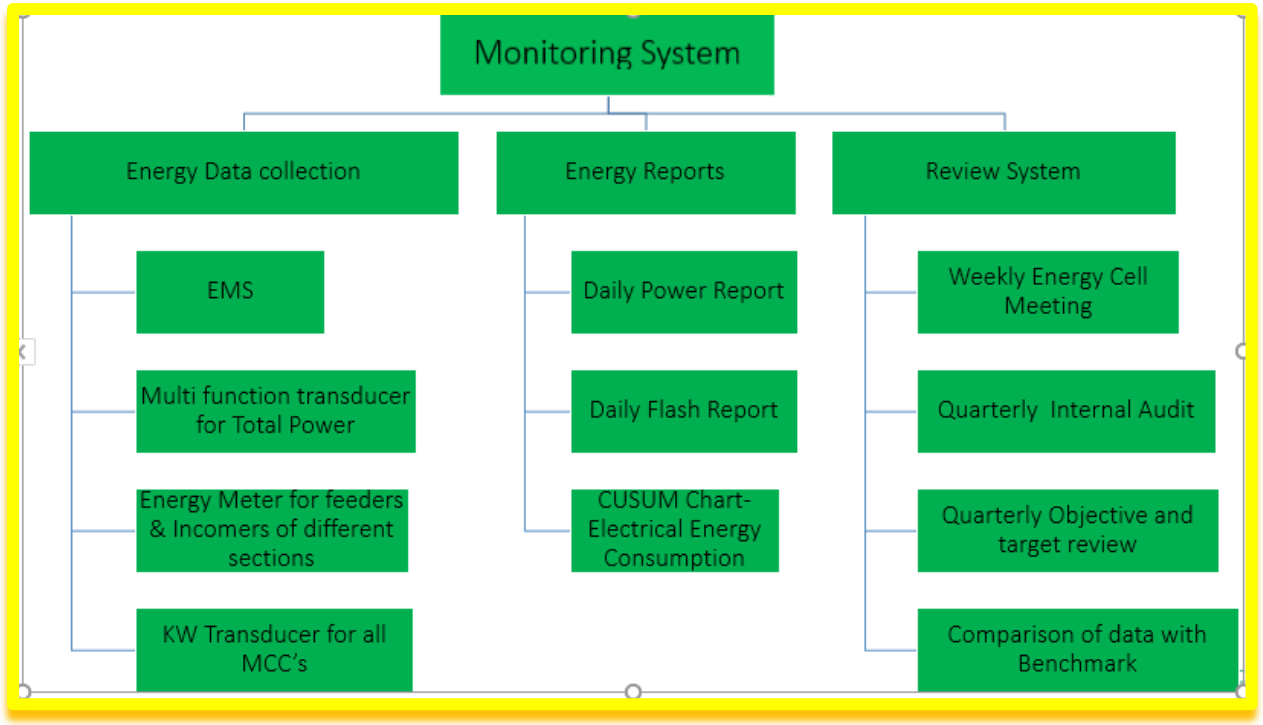
Energy Circle

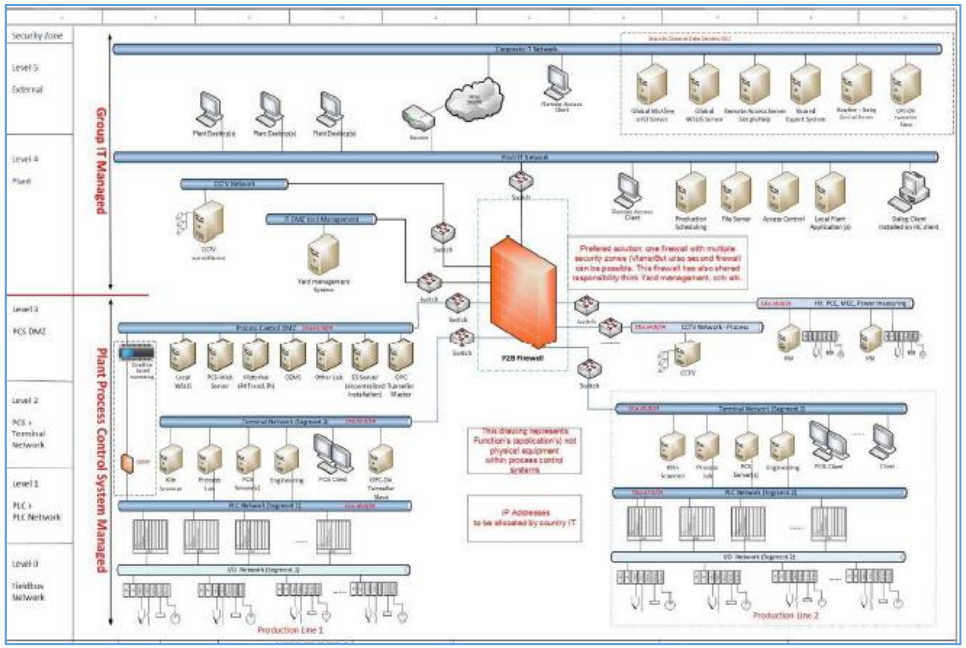
- **Daily Energy Observation Tour(EOT)** to observation any abnormality
- Ensure timely compliance of points identified
- **Analyze idle running of equipment** operation
- Training for shop floor employees on energy conservation

Employee Involvement Projects Implemented through Kaizens:

- 30 Number of Kaizens from workers & 15 Numbers from staff. Total : 45.
- Total 10% of budget allocated for Energy conservation projects. If the ROI is less than 1Year, then fast approval of CAPEX Projects.

Energy Monitoring System





- IOT System is used for daily monitoring the plant data . Plant is having 25 Nos networked digital energy meters connected to plant DCS. All major equipment have meters and connected to DCS and Day wise & Product wise Electrical energy report is generated.
- ➢Production meeting held on daily for plant performance and improvement discussion.
- Energy conservation budget allocated along with Capex budget.
- Energy audit by authorized external energy auditors is conducted in every 3 years.

Zuari Cement
HEIDELBERGCEMENT Group

SOLAPUR
UNIT
AWARDED

HEIDELBERGCEMENT

safe work healthy life

SAFETY EXCELLENCE

14 March'2023

9 YEARS WITHOUT
LOST TIME INJURIES

Joydeep Mukherjee
Managing Director

Vimal Jain
Director - Technical

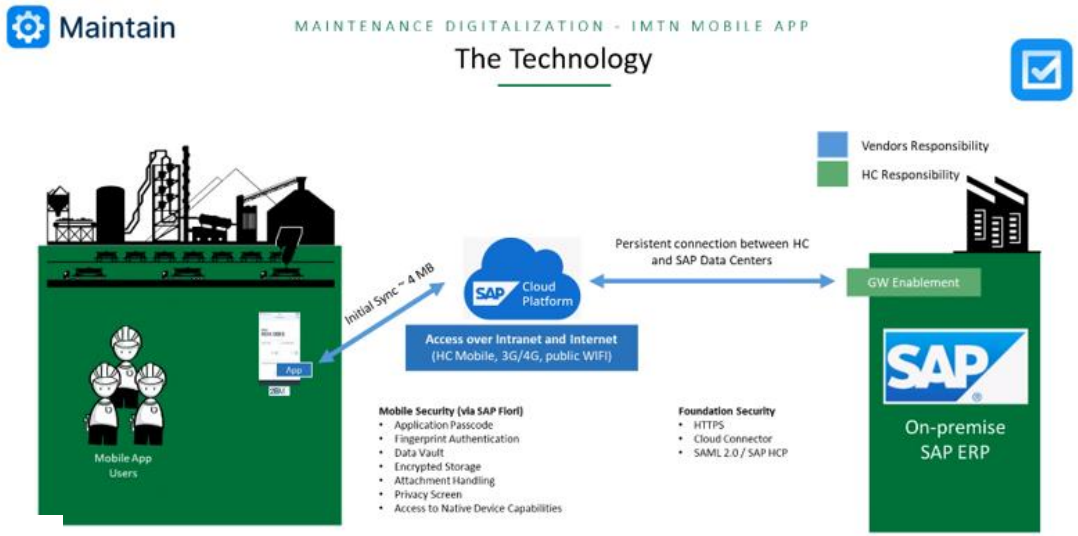
HEIDELBERGCEMENT
INDIA

Implementation of I0T Technology

Zuari Cement
HEIDELBERGCEMENT Group

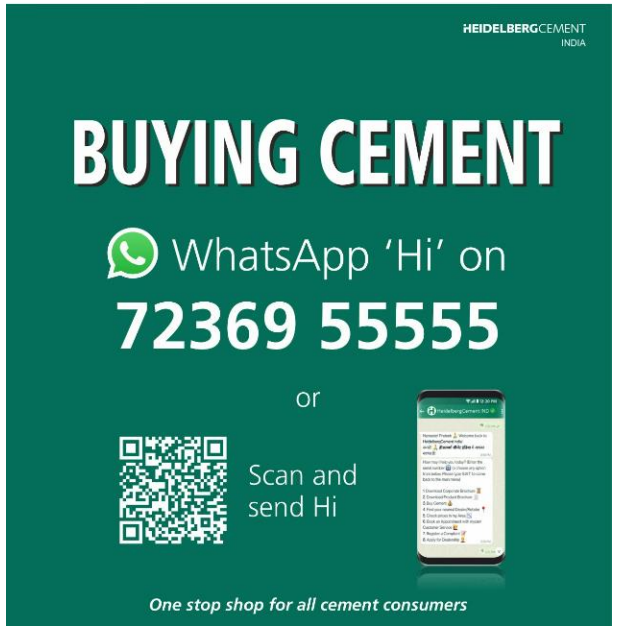
- ✓ **ImTN mobile App for maintenance**
- ✓ **HDIGICUBE application for concrete testing**
- ✓ **SimpleHelp tool for remote access**
- ✓ Magma tool for case access land records
- ✓ Mobile Sales Force Application
- ✓ On line portal for Rake Planning Application
- ✓ GPS Installed in Transport Vehicles
- ✓ Online submission of Offers by Vendors
- ✓ Negotiations through E-Auction
- ✓ Plant remote control and monitoring

Innovative I0T Technology



Implementation of Digital Signature on Cement outward documents

- We have been manually signing all Tax Invoices, and Delivery Challans on sale/despatch of cement / clinker.
- Now, all sales related documents including Debit note and Credit Note are digitally signed by the system.
- There is no need for keeping office copy resulted into saving of >100K A4 size papers per annum; contributes to save Environment.
- Retrieval of documents in future becomes very easy.



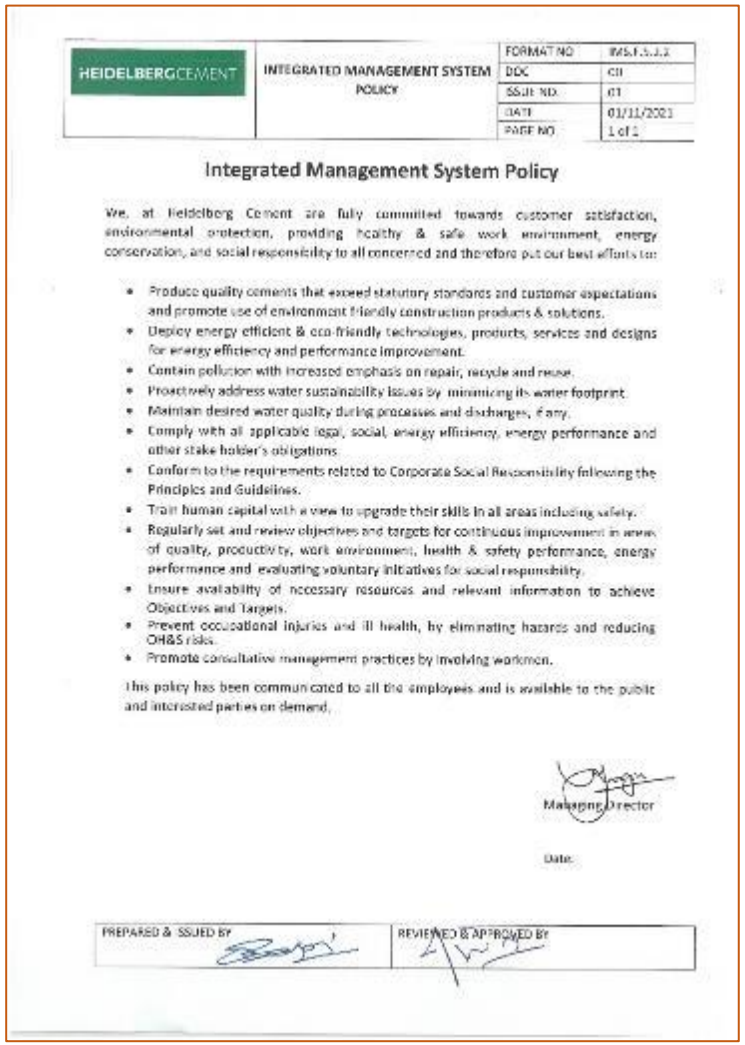
Zuari Cement

HEIDELBERGCEMENT

Implementation of ISO 50001/ Green Co/IGBC rating

10. Implementation of ISO 50001/Green Co/IGBC rating

Zuari Cement
HEIDELBERGCEMENT Group



HEIDELBERGCEMENT | INTEGRATED MANAGEMENT SYSTEM POLICY | FORMAT NO: IMS/F/5.3.2 | DOC: CO | ISSUE NO: 01 | DATE: 01/11/2021 | PAGE NO: 1 of 1

Integrated Management System Policy

We, at Heidelberg Cement are fully committed towards customer satisfaction, environmental protection, providing healthy & safe work environment, energy conservation, and social responsibility to all concerned and therefore put our best efforts to:

- Produce quality cements that exceed statutory standards and customer expectations and promote use of environment friendly construction products & solutions.
- Deploy energy efficient & eco-friendly technologies, products, services and designs for energy efficiency and performance improvement.
- Contain pollution with increased emphasis on repair, recycle and reuse.
- Proactively address water sustainability issues by minimizing its water footprint.
- Maintain desired water quality during processes and discharges, if any.
- Comply with all applicable legal, social, energy efficiency, energy performance and other stake holder's obligations.
- Conform to the requirements related to Corporate Social Responsibility following the Principles and Guidelines.
- Train human capital with a view to upgrade their skills in all areas including safety.
- Regularly set and review objectives and targets for continuous improvement in areas of quality, productivity, work environment, health & safety performance, energy performance and evaluating voluntary initiatives for social responsibility.
- Ensure availability of necessary resources and relevant information to achieve Objectives and Targets.
- Prevent occupational injuries and ill health, by eliminating hazards and reducing OH&S risks.
- Promote consultative management practices by involving workmen.

This policy has been communicated to all the employees and is available to the public and interested parties on demand.

Managing Director

Date:

PREPARED & ISSUED BY | REVIEWED & APPROVED BY

ZERTIFIKAT ◆ CERTIFICATE ◆ 증명서 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD South Asia

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited
certifies that

HEIDELBERGCEMENT
Zuari Cement Ltd
Attipattu - Village Ponneri - Taluk
Tiruvallur – Dist – 600120, Tamil Nadu, India

has implemented Energy Management System
in accordance with **ISO 50001:2018**
for the scope of

Grinding and dispatch of Cement

The certificate is valid in conjunction
with the main certificate from **2022-03-01** until **2025-02-28**
Subject to successful completion of annual periodic audits
The present status of this certificate can be obtained through TÜV SÜD website by scanning below QR code and by entering the certificate number (without spaces) on web page. Further clarifications regarding the status & scope of this certificate may be obtained by consulting the certification body at info.in@tuvsud.com

Certificate Registration No. **99 118 00047/09**
Date of Initial certification: **2019-05-03**
Issue Date: **2022-02-21** Rev. **00**

Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited,
Mumbai
Member of TÜV SÜD Group

TÜV SÜD South Asia Pvt. Ltd. ● TÜV SÜD House ● Saki Naka ● Andheri (East) ● Mumbai – 400072 ● Maharashtra ● India

ISO 50001- 2018

CII
Confederation of Indian Industry

CII-Green Products and Services Council

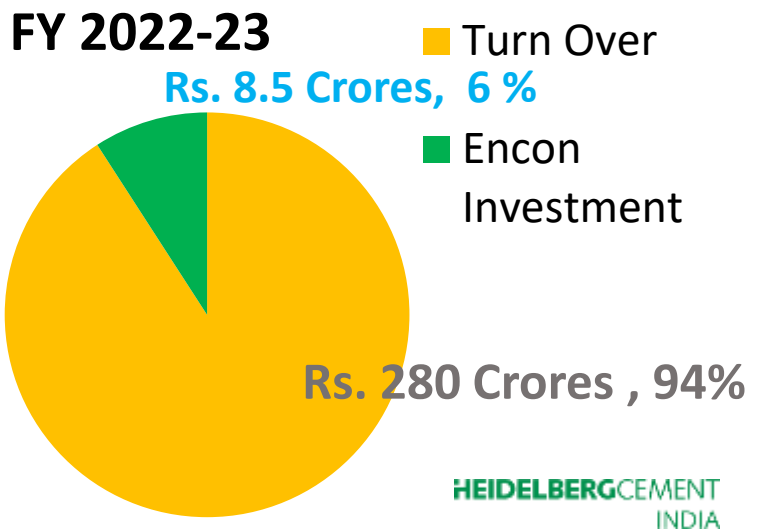
Jamshyd N Godrej
Chairman, CII-Godrej GBC

ParasuRaman R
Chairman, CII-Green Products & Services Council

K S Venkatagiri
Executive Director, CII-Godrej GBC

Supporting Council and programmes

Turn Over & Investment



HEIDELBERGCEMENT INDIA

SGU - Certification

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited
certifies that

Zuari Cement Ltd
Solapur Grinding Unit At: Auj(Aherwadi), Post: Shingadgaon,
Tal: South Solapur district -Solapur - 413 228, Maharastra, INDIA

has implemented Quality Management System
in accordance with ISO 9001:2015
for the scope of

Grinding and dispatch of Cement

The certificate is valid in conjunction
with the main certificate from 2021-09-14 until 2024-09-13
Subject to successful completion of annual periodic audits
The present status of this Certificate can be obtained on www.tuvsud.com/en-in
Further clarifications regarding the scope of this certificate may be obtained by consulting the certification body

Certificate Registration No. 99 100 19113/08
Date of Initial certification: 2019-02-11
Issue Date: 2021-08-12 Rev. 00

Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited, Mumbai
Member of TÜV SÜD Group

TÜV SÜD South Asia Pvt. Ltd. ● TÜV SÜD House ● Saki Naka ● Andheri (East) ● Mumbai – 400072 ● Maharashtra ● India

ISO 9001- 2015

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited
certifies that

Zuari Cement Ltd
Solapur Grinding Unit At: Auj(Aherwadi), Post: Shingadgaon,
Tal: South Solapur district -Solapur - 413 228, Maharashtra, INDIA

has implemented Environmental Management System
in accordance with ISO 14001:2015
for the scope of

Grinding and Dispatch of Cement.

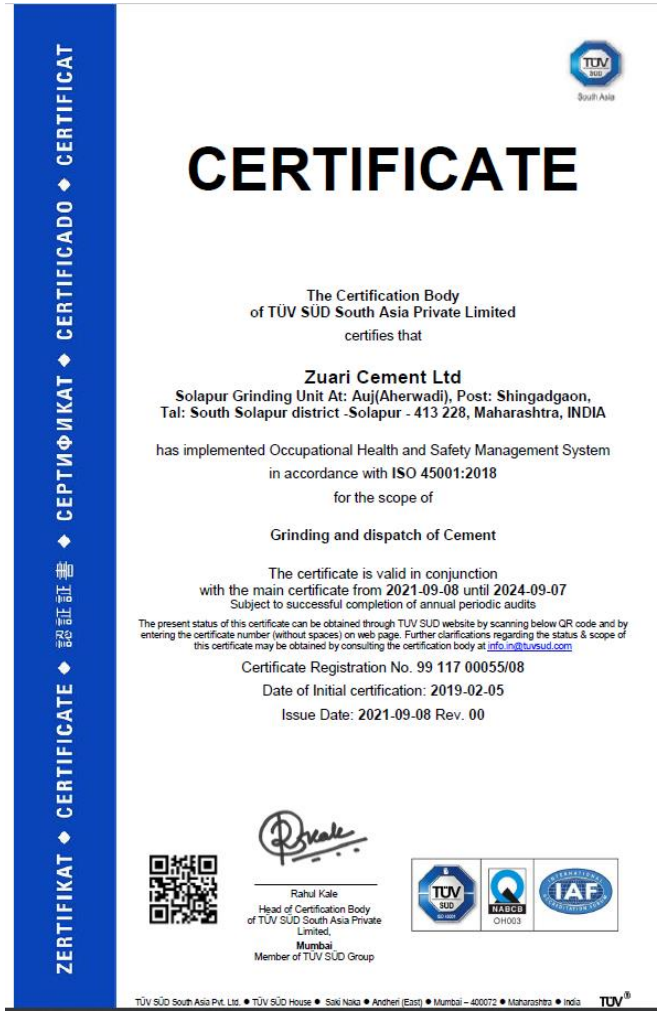
The certificate is valid in conjunction
with the main certificate from 2021-10-15 until 2024-10-14
Subject to successful completion of annual periodic audits
The present status of this certificate can be obtained through TUV SUD website by scanning below QR code and by entering the certificate number (without spaces) on web page. Further clarifications regarding the status & scope of this certificate may be obtained by consulting the certification body at info.in@tuvsud.com

Certificate Registration No. 99 104 00655/08
Date of Initial certification : 2019-02-12
Issue Date: 2021-09-08 Rev. 00

Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited,
Mumbai,
Member of TÜV SÜD Group

TÜV SÜD South Asia Pvt. Ltd. ● TÜV SÜD House ● Saki Naka ● Andheri (East) ● Mumbai – 400072 ● Maharashtra ● India

ISO 14001- 2015



ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited
certifies that

Zuari Cement Ltd
Solapur Grinding Unit At: Auj(Aherwadi), Post: Shingadgaon,
Tal: South Solapur district -Solapur - 413 228, Maharashtra, INDIA

has implemented Occupational Health and Safety Management System
in accordance with ISO 45001:2018
for the scope of

Grinding and dispatch of Cement

The certificate is valid in conjunction
with the main certificate from 2021-09-08 until 2024-09-07
Subject to successful completion of annual periodic audits
The present status of this certificate can be obtained through TUV SUD website by scanning below QR code and by entering the certificate number (without spaces) on web page. Further clarifications regarding the status & scope of this certificate may be obtained by consulting the certification body at info.in@tuvsud.com

Certificate Registration No. 99 117 00055/08
Date of Initial certification: 2019-02-05
Issue Date: 2021-09-08 Rev. 00

Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited,
Mumbai,
Member of TÜV SÜD Group

TÜV SÜD South Asia Pvt. Ltd. ● TÜV SÜD House ● Saki Naka ● Andheri (East) ● Mumbai – 400072 ● Maharashtra ● India

ISO 45001 -2018

11. Learning from CII Energy Award

Zuari Cement
HEIDELBERGCEMENT Group

CII Energy Award helps in receiving recognition from the cement industry for the company's contribution towards energy conservation and green environment. We have learnt various innovative ideas and energy saving measures being adopted in cement industry to reduce carbon foot print. Some of the learnings are as follows:

1. Sequential operation of clinker silo gate
2. Local start stop push button provided for all flyash compressors at flyash unloading area. Operator can stop compressor immediately after completion of unloading. Idle run hours are minimized.
3. Installation of hooter at wagon loading machine for Bag divertor for diversion of bags towards desired Wagon Loading machine
4. Auditing of load centre / MRSS/ VFD room air conditioning system
5. Leakage test of compressed air line
6. Regrading of Grinding media on yearly basis.
7. Change of diaphragm plates to avoid nips formation

Zuari Cement

HEIDELBERGCEMENT

Environmental, Green Projects & Best Practices

12. Awards : CII Energy Efficient Unit 2021

Zuari Cement
HEIDELBERGCEMENT Group

2021

2022

HEIDELBERGCEMENT
INDIA

Greenery

Greenery

Greenery

Water Neutrality Data

Zuari Cement
HEIDELBERGCEMENT Group

Water Neutrality Data

Year	Harvested Water (KL)	Total Water Consumed (KL)	Water Positive (KL)	Ratio (Harvested water/Consumed water)
2021	53733	14040	39693	3.83
2022	65581	14131	51450	4.64
2023 (June 23)	19691	8224	11467	2.39

Piezometer Reading

2022

17.65 mbgl (meter below ground level)

2023

Present water level 11.99 mbgl

HEIDELBERGCEMENT INDIA

Safety Trainings

Zuari Cement
HEIDELBERGCEMENT Group

52nd NATIONAL SAFETY WEEK 2023

Our Aim- Zero Harm

HEIDELBERGCEMENT
INDIA

Safety Trainings

Zuari Cement
HEIDELBERGCEMENT Group

On 4th March we Conducted PPE's Wearing Competition

HEIDELBERGCEMENT
INDIA

Safety Training & Risk hunting Competition

Zuari Cement
HEIDELBERGCEMENT Group

Explaining about Risk Hunting Competition (Unsafe Acts & Unsafe Conditions)

Driver health checkup and awareness program
SAFETY
(HIV / Hepatitis B etc)

Zuari Cement
HEIDELBERGCEMENT Group

Safety Awards

Zuari Cement
HEIDELBERGCEMENT Group

Safety Star Award for contract workmen

Certificate for best safety practices amongst the industries by Director industries

INDIAN INOVATIX LTD.

Directorate of Industrial Safety & Health, Solapur

Special Thanks !

We value the participation of

M/s. Zuari Cement Ltd.

has successfully completed "Height Work Training Program"

in **"SAFETY MEET - 2022"** on Tuesday, 25th January 2022

The Best Safety Practices shared shall help in supporting for the theme of "Working on height, Learn and Apply".

Organized by - **Indian Inovatix Ltd., Ahmedabad** (Serving work at height needs since 1975 [4

Sponsored by - **Lobhas Consultant, Pune**

Avneet Antoorkar (Exe. Director - Business Development & Tech.)

Aditi Antoorkar Desai (Exe. Director - Sales & Commercials)

Shri. A. N. Avasare (Jt. Director - Industrial Safety & Health, Satara Division)

Shri. P. V. Surse (Dy. Director - Industrial & Health, Solapur Divi

MATERIAL
TO BUILD OUR FUTURE

Safety is our foremost priority