

“23<sup>rd</sup> National Award for Excellence in  
Energy Management 2022”

HeidelbergCement India Ltd.-Unit Jhansi

(23<sup>rd</sup> – 25<sup>th</sup> August' 2022)

**HEIDELBERGCEMENT**

**Mr Sunil Kumar, Unit Head**

**Mr Manoj Vaish, Production Head**

**Mr Shailendra Agrawal, E&I Head**



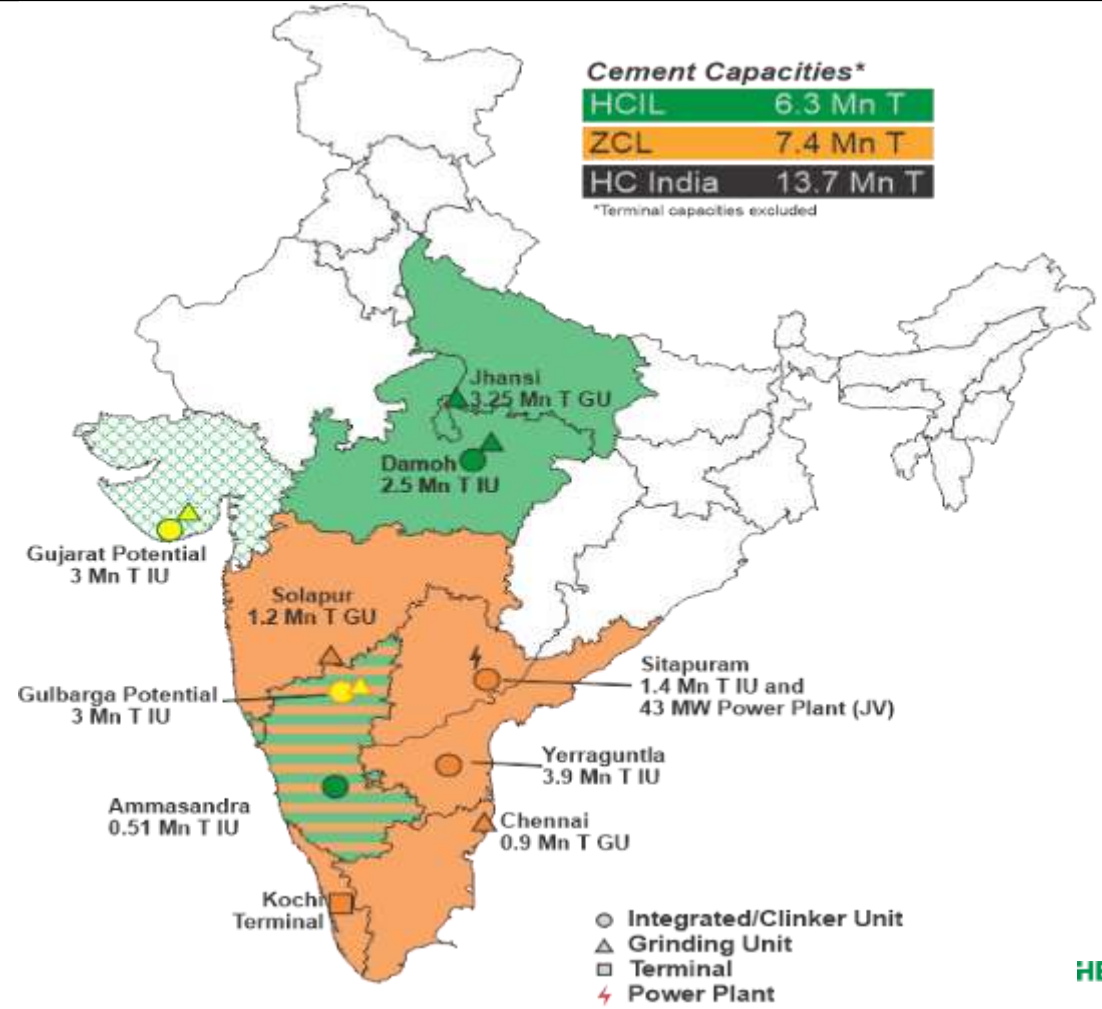
# Brief introduction on Group/Unit HeidelbergCement Group



## Worldwide Presence

- ❑ 51,000 Employees Globally
- ❑ Leading market positions in No.2 in cement, Aggregate and ready-mixed concrete
- ❑ 3,000 production sites in more than 50 countries
- ❑ Cement capacity 184 MT (inclusive of joint ventures)
- ❑ Aggregates resources and reserves 19.2 BT

## Presence in India



# Jhansi Unit - Milestone



**0.5 MTPA**  
**1989**  
 • Ball Mill Commissioned



**0.8 MTPA**  
**1991**  
 • Roller Press Installed



**0.8 MTPA**  
**2006**  
 • HC Took Over



**1.0 MTPA**  
**2010**  
 Dry Fly Ash feeding System



**2.7 MTPA**  
**2013**  
 • VRM Commissioned



**3.25 MTPA**  
**2020**  
 • High Efficiency Separator Installed in Ball Mill



**3.25 MTPA**  
**2022**  
 • Execution of PPA of 10.6 MW Solar Power share by 30%



# HeidelbergCement India Limited – Unit Jhansi

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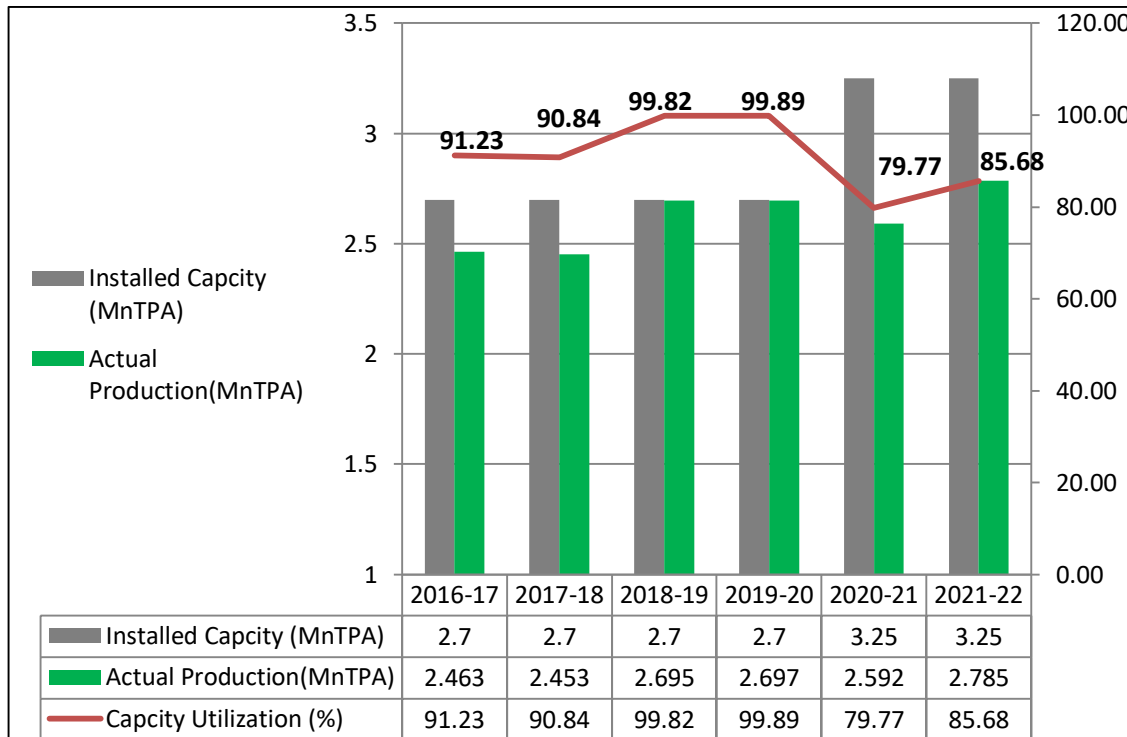
- Jhansi Cement Grinding & Packing Unit Commissioned in 1989,
- Initial capacity started with 0.5 MTPA
- 100 % PPC Manufacturing, Close to Power Plants (PTPP 920 MW & LPP 1920 MW)
- Capacity Expanded to 2.7 MTPA, Installed VRM in 2013
- Capacity Expanded to 3.25 MTPA by upgrading High efficiency Separator and debottlenecking of Ball Mill in April 2020.

## Major Equipment Details

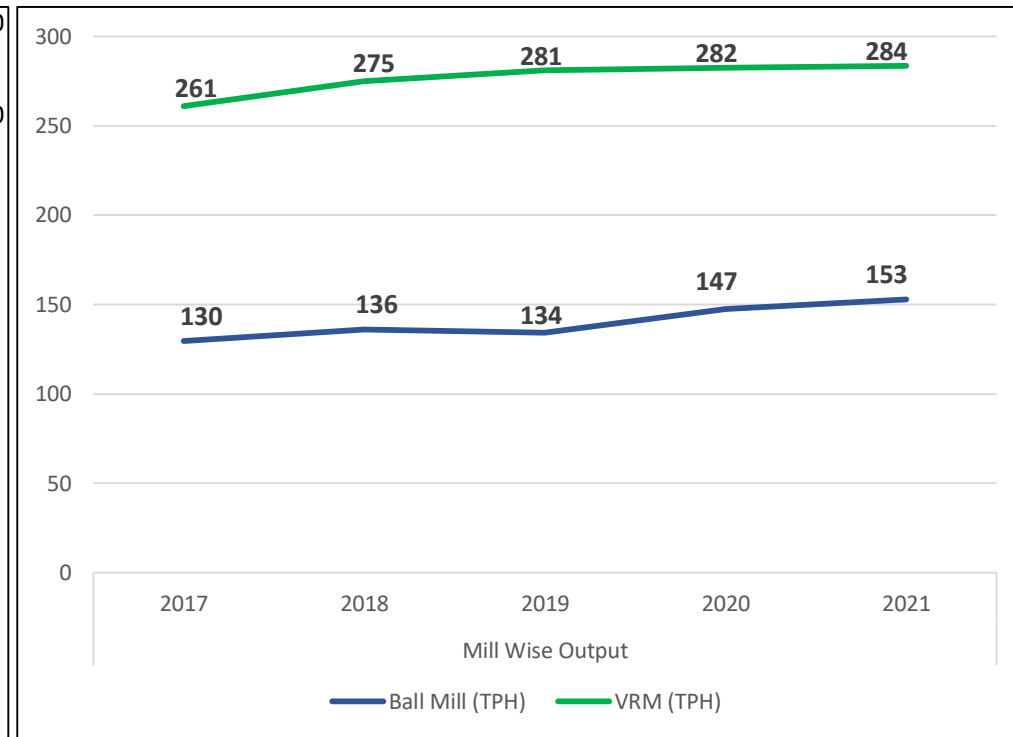
Major Equipments	Supplier	Type	Installed Capacity
Cement Mill-1 (Ball Mill)	KHD	Closed Circuit Ball Mill	162 TPH
Roller Press	KHD	Pre Grinder for Clinker Open Circuit	200 TPH
Cement Mill-2 (VRM)	Loesche	Vertical Roller Mill(53.3+3)	215 TPH
Wagon Tippler	Metso	Wagon Tippler	1000 TPH
Roto Packers	FLS (EEL)	Rotary Packer(16 Spouts)	4x240 TPH
Clinker Storage	FLS		2x40000 Tones Pile
Gypsum Storage	FLS		12500 Tones
Cement Silos	FLS		1x13800 Tones + 2x14000 Tones
Dry Fly Ash Storage	FLS		1x300 Tones + 1x 12000 Tones



## Capacity Utilization



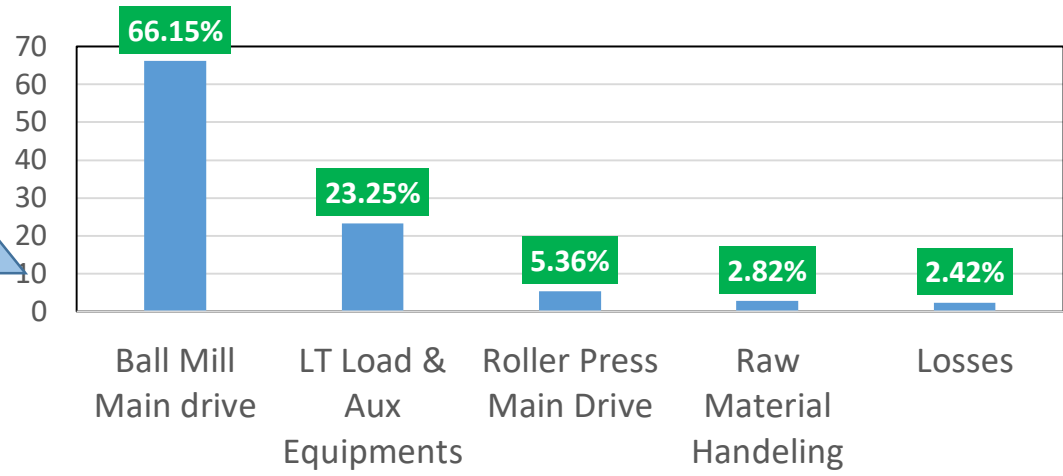
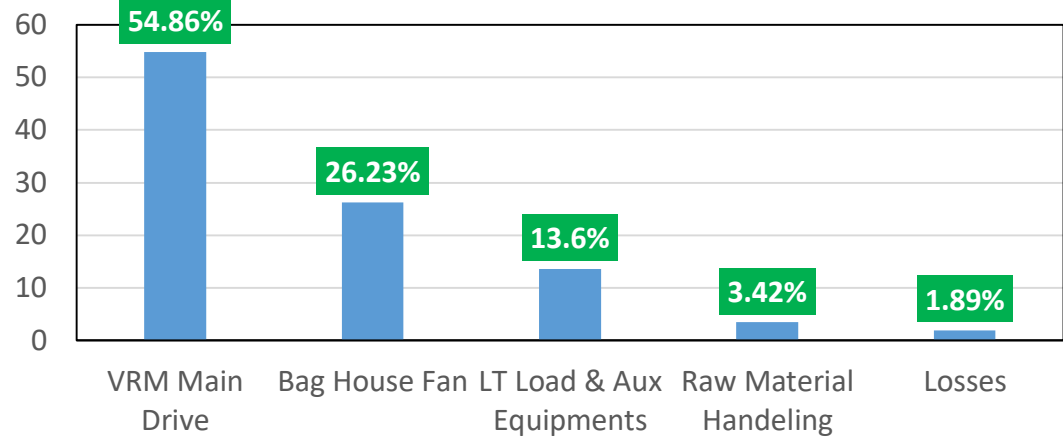
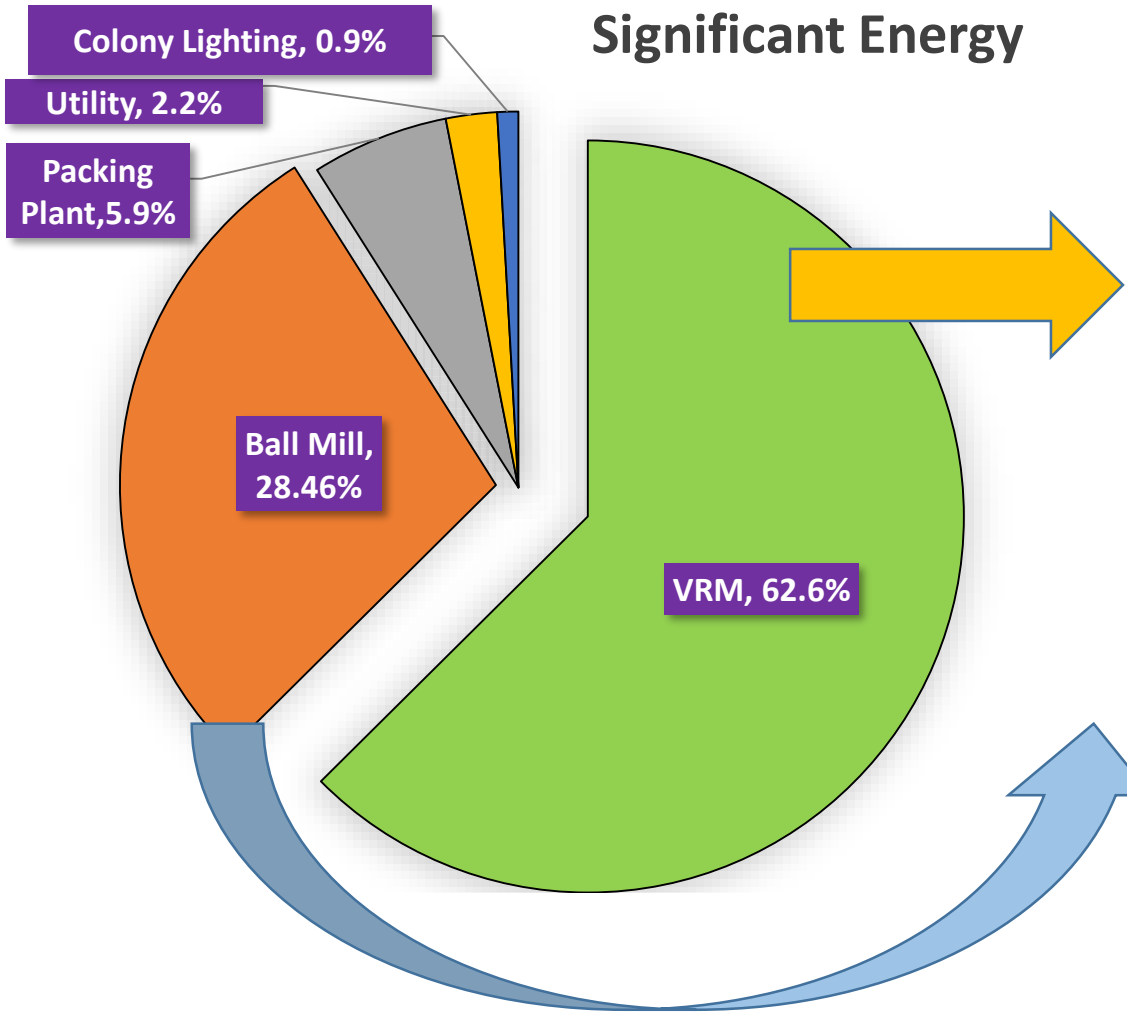
## Mill Wise Output



- Less capacity utilization in FY2020-21 due to COVID Pandemic.
- Less capacity utilization FY2021-22 due to low market demand.
- Increasing trend of output of VRM & BM (TPH).

# Section wise Significant Energy Uses – VRM & Ball Mill

## Performance Evaluation of Energy Intensive Equipment



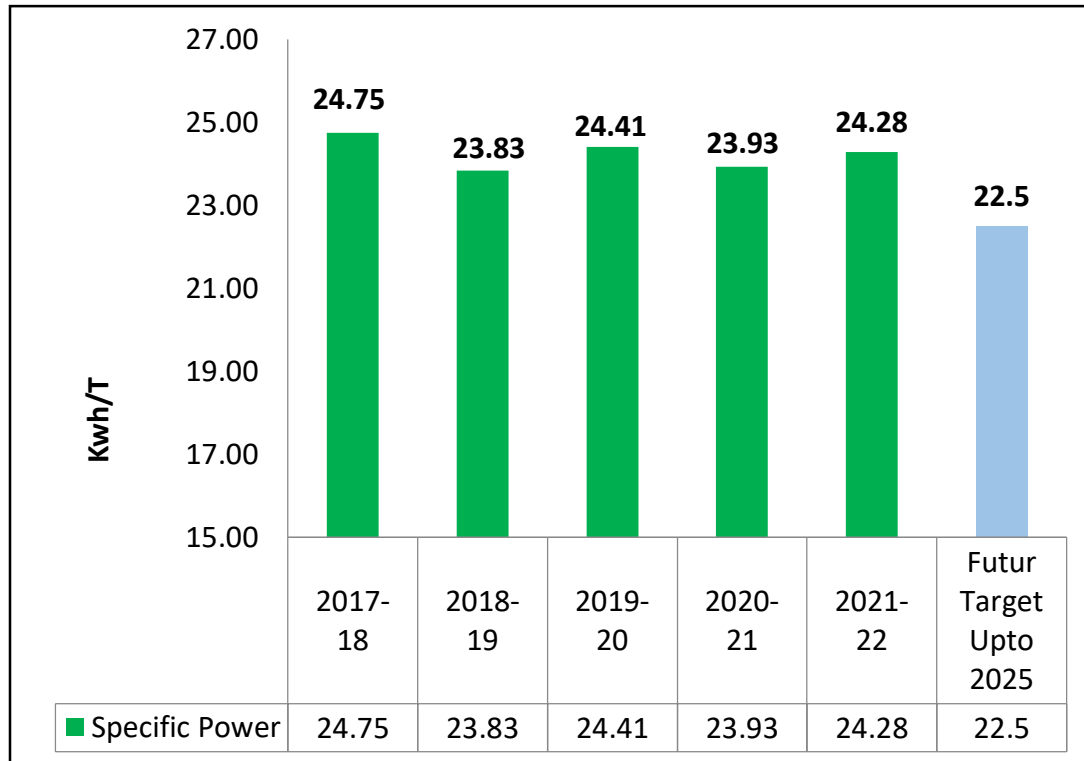
# Specific Energy Consumption



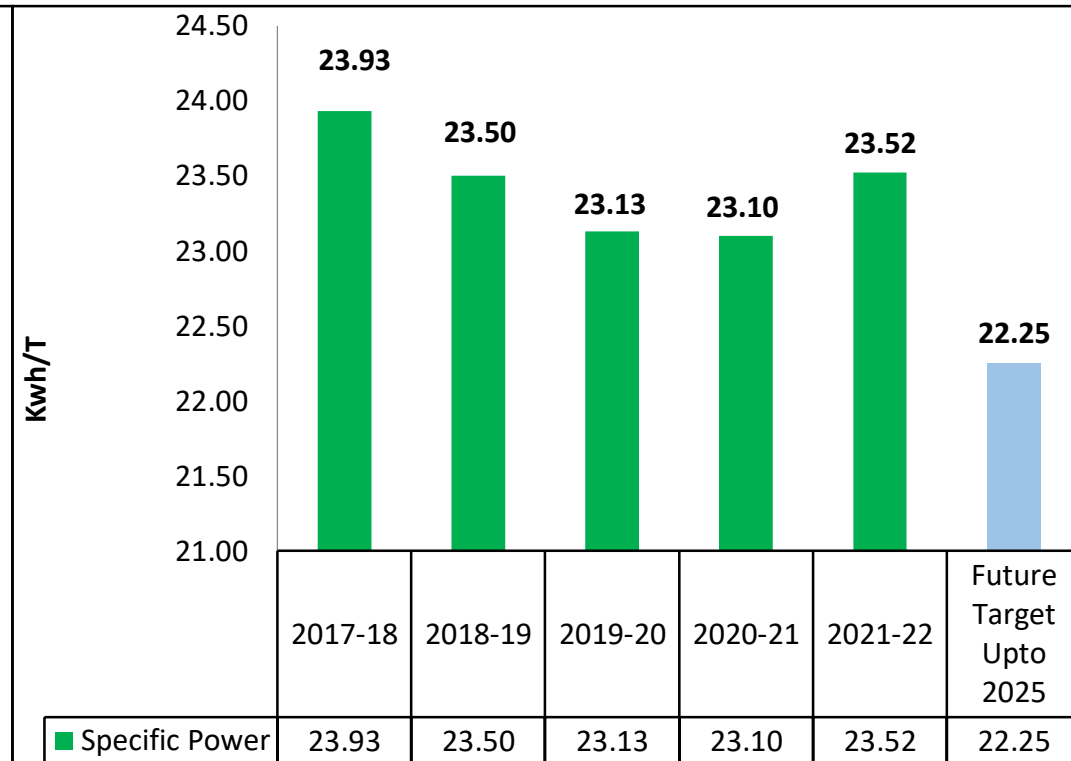
# Cement Mill -1 & Cement Mill-2 PPC Grinding SEC (KWh/Ton)



**Ball Mill SEC – PPC (CM-1)**



**VRM SEC – PPC (CM-2)**



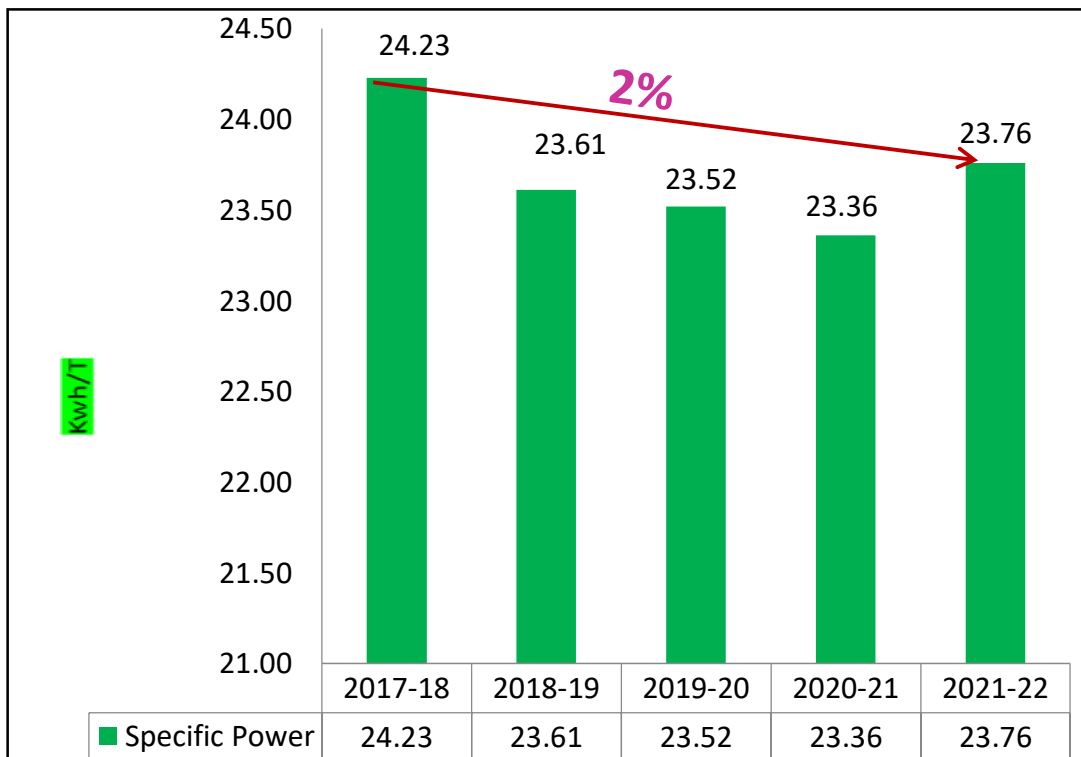
- ❑ Ball Mill – Higher SEC in FY2021-22 due to hard to grind clinker.
- ❑ VRM - Higher SEC in FY2021-22 due to use of more wet fly ash and hard to grind clinker.



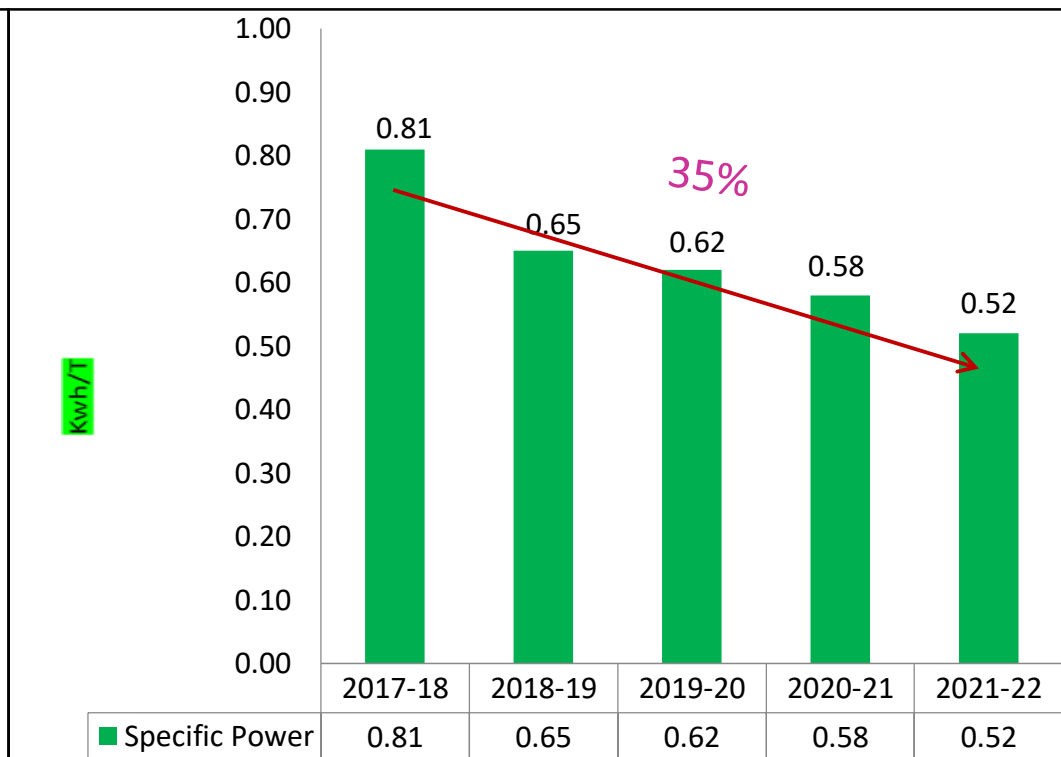
# Overall PPC Grinding / Utility SEC (KWh/Ton)



### Overall SEC PPC (BM+VRM)



### Utility SEC

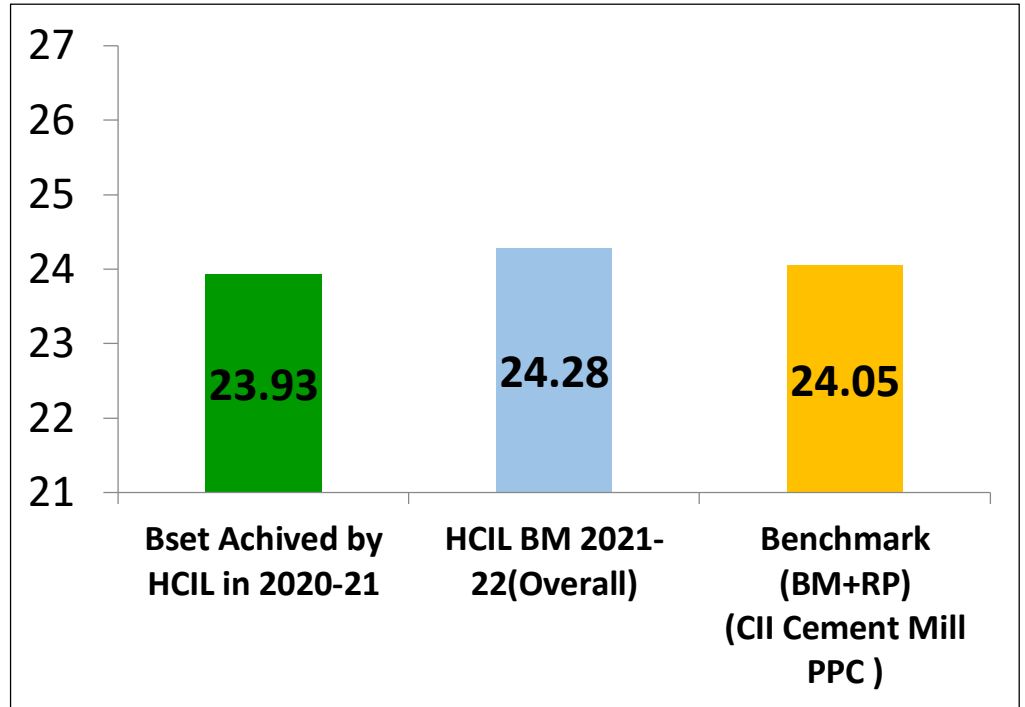
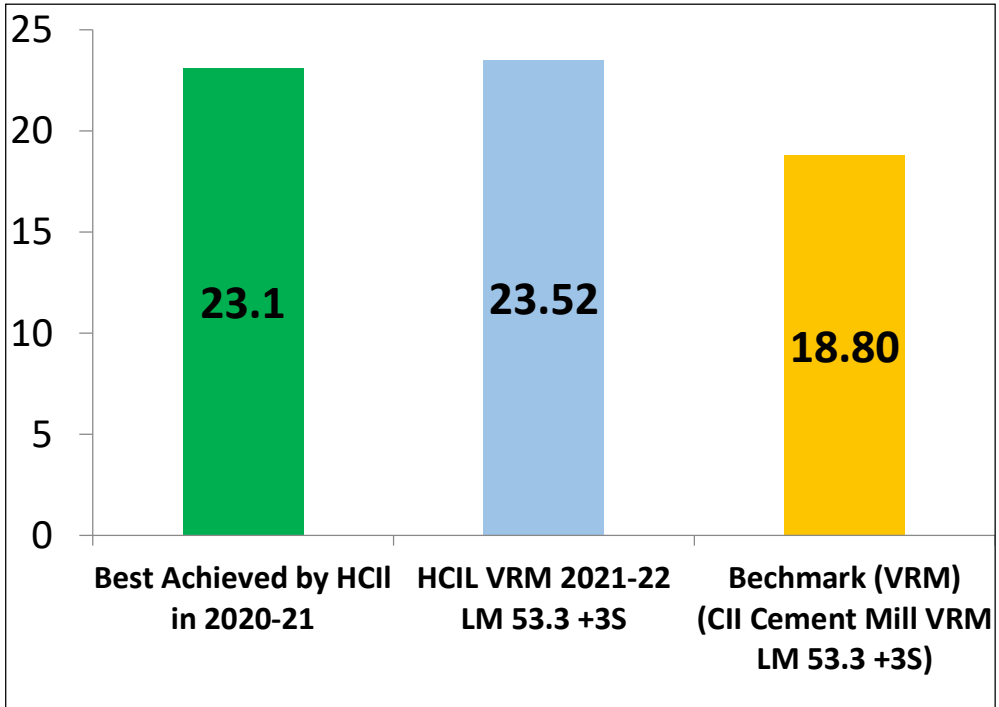


- ❑ Reason of Higher SEC in FY2021-22 due to use of wet fly ash and hard to grind clinker.
- ❑ Reduction in Utility SEC due to following reasons,
  - Use of LED lights,
  - Optimisation of ACs operation at 24° C Temp.
  - Installation of Occupancy Sensors in Offices & Buildings.
  - Auto ON/OFF Plant Lighting through DCS.

# Specific Power Comparison with CII Benchmark

**VRM**

**Ball Mill**



- ❑ VRM Main Drive SEC – **13.69 KWh/T**
- ❑ VRM Bag House Fan SEC – **6.80 KWh/T**
- ❑ VRM Classifier SEC – **0.45 KWh/T**
- ❑ VRM Aux. – **2.17 KWh/T**

- ❑ BM Main Drive SEC – **17.11 KWh/T**
- ❑ RP Main Drive SEC – **0.98 KWh/T**
- ❑ BM CA Fan SEC – **2.82 KWh/T**
- ❑ BM SEP SEC – **0.50 KWh/T**
- ❑ BM Bag House Fan – **0.39 KWh/T**
- ❑ BM Aux. – **2.13 KWh/T**

# Energy Target setting & Planned Encon Project

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Long Term Commitment to Reduce Energy & Road Map To Achieve Benchmarking

Project Description	Investment (Million Rs.)	Proposed SEC Saving (Kwh/MT)	Section	Planned in Year
Replacement of Existing Air Conditioners with Highly Efficient & 5 Star Rating Air Conditioners	4.5	0.05	Utilities	2022-2024
Installation of Mill Expert System to improve mill efficiency and automation	3	0.67	Ball Mill	2022-2023
		0.75	VRM	
Replacement of Ball Mill Water Spay System to improve the operational efficiency	2	0.05	Ball Mill	2022-2023
Replacement of Classifier Rotor with shaft for VRM to improve the reliability	15	0.05	VRM	2022-2023
Replacement of Shell Liner for Ball Mill	5	0.05	Ball Mill	2022-2023
Replacement of Bag for VRM Main Bag House	11	0.05	VRM	2022-2023
Up gradation of Roller press hydraulic system & Replacement of Old Rollers	15	0.1	Ball Mill	2023-2025
Replacement of Roller Press Roller with Housing	13	0.05	Ball Mill	2023-2024
Study for close circuiting of Roller Press Under Progress	1	Under Study	Ball Mill	2023-2024
Procurement of Energy Efficient Compressor for Packing Plant	3	0.12	Packing plant	2023-2022
Replacement of old & inefficient LT motors with high efficient motors of ball mill section	5	0.07	Overall	2024-2025
Installation of VFD for wagon tippler and other dust collector fans	4	0.02	Overall	2024-2025



# Energy Saving Projects



# Energy Saving Projects Implemented in Last 3 Years



Year	No of Energy saving projects	Investments (INR Million)	Electrical savings (kWh)	Savings (INR Million)
FY 2019-20	9	11.21	1385512	9.99
FY 2020-21	5	97.93	1241611	9.31
FY 2021-22	5	81.08	648155	4.2



# Major Energy Saving Projects Implemented in Last 3 Years

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- ❑ Installation of high efficiency Separator in Ball Mill in place of old zub separator.
- ❑ Installed of Roller Press feed Reject Circuit which equipped with magnetic separator & metal detector along with the diverters to improve reliability & performance of roller press.
- ❑ Replaced existing festooning system with cables by Energy Chain in Tripper Car & Gypsum Crane to reduce the breakdown and improve the performance.
- ❑ Replacement of Conventional lights with LED lights.
- ❑ Stopped one Bag Filter (22 KW)fan with RAL of Packing Plant by connecting venting line from other Bag filter.
- ❑ Installation of screw compressors in place of old vane compressors for dry fly ash unloading and reduced the timing of unloading & maintenance cost also reduced.
- ❑ Installed the pneumatic cylinder in manual gate and hard wire automation done of manual gate by separate level switch in Packer
- ❑ Modification in truck loaders, installation of luffing arrangement of 1.5 KW to reduce operation of hoisting lowering motor of 15 KW.
- ❑ Control of plant lighting & street lighting through DCS.



# Major Energy Saving Projects Implemented in Last 3 Years

- ❑ Installation of Belt Bucket Elevator (110 KW) for Ball Mill Silo Feeding in Place of Airlift Blowers (160 KW).
- ❑ Installation of VFD with VFD duty motors of Ball Mill CA Fan (500 KW, 690 Volts) & Separator (250KW, 415 Volts).
- ❑ Installation of Energy Chain Arrangement in place of old festooning cables in wagon & truck loading machines to improve the performance.
- ❑ Replacement of Old LV capacitor bank Panels for Old Substation (700 KVAR & 500 KVAR) to improve power factor.
- ❑ Optimisation of dust collector fans in packing Plant & Raw material handling section.
- ❑ Install occupancy sensors at various locations in office lighting, toilets & area lighting.
- ❑ Monitoring of compressor power on daily basis to optimise the compressor power.
- ❑ Optimisation of VRM & Ball Mill Operations by proper monitoring of parameters
- ❑ Idle running of equipment reduced by providing idle running interlock.



# Innovative Project

## Installation of Roller Press feed Reject Circuit

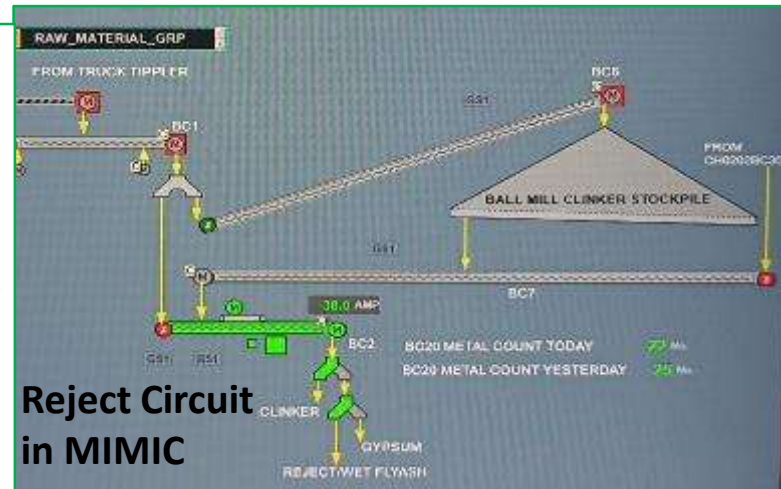
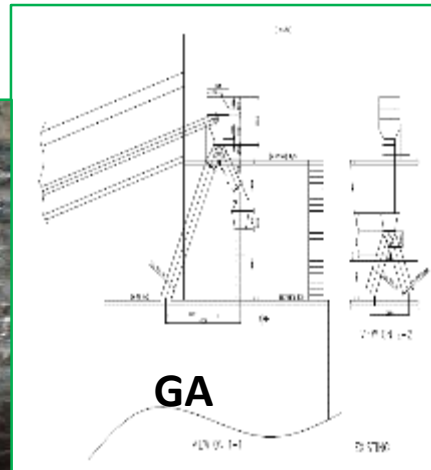


### Problem:

- ❑ Open circuit Roller Press Installed for Ball Mill in 1991 with no reject material circuit.
- ❑ There was chances of ingress of foreign material in clinker while feeding or transport. Earlier permanent magnets was installed to prevent entry of any ferrous material which was being cleaned manually; sometimes foreign material remains hidden beneath the clinker.
- ❑ These metal pieces was frequently damaging RP roller as well as it's housing and locking arrangement. Due to this frequent issue of chunking out of roller surface.

### Solution & Benefits:

- ❑ Through discussion with internal team, reject Circuit installed to avoid breakdowns in Roller Press and improved mill reliability & RP Roller life.
- ❑ Inhouse drawing developed along with selection of equipments for reject circuit like magnetic separator, metal detectors with diverters.
- ❑ Reduction in frequent stoppages of Roller Press and improved the life of RP rollers.
- ROI of Project – 2.25 Years.
- ❑ This projected can be easily replicated to other location.





## Innovative Project

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### In-house Modification in Wagon Tippler Clamps

#### Problem:

It was difficult to unload Bulged Wagons through wagon tippler, to unload bulged wagons by external hired Poclairn or manually resulting demurrages cost, fuel cost and idle running of Wagon Tippler circuit.

#### Solution & Benefits:

- ❑ After RCFA and brain storming session with internal team members a unique idea came out, which has been implemented & running successfully.
- ❑ Increased the length of Clamp pads to hold the bulged wagons from by 170 mm.
- ❑ Very low-cost investment Eliminated demurrage cost & fuel consumption for operation of Poclairn.
- ❑ This Inhouse & unique idea can be easily replicated to other locations.



S.No	Description /Year	UOM	2019	2020	2021
1	Bulged wagon	Nos	32	45	2
2	Demurrage: Unloading by L&T	Hrs.	42	28	2
3	Demurrage: Derailment	Hrs.	12	10	0
<b>Extra Cost</b>					
4	Cost of Diesel	INR/Lit	55		
5	Cost of Demurrages	INR/Hr	8800		
6	Diesel consumption	Lit/Hr	20		
7	Cost of Diesel consumption	INR	46200	30800	2200
8	Cost of Demurrages:	INR	475200	334400	17600
9	<b>Total Extra Cost to Company</b>	<b>INR</b>	<b>521400</b>	<b>365200</b>	<b>19800</b>

# Utilisation of Renewable Energy sources

Sr No.	On site	FY	UOM	Renewable Energy Consumption	
				MWH	%
On Site					
1	Solar	2017-18	MWH	75	0.12
2	Solar	2018-19	MWH	102	0.27
3	Solar	2019-20	MWH	175	0.53
4	Solar	2020-21	MWH	175	0.53
5	Solar	2021-22	MWH	200	0.60



Sr. No.	Project Description	Status	Saving in Kwh per year	Saving in Kg of CO2 eq.
1	Installed 7.5 Kw Solar system at 5 locations	Completed	14600	11.97 Ton
2	Installed transparent sheets in plant building to use day light	Completed	11242	9.21 Ton
3	Installation of Turbo Ventilators ( 36 Nos.)	Completed	18000	14.76 Ton
4	Installation of 2 MW solar system	Under study	4500000	3690 Ton
5	Long term PPA signed for purchase of 10.6 MW solar power through Wheeling	Power drawl from April 2022	Utilization of Green Power	400000 Ton over life span of PPA
6	PPA for Procurement of Hydro Power 0.6 MW through Wheeling	Power drawl from Aug 2022	Utilization of Green Power	700 Ton

# Utilisation of Renewable Energy sources

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- ❑ Solar PV Cell at various load centres, Solar Geyser in colony , Solar street lights, Turbo Ventilators and Transparent sheets installed in the workshop, store and other sheds in plant and colony

# RPO Compliance

Solar RPO Compliance (Yearly)							
NAME : Obligated Entity (Diamond Cement (Prop. HeidelbergCement India Limited, Jhansi, UP - DVVNL))							
Open Access energy Consumed/monthly adjusted in Electricity Bill	Solar RPO	Solar RPO Obligation	RPO% cumulative up to previous Year	Solar-RE purchase up to previous Year	Solar-REC purchase for the Year	Shortfall if any	
							MUs
FY 18-19	10.8	1%	0.11	0.11	0	0.11	0.11
FY 19-20	39.54	2%	0.79	0.90	0	899	0.00
FY 20-21	45.40	3%	1.36	1.36	0	0	1.36
FY 21-22	41.38	4%	1.66	3.02	0.07	2943	0.00
<b>TOTAL</b>	<b>137.12</b>		<b>3.92</b>		<b>0.075</b>	<b>3842</b>	<b>0.00</b>

Non-Solar RPO Compliance (Yearly)							
NAME : Obligated Entity (Diamond Cement (Prop. HeidelbergCement India Limited, Jhansi, UP - DVVNL))							
Open Access energy Consumed/monthly adjusted in Electricity Bill	Non Solar RPO	Non Solar RPO Obligation	RPO% cumulative up to previous Year	Non-Solar-RE purchase up to previous Year	Non-Solar-REC purchase for the Year	Shortfall if any	
							MUs
FY 18-19	10.8	5%	0.54	0.54	0	0.54	0.54
FY 19-20	39.54	6%	2.37	2.91	0	2912	0.00
FY 20-21	45.40	8%	3.63	3.63	0	799	2.83
FY 21-22	41.38	9%	3.72	6.56	1.1	5457	0.00
<b>TOTAL</b>	<b>137.12</b>		<b>10.27</b>		<b>1.1</b>	<b>9168</b>	<b>0.00</b>

- 100 % RPO (Renewable Purchase Obligation) Complied as per UPERC Promotion of Green Energy through Renewable Purchase Obligation Regulations, 2010 by Purchase of Renewable Energy Certificates (RECs) and purchase of Solar/ Non-solar RE Power through STOA(Short term open access)/LTOA(Long term open access).



# Utilization of Renewable Energy sources at Nearby Village

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Encourage & motivate local community and near by villagers for the use of RE Power & Installed,

- ❑ 50 nos Solar Street Lights at nearby village.
- ❑ PV solar panels in four school & a community center at nearby villages (Total Capacity – 11 KW).





## GHG Inventorisation



# Focus and Long-Term Target By Group

### The focal points of our sustainability strategy until 2030

**SUSTAINABILITY COMMITMENTS 2030**

The Sustainability Commitments 2030 are the cornerstone of HeidelbergCement's sustainability strategy. They were first introduced in 2017 and are regularly revised to reflect environmental and social developments. The Sustainability Commitments 2030 now include several new or updated targets and an even broader range of responsibilities in corporate sustainability management.

**Driving economic strength and innovation**

**Our goals**

- We use all resources as efficiently as possible and target to earn a premium on our cost of capital.
- NEW** We will generate 17% of our Group revenue from low-carbon and reuse products and solutions by 2030.
- We invest substantially in R&D towards innovative low-carbon production technologies and products, and will advance a portfolio of sustainable products in every Group country.
- We are active in Green Building Councils and other organizations in order to drive innovation of sustainable products together with our customers.

**Ensuring compliance and creating transparency**

**Our goals**

- We ensure compliance with international human rights, anti-corruption, and labour standards through internal control and risk management systems, such as internal audits and a whistle-blower hotline.
- We ensure that our suppliers comply with our Supplier Code of Conduct.
- We ensure that each position is filled with the most qualified person, independent from gender, origin, beliefs, or sexual orientation.

**Reducing our environmental footprint**

**Our goals**

**Emissions**

- NEW** We will reduce the CO<sub>2</sub> footprint of our cement-based products to reach 400 kg CO<sub>2</sub> per tonne of cement-based material by 2030.
- We will reduce the CO<sub>2</sub> emissions from electrical power consumption by at least 65% compared to 1990 by 2030.
- To reduce the supply and transportation-related greenhouse gas emissions of our finished products and to support the decarbonization of relevant industries, we engage with all of our partners along the whole value chain.
- We will increase the alternative fuels rate to 45%.
- We will reduce cement production-related SO<sub>x</sub> and NO<sub>x</sub> emissions by 42% and dust by 80% compared with 2008.
- We will permanently reduce all other air emissions below current industry average.

**Water**

- We aim to reduce water consumption at all operational sites as far as economically and technologically feasible.
- We aim to implement water management plans at all sites located in water scarce areas and will also explore water resources to local communities.
- At Group level, all efforts will be combined in a global strategic water consumption reduction plan.

**Land use**

- All our extraction sites are operated based on an after-use plan in agreement with local authorities and in accordance with the needs of local communities.
- We aim to include biodiversity enhancement recommendations in any new after-use plan.
- We want to implement a biodiversity management plan at all business operations located within 1 km of a recognized high biodiversity value area.
- In case of nature-oriented after-use plans, we aim to achieve a positive impact on the biodiversity value of our extraction sites.

**Enabling the circular economy**

**Our goals**

- NEW** We will offer circular alternatives for 10% of our concrete products by 2030.
- We will continuously increase the substitutable share of natural raw materials by using by-products or recycled materials.
- We will increase the share of recycled aggregates in our fresh concrete portfolio.

**Achieving excellence in occupational health and safety**

**Our goals**

- We will achieve zero fatalities.
- We will achieve zero lost time injuries.
- We will implement the World Business Council for Sustainable Development's (WBCSD) Pledge for access to safe water, sanitation, and hygiene of all production sites.

**Being a good neighbour**

**Our goals**

- We maintain open and transparent communication about our activities and performance.
- We help improve the living conditions in neighbouring communities.
- Group-wide, we achieve 60,000 hours of corporate volunteering annually.

## CO<sub>2</sub> CARBON NEUTRAL

The worldwide implementation of our ambitious carbon reduction roadmaps is at the heart of HeidelbergCement's climate strategy: they are based on concrete measures at plant and product level.

**We will significantly reduce our carbon footprint until 2030**

Year	CO <sub>2</sub> footprint (kg CO <sub>2</sub> /t CEM)
1990	750
2020	576
2021	565
2030	400

**-47% CO<sub>2</sub>**

Measures contributing to the 2030 target: Optimise products, Optimise process, Carbon capture, utilisation & storage (CCUS).



- Set Pilers to achieve our sustainability target by 2030 on HC Group Level.
- Target to reduce CO<sub>2</sub> by 47% till 2030 product optimization, process optimization & finally Carbon capture utilization & storage (CCUS).
- CCUS – Carbon Capture Utilization & Storage is a key component to reduce carbon footprint. CCUS Projects already launched by our group first in world cement industry. HC Group has concrete target to save 10 millions tones of CO<sub>2</sub> by installing CCUS worldwide by 2030.**

# Focus and Long-Term Target By Group

	Medium-term: 2020-2030	Long-term: 2030-2050
<b>Reducing Intensity</b>	<ul style="list-style-type: none"> <li>Reduction of CO<sub>2</sub> content in clinker                             <ul style="list-style-type: none"> <li>Further improve energy efficiency</li> <li>Increase use of alternative fuels, raw materials, and new binder concepts</li> </ul> </li> <li>Reduction of CO<sub>2</sub> content in cement and concrete                             <ul style="list-style-type: none"> <li>Use clinker with lower CO<sub>2</sub> content and secondary cementitious materials</li> <li>Optimise concrete mixes through new cement types</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Continued R&amp;D into improving processes and energy efficiency</li> <li>Alternative cementitious materials</li> <li>Increasing variety of low-carbon / zero-carbon products</li> <li>Hydrogen as a fuel &amp; kiln electrification</li> </ul>
<b>Mitigating remaining emissions</b>	<ul style="list-style-type: none"> <li>Projects for CO<sub>2</sub> capture and usage                             <ul style="list-style-type: none"> <li>Process-integrated CO<sub>2</sub> capture</li> <li>Recarbonation of recycled concrete</li> <li>Use of CO<sub>2</sub> in circular economy (e.g. chemical products)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Long-term R&amp;D efforts to support new technologies, e.g. process-integrated CO<sub>2</sub> capture, recarbonisation of recycled concrete</li> <li>Rollout of new technologies in industrial scale</li> </ul>
<p>An adequate political framework is the prerequisite for successful decarbonisation.</p>		



- ❑ Medium and Long-Term Target Set by HC Group to reduce the carbon footprint.
- Further Improvement Towards Energy Efficiency.
- Carbon Capture Storage & Utilization (CCUS).
- Continual R&D Towards Process Optimization.
- Rollout New Technology in Industry Scale.



# Major Achievement by HC India & Jhansi Unit for Sustainability



ESG Overview  
Environmental Social Governance

<p>Blended Cement</p> <p>100%</p>	<p>CO<sub>2</sub> Footprint</p> <p>511 Kg/t cement</p>	<p>Water Positivity Index</p> <p>4.4X</p>	<p>CSR</p> <p>32000+ Lives Improved</p>	<p>Green Power</p> <p>30%</p>
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- ❑ HC India has share of 100% Blended Cement.
- ❑ Current CO<sub>2</sub> Footprint of HC India – 511 Kg/t Cement.
- ❑ HC India 4.4 X Water Positive.
- ❑ Current HC India has 30 % of Green Power Share.
- ❑ HC India Plants have a target to achieve 2 °C lower temp within our plant as compared to 1 KM away, Jhansi unit achieved 2.2 °C temp difference.
- ❑ HC India has proudly achieved the milestone of planting more than 100,000 Trees and registered on HC India’s website [hcfriendsofearth.com](http://hcfriendsofearth.com)



HEIDELBERGCEMENT INDIA

**“WHAT GETS MEASURED, GETS ACHIEVED”**

We, at HeidelbergCement India have a target to achieve 2 °C lower ambient temperature within our plants compared to 1 Km away.

Our consistent efforts to increase our green cover followed by weekly temperature monitoring have made our Jhansi Grinding Unit achieve a difference of 2.2 °C and become the 2nd unit to surpass the target.

**JHANSI GRINDING UNIT**

*Sunil Kumar*  
Plant Head - Jhansi Unit

mycem cement | Zuari Cement

[www.hcfriendsofearth.com](http://www.hcfriendsofearth.com)

Let's Grow Together

HeidelbergCement India has proudly achieved the milestone of planting

**100,000+**

Trees\* and growing...

Thanks to everyone in the **friends of Earth** community who contributed to achieve this milestone!

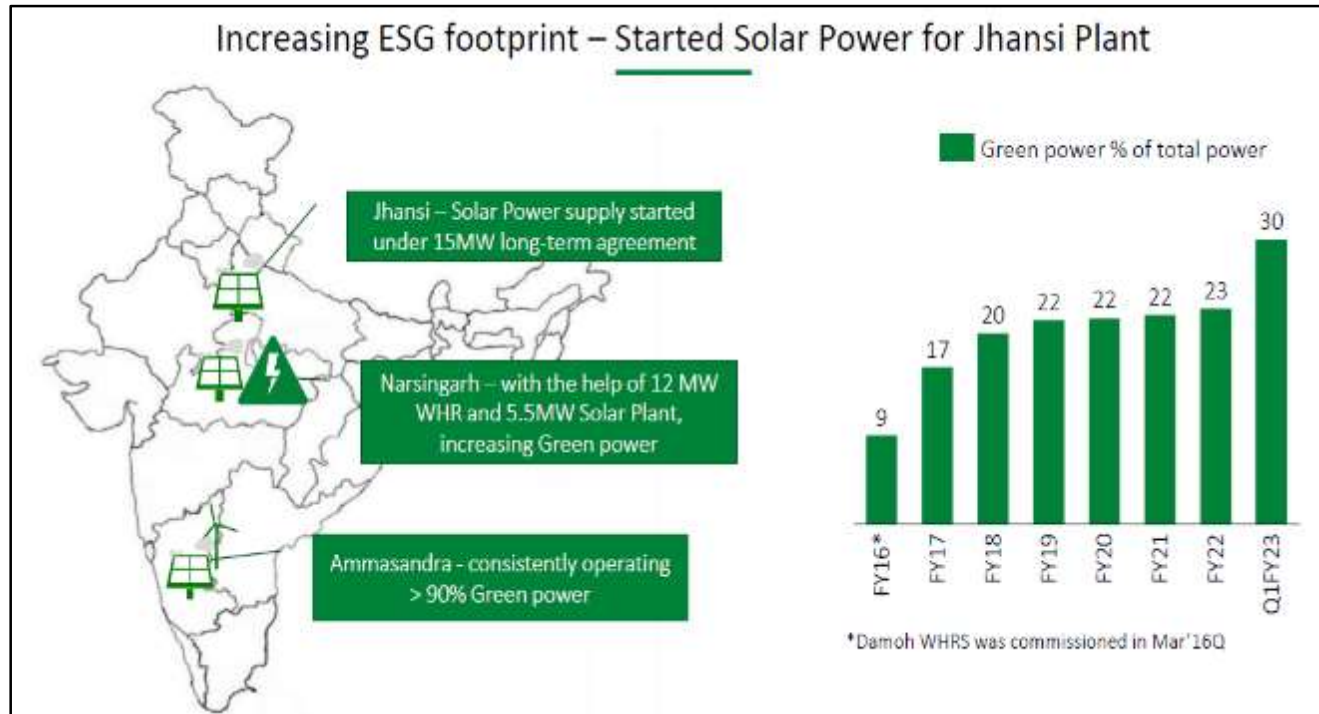
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# Focus and Target Jhansi Unit – RE Power Uses



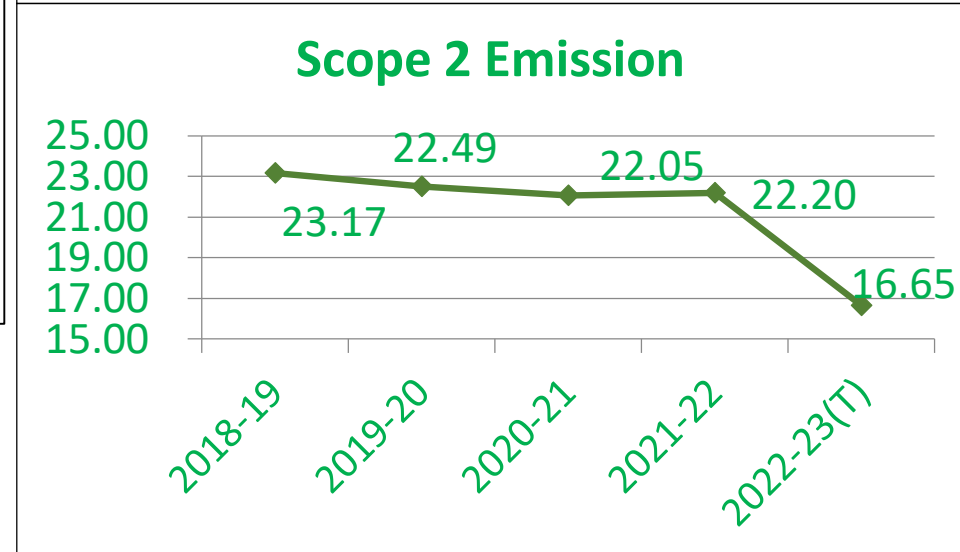
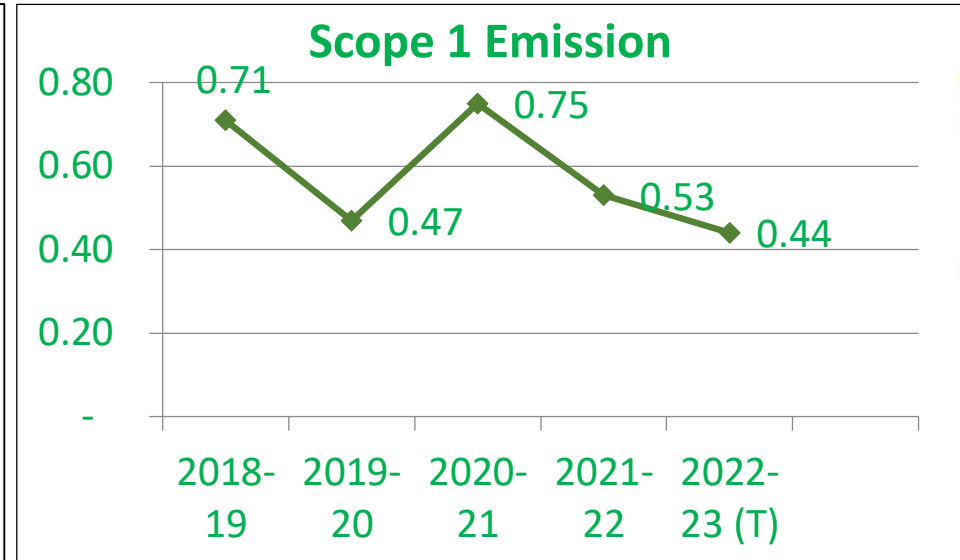
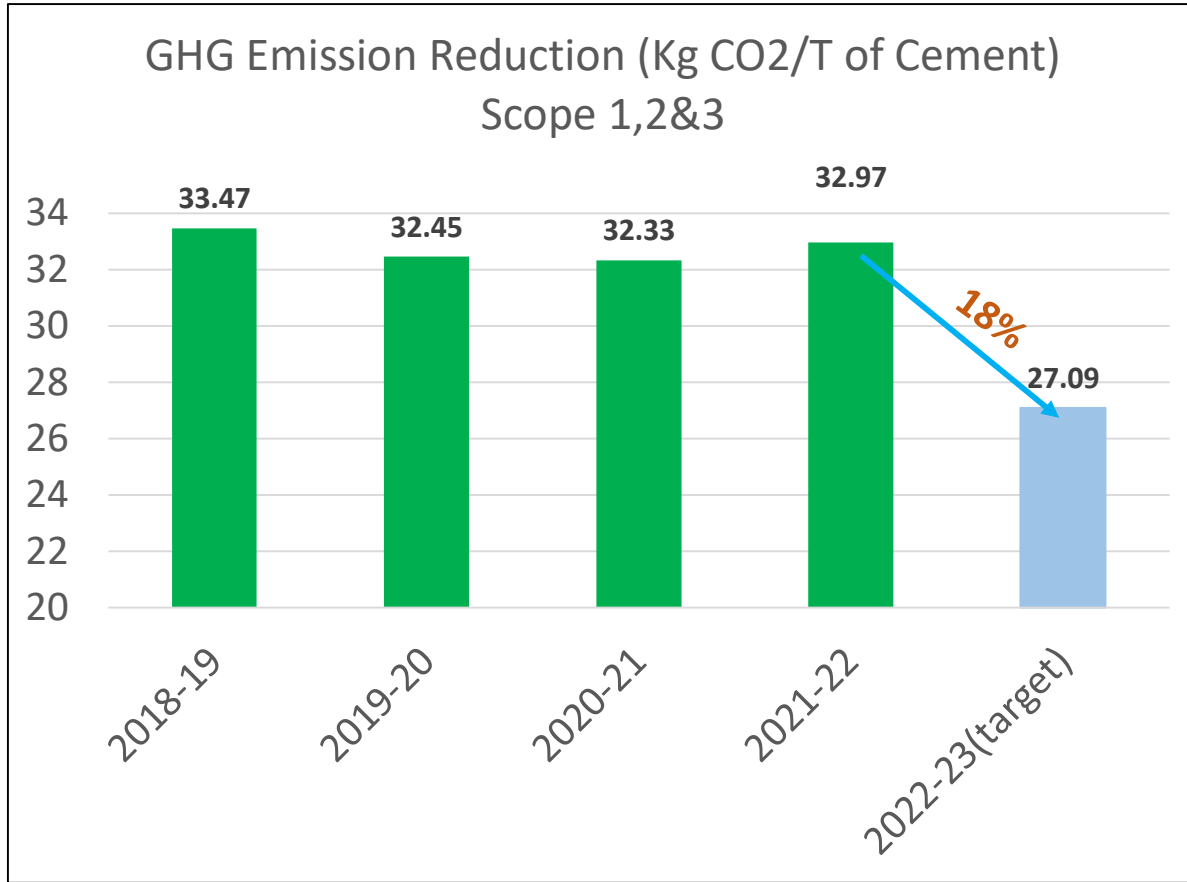
- HC India has executed a LTOA (Long term open access) Power Purchase Agreement to purchase of 15MW DC (10.6 MW AC) solar Power for Jhansi Plant and drawl of solar power commenced from 20.04.2022. (22000 MWh Per Annum).
- The expected CO2 Savings on consumption of electricity would be ~400,000 tonnes over the life span of contract. This Power Purchase Agreement is another step for HC India on the way to achieving carbon neutrality.
- Further HCIL Jhansi plant has executed a STOA PPA to purchase 0.6 MW Hydro power (Non-solar RE Power) to increase the share of green power and drawl of hydro power commenced from 01.08.2022.



- Green Power Share of Jhansi Unit– Approx 18% of Total HC India Green Power.**

Month	Solar Power Consumption (KWh)	% Share of total power (Green Power)
Apr-22	658794	10
May-22	2073215	37
Jun-22	1800547	30
Jul-22	1740672	30

# GHG Emission Intensity Reduction Scope 1, 2 & 3

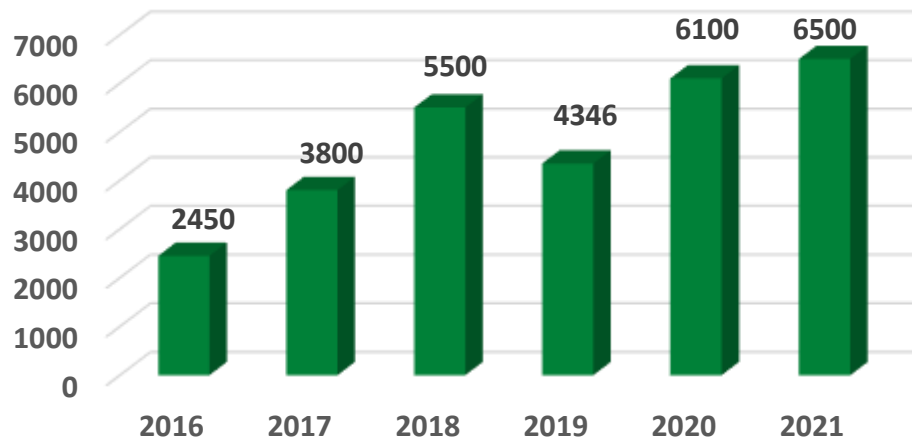


☐ 25% Reduction Target for scope 2 emission by maximizing green power share.

# Carbon Neutral Approach



Number of Trees planted in Plant premises



■ Number of Trees planted in Plant premises

- ❑ 10000 Tree Planted in near by Village in 2021 to reduce carbon footprint.
- ❑ Mass Tree Plantation Near Gypsum Yard and other locations of plant.
- ❑ Survival rate > 90%



# Carbon Neutral Approach

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- ❑ Plantation of trees at RMH and various locations in plant & Colony
- ❑ Total number of trees Planted in 2021: **6500**
- ❑ Green area: > **35%**
- ❑ Our Unit is 2.2° C cooler than 1 km away from plant and the target is 2.0° C.

## Rainwater Harvesting and STP Water Recycled

Year	Rain Water Harvested(KL)	Rainfall(mm)	STP Water Recycled(KL)	Water Positive
FY2018-19	121,830	1317.85	33860	2.19
FY2019-20	72,848	788.01	32565	1.17
FY2020-21	57,603	606.23	29275	0.87
FY 2021-22	90056	939	27980	1.25

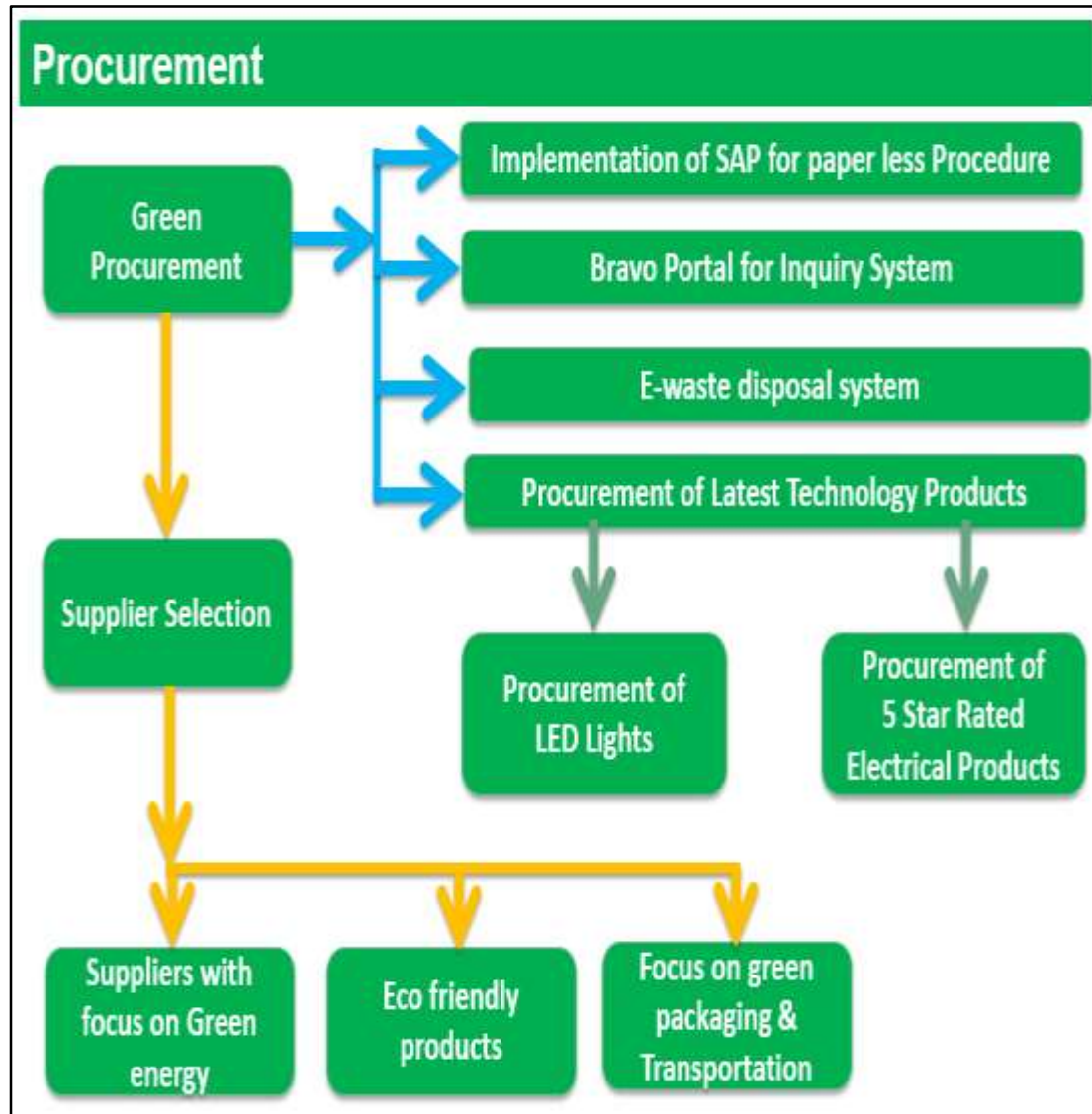
- Roof-top Rainwater harvesting system
- 125 KL per day STP
- Ground water withdrawal monitoring through Electromagnetic flow meters
- Rainwater collection ponds



# Green Supply Chain



# Green Supply Chain – Procurement Process



- ❑ SAP implementation for complete paperless procedure.
- ❑ Easy Supply Portal for floating online enquiries and commercial & tech. comparison among different suppliers .
- ❑ Procurement of Latest Technology & Energy Efficient Products. (LED Lights, Energy Efficient Motors, VFDs, High Efficiency Compressors, Star Level product).
- ❑ E Auction for scrap disposal Process.
- ❑ Emphasizing on RE Power Procurement.
- ❑ ARC contract for fast moving spares.
- ❑ Maximising availability of Fly Ash.
- ❑ Two-way transportation (from one unit to other unit i.e. Clinker from one plant and return with fly ash).





# Green Supply Chain – Project Implemented

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Sr No.	Projects Implemented	Benefits Achieved	Description
1	Maximization of fly ash blending up to 35%	Ensuring availability of dry fly ash	Long term contract Power plant O&M contract for dry fly ash system maintenance Mineral conservation due to usage of fly ash
2	More despatch from rake (65% :35% ratio)	Ease of dispatch bulk quantity and availability of 2 point loading	Railway siding has been developed to engage more rakes and avoid congestion, <b>railway has started to provide Green Points since April 2022.</b>
3	100 % Reverse Logistic for Raw Material, Two way transportation	Freight saving - 100 Rs./ Ton	Clinker from Damoh plant to Jhansi and reverse loading dry fly ash from Jhansi PTPP to Damoh plant
4	Mobile Sales Force Application	Live detail sales accounting	Handy Sales Portable for Dealer detail
5	Magma Tool	Paper less and Ease access land record	Land record Management compilation of all land details
6	On line portal for Rake Planning Application	Fast speed rake demand management	Rake planning application for rake demand, Customer care and logistic integration
7	Procurement of Energy Efficient Product	Energy saving	Procurement of star level product, energy efficient motors, VFDs, LED Lights and other energy efficient products.
8	GPS Installed in 100% own trucks	Track the shortest route of truck, TAT Improvement	To improve our customers services and reduce TAT



# Rail Green Points(RGPs) & Utilization of Fly-Ash

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**CERTIFICATE OF APPRECIATION**

Date: 12-08-2022

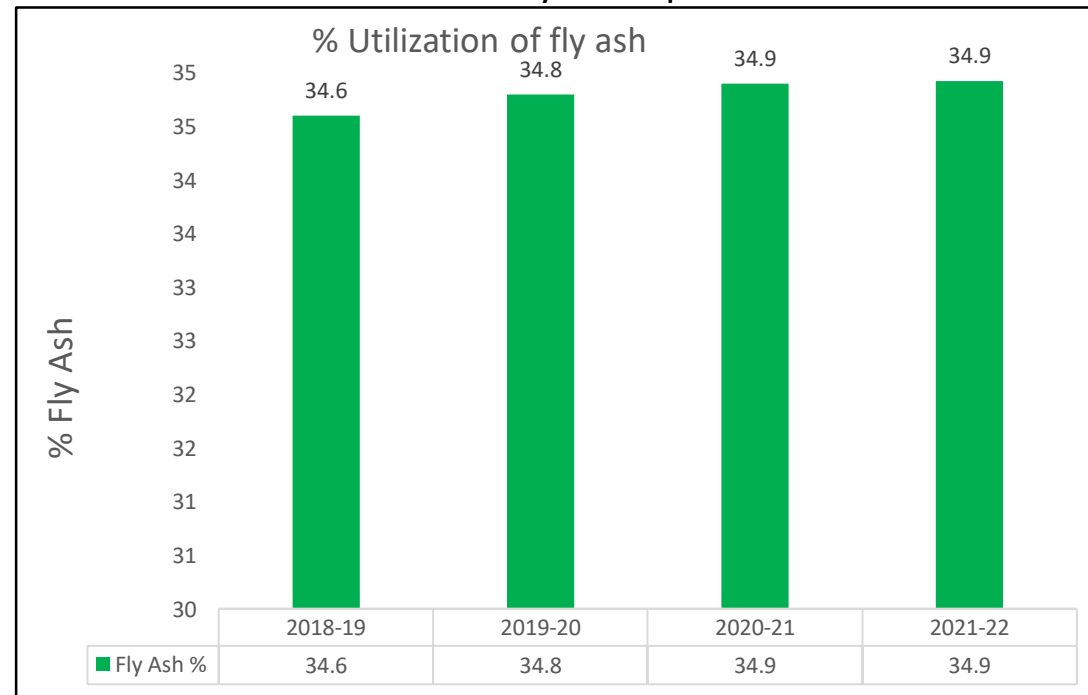
This is to certify that **DIAMOND CEMENTS (PROP. HEIDELBERG CEMENT INDIA LTD.)** has contributed in reduction of Carbon Emission by opting Rail Transportation over Road for movement of its cargo and earned **1371 RGP** since 01.04.2022. This contribution towards a Clean and Green India is highly appreciated.

The month-wise earning of RGP is as follows:

Month	Rail Green Points Earned
APR-2022	1309
MAY-2022	1679
JUN-2022	1190
JUL-2022	1117
AUG-2022	705
CLOSING BALANCE	1371

-Indian Railways  
\*RGP: RAIL GREEN POINTS

- Indian Railway has started to provide Rail Green Points (RGPs) to encourage rail transportation over road since April - 2022.
- 1 RGP – 1 Ton of CO2 saving.
- HC Jhansi Unit has earned 1371 RGPs since April-2022 and has received Certificate of Appreciation for contribution towards reduction of Carbon Emission.
- Maximum Utilization of Fly-Ash up to 35%



# Green Supply Chain – Digitization

## Digital Signature Implementation - done on 20th March 2022

### Implementation of Digital Signature on Cement outward documents

Go-Live: 20<sup>th</sup> March'22



- 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.

## myRobby

**mycom** **Zuari Cement**

**HEIDELBERGCEMENT INDIA**

**MyRobby**  
brings another RPA solution  
**Blocked Order- Auto Release**

**On:**

- Payment receipt or credit given to customer accounts
- Revision in credit status due to cancellation of old residual orders/deliveries.
- Payment term/credit limit enhanced or revised.
- Request raised by authorized person within their limits of Authority (LOA).

**Benefits:**

- No need to reconfirm and release order manually.
- No more manual checks to verify collections, overdue outstanding, credit status etc.
- No more follow-ups from the stakeholders to release the blocked orders.
- Improve turnaround time of Sales and Distribution team.
- Mitigate the risk of incorrect and inadvertent release of credit blocks.
- Activities run 24x7 through the robotic process that will save time and improve productivity.
- Customers and Truck Drivers remain happy.

**No More Wait Now!**



## HDIGICUBE Mobile Application Published on 21st April 2022

Introducing  
**HDIGICUBE**  
INNOVATE | EMPOWER | MONITER

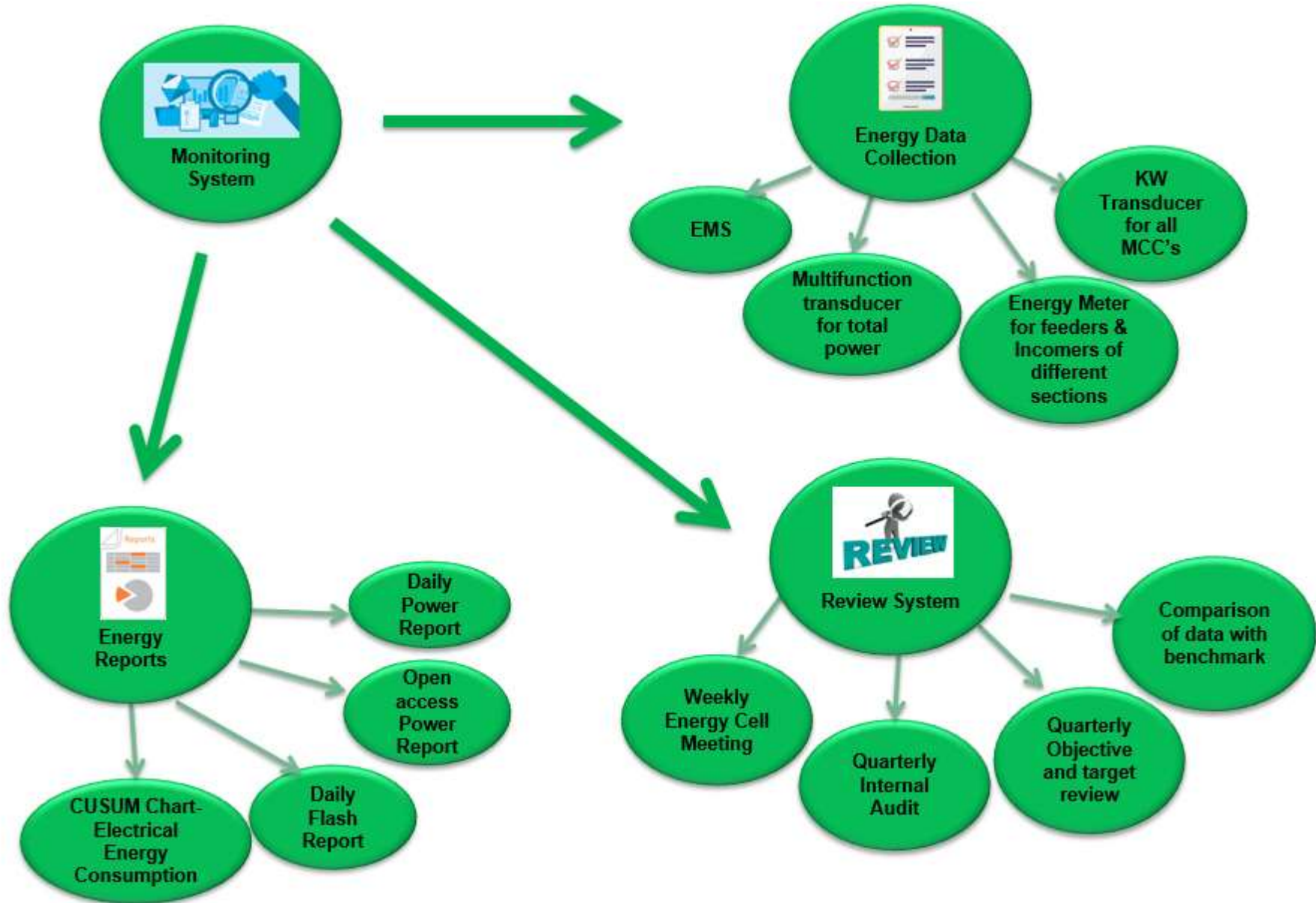
- A pioneering effort to digitalize onsite concrete testing process.
- Onsite real time results of concrete cube casting, testing, slump tests, etc.
- Supporting architects, contractors and consumers with data for taking informed decisions.

- ❑ Implementation of Digital Signature on Cement Outward documents from 20.03.2022 will results saving of > 100K A4 size papers per annum.
- ❑ HDIGICUBE Application published on 20.04.2022 and will Provide onsite real time Concrete Cube testing information to HC Customers.
- ❑ “myRobby” live from 15.03.2022, is a Robotic Process automation solution to release blocked Orders- Automatically, will run 24X7, save time, improve productivity, improve TAT of sales & distribution team.

## Team Work, Employee Involvement and Monitoring



# Energy Monitoring System



# Energy Target setting & Energy Monitoring System & Review



- Short term & long term goals which are Specific, measurable, assignable and realistic
- Annual specific energy targets (best power achieved and energy Project considered) for the specific year.
- Long term ( 3 to 5 year ) targets are being set on the basis of Capital expenses plan for the coming years, statutory guidelines for environment , availability of raw material, process related change etc..

Description	Frequency
Review of Energy Consumption/Flash Report to All Senior Management	Daily
Section wise review of energy consumption with team & Reason for deviations	Weekly
Plant Head Review meeting for On track & Off-Track Energy KPIs	Weekly
Energy Management Cell Meeting	Monthly
Capex Review of Encon Projects	Monthly

Daily Power report									
Jul-20									
GRINDING UNITS - PPC									
Meas Point	Mesuring Points name	1	2	3	4	5	6	7	8
HT (Ball Mill)	103143 HT-CM-1	- Kwh	31580	59390	55210	58840	57960		
HT (R Press)	103144 HT- RP	- Kwh	1890	3570	3130	3530	4250		
LT( BM)	103136 LT-CM1	- Kwh	10950	20630	19530	20290	19890		
HT ( VRM)	103145 HT-CM-2(VRM)	- Kwh	93440	89770	91490	93950	84750		
HT ( BH)	103147 HT-BAG HOUSE FAN VI	- Kwh	45250	45870	45430	45890	41540		
LT ( VRM)	103137 LT-CM2(VRM)	- Kwh	22890	24070	23640	23310	18490		
Total Ball Mill		- Kwh	44420	83590	77870	82680	82100		
Total VRM		- Kwh	161580	159710	160860	163180	144780		
Raw material ( Ball Mill)	103142 RMATERIAL-CM-1	- Kwh	610	940	1070	840	1120		
Raw material ( VRM)	103148 RMATERIAL-CM-2(VRM)	- Kwh	8980	6190	6150	6810	5970		

CURSUM Chart - Thermal Energy Consumption						
Month	VRM Cement Production Actual(Tons)	VRM Cement Production Plan (Tons)	Fuel Consumption(Actual) Litres	Fuel Consumption Plan(Litres)	(Actual - Plan) Litres	CUSUM(Litres)
May-18	148,954	131,820	3,300	3,354	-54	43387
Jun-18	146,242	132,900	1,600	1,677	-77	43290
Jul-18	147,181	132,000	8,700	12,700	6000	43380
Aug-18	112,000	138,400	3,800	11,266	-7466	41734
Sep-18	157,200	131,100	35,900	10,488	25,412	43290
Oct-18	177,817	130,300	33,100	3,908	29,191	82487
Nov-18	134,454	131,100	19,800	3,533	16,267	50754
Dec-18	188,321	144,300	22,200	4,329	17,871	81225
Jan-19	152,722	146,500	4,500	4,755	-255	81070
Feb-19	124,912	156,500	4,000	4,750	-750	81420
Mar-19	132,788	188,800	2,800	4,788	-2,988	81170
Apr-19	104,195	146,500	300	4,755	-4,455	50515
May-19	144,722	156,500	1,700	6,750	-5,050	90560

HEIDELBERG CEMENT INDIA LIMI												
Operating Plan -2022												
Jhansi Power Planning												
PARTICULARS	Days	OP-2022						2023		2024		
		Mar	Apr	May	Jun	Jul	Aug	2023	2024			
- Cement	Kwh/ft	25.18	25.18	25.18	25.18	25.41	25.78	25.50	25.18	25.18	25.18	25.28
- Packing	"	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69
- Other Services	"	0.51	0.56	0.56	0.49	0.56	0.62	0.58	0.62	0.58	0.48	0.55
- Colony lighting	"	0.25	0.27	0.26	0.24	0.28	0.30	0.25	0.26	0.23	0.21	0.25
		27.63	27.70	27.70	27.60	27.94	28.39	28.00	27.75	27.68	27.58	27.78
<b>Total requirement</b>	<b>Units</b>	<b>7,291</b>	<b>6,540</b>	<b>6,791</b>	<b>7,540</b>	<b>6,769</b>	<b>6,457</b>	<b>6,834</b>	<b>6,347</b>	<b>6,716</b>	<b>7,801</b>	<b>82,164</b>
<b>Power - Availability ( Sources)</b>												
UPSEB - JHANSI	Units	3,155	2,967	2,715	2,912	2,225	2,355	3,211	3,574	3,943	5,028	37,168
Open Access	Units	2,497	1,934	2,438	2,989	2,905	2,462	1,985	1,134	1,134	1,134	25,328
Solar Power	Units	1,833	1,833	1,833	1,833	1,833	1,833	1,833	1,833	1,833	1,833	19,400
DG-Jhansi	Units	6	6	6	6	6	6	6	6	6	6	72
		<b>7,291</b>	<b>6,540</b>	<b>6,791</b>	<b>7,540</b>	<b>6,769</b>	<b>6,457</b>	<b>6,834</b>	<b>6,347</b>	<b>6,716</b>	<b>7,801</b>	<b>82,164</b>
<b>Value of Source wise Power Cons</b>												<b>4,792.89</b>

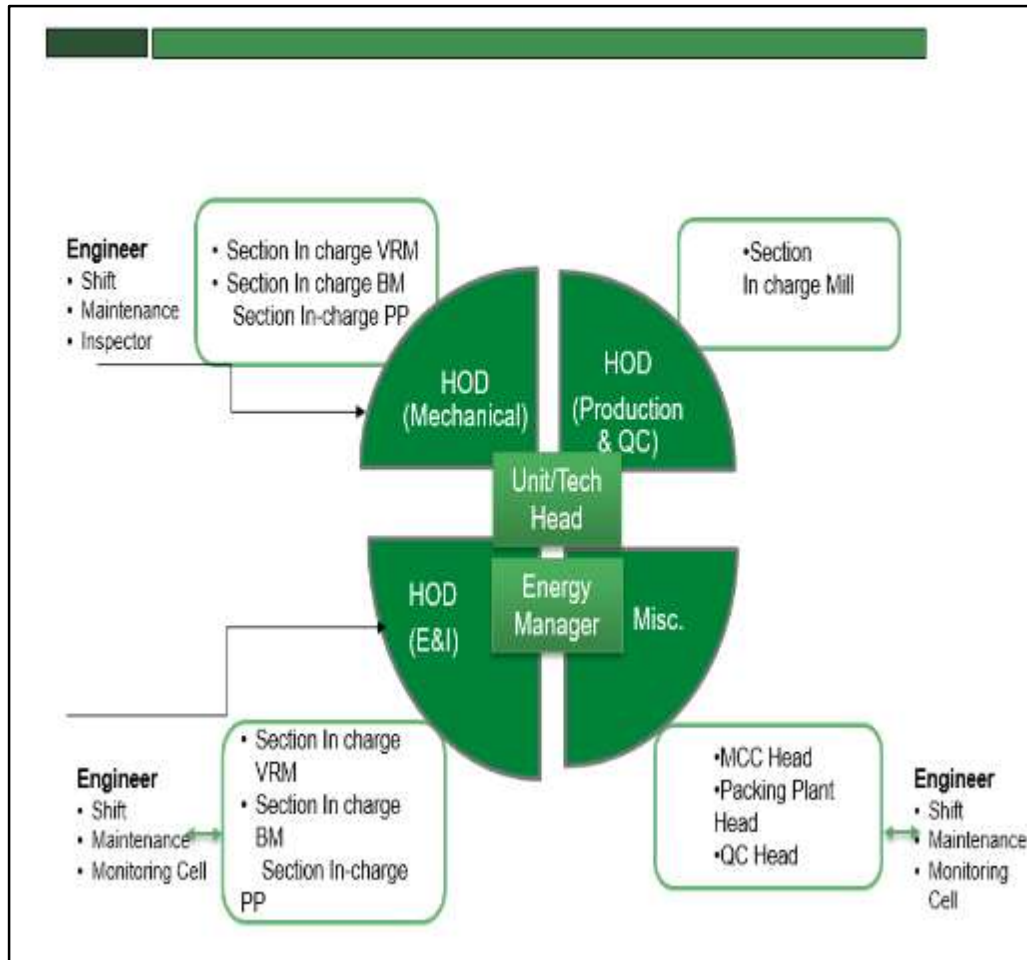


# Awareness for Reducing Energy Consumption & Sustainability Targets



- ❑ Awareness by Senior Management for sustainability Targets & Achievement of the company.
- ❑ Plant Head addresses team to increase awareness towards reduction in energy consumption.
- ❑ Prize for Energy Champion on National Energy Conservation day.
- ❑ Monthly prizes for Best Energy Saving Ideas/ Best Practices.
- ❑ Daily, Weekly, Monthly Review to track Energy KPIs chaired by Plant Head.

# Plant Energy Committee & Energy Policy



**mycem** **HEIDELBERGCEMENT**

### ENERGY MANAGEMENT POLICY

We, at Heidelberg Cement India Limited are fully committed towards conservation of energy & environment.

We shall endeavour to reduce energy consumption by

- Optimizing process & technology upgradation.
- Implementing improvement measures.
- Involvement of employees of all levels in the energy conservation efforts.
- Regularly set & review objectives and targets for continual improvement in Energy conservation.
- Exploring utilization of renewable Energy resources.

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

-sd-  
Plant & Unit Head

Date: 1.07.2017



- Policies and program to create awareness towards energy conservation
- Collection of Innovative ideas from all level of workforce through idea generation
- Investment in energy conservation projects
- Continuous EnPI monitoring with Benchmark data.



# ISO Certificates



- ❑ Certified to ISO 50001 – ENERGY MANAGEMENT
- ❑ External & Internal Yearly audit from Certified agencies ( TUV ) & trained auditors



ISO 50001 (Energy Management System)

ISO 9001 (Quality Management System)

ISO 14001 (Environment Management System)

ISO 45001 (Occupational Health & Safety Management System)

ISO 14046 (Water Footprint Verification & Assurance Statement in Compliance with ISO14046)

# Award & Accolades



## National Energy Management Award by CII



- Participated & won CII National Energy Management Award for six consecutive years since 2016 out of which 2 times won the award of Excellent Energy Efficient Unit.



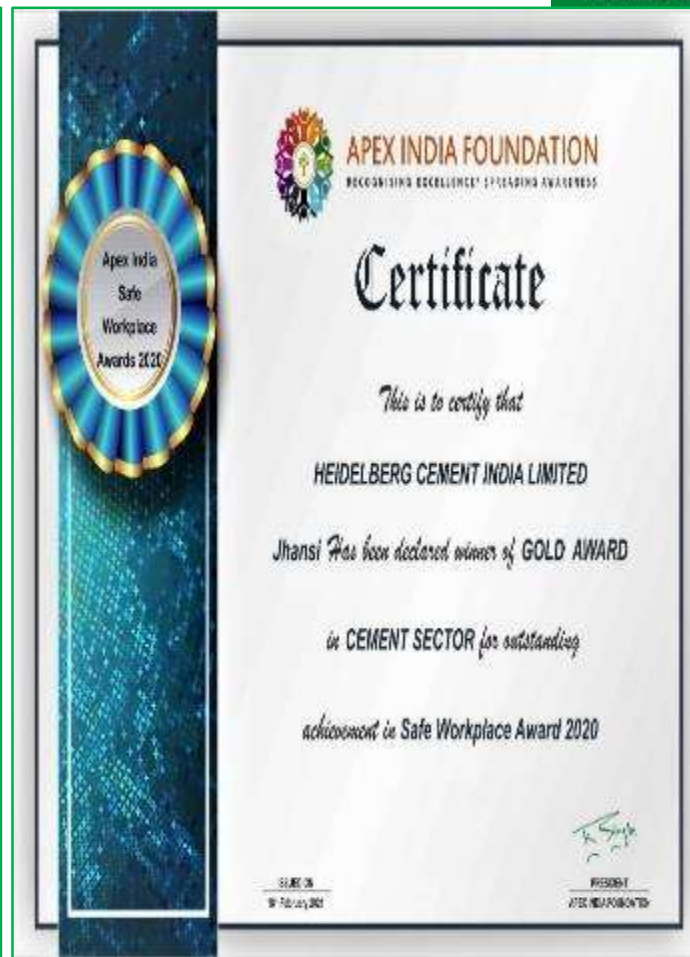
Award - Green CO GOLD Unit by CII



- ❑ 0.57 % investment done for energy saving projects on total turnover in FY2020-21.
- ❑ 0.50 % investment planned for energy saving projects on total turnover for FY 21-22.

## Award & Accolades

HEIDELBERGCEMENT



- ❑ HC Jhansi certified with GRIHA council for Green rating Product by Ministry of New & Renewable Energy and The Energy & Re-source Institute (TERI) in July2022.
- ❑ HC Jhansi received Apex Safety Gold Award 2020 for Cement Sector in Feb 2021.
- ❑ HC Jhansi received National Energy Conservation Award by BEE in Dec 2018.

# Learning From CII Energy Awards

HEIDELBERGCEMENT

- ❑ Excellent platform for sharing best practices/ideas amongst industries
- ❑ Benchmark setting
- ❑ Long term potential projects identification
- ❑ Provides national recognition for commitment towards Energy conservation

## Projects Replicated

- ❑ 22 KW Bag filter fan and RAL stopped in packing plant section and venting line connected to another bag filter
- ❑ Replacement of conventional lights with LED lights
- ❑ Motor derating under study.
- ❑ Optimisation of operation for ACs in Electrical Rooms with respect to plant operation.
- ❑ Installation of low-pressure screw compressor for Dry Fly ash unloading.
- ❑ Monitoring of Idle running and provided interlock through DCS.



# Initiatives for Digitization & IOTs

- ❑ **Remote Plant Operations** – Resilience & Agility for unexpected shocks. Support Systems for better decision making. Compliance with stricter emission norms. **(Planned in 2022-23)**
- ❑ **Expert System** - An optimization tool, which is a self learning computer-based system for controlling, stabilizing and optimizing cement manufacturing processes. The system operates the plant in autopilot mode and helps us make optimum operational decisions accurately and consistently. **(Planned in 2022-23)**
- ❑ **PX Trend** - A standard deployment for MIS in the HeidelbergCement Group, Px Trend is a Process Data Acquisition and Information System (PDIS) that has been found to be reliable and user-friendly. Critical performance parameters in real time as well as historical reviews, the system aids analysis of historical/real time process data, production values, environmental data, etc. **(Planned in 2023-24)**
- ❑ **DALOG System** – Installed Dalog System for Remote/ online condition & monitoring of VRM Gear Box. Easy Access of historic and online/real time data with pre-configured frequency. DALOG Report compiles Status & Performance Reports with condition indicators, analysis and recommendations. **(Implemented)**
- ❑ **SIMPLEHELP** - Simplehelp is a remote operation tool, which helps in monitoring and operation of plant from remote location through a secured network connection. Created on a thin client-server architecture, all one needs is a remote device like a remote desktop installed with the Simplehelp software and secured credentials to log in and make operational interventions, as may be necessary. **(Implemented)**
- ❑ **EQUIP CHECK** - Equip check is a SAP-based world class Predictive Maintenance system to optimize maintenance strategy: predictive maintenance and asset monitoring system. A real time condition-based monitoring system, it analyses machinery health for a preventive response. The objectives are to avoid equipment downtime, improve equipment efficiency and install a faster workflow system. **(Implemented)**



# Biodiversity



Thank you

***mycem***  
for better building

**Safety is our  
Foremost priority**

HEIDELBERGCEMENT

