"24th National Energy Award for Excellence in Energy Management 2023"

HeidelbergCement India Ltd.-Unit Jhansi

(13rd – 15th September' 2023)

HEIDELBERGCEMENT

Mr GD Raval, Plant Head

Mr Shailendra Agrawal, E&I Head

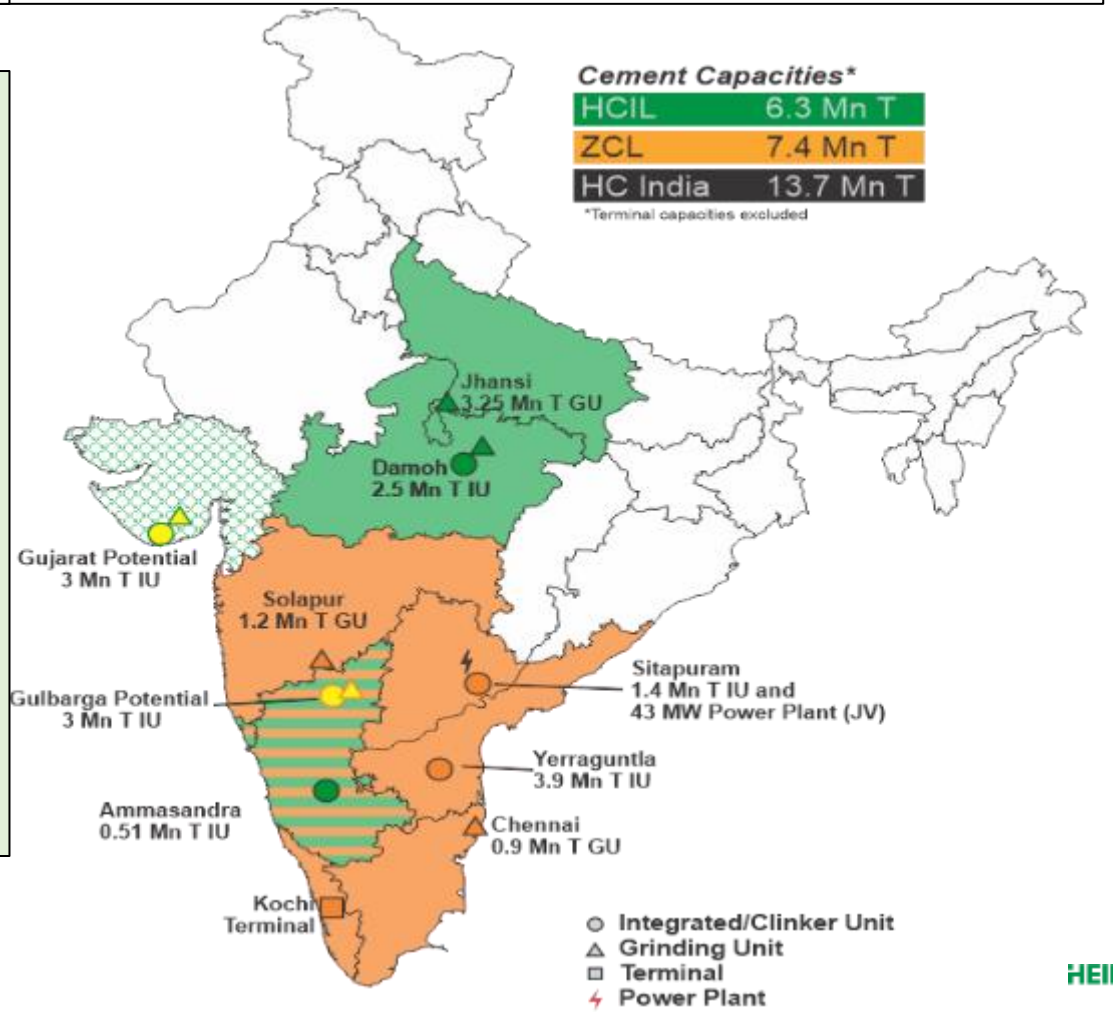
Mr Rohit Pandey, AGM Mech.

Brief introduction on Group/Unit
HeidelbergCement Group

HEIDELBERGCEMENT

Worldwide Presence	Presence in India

- 51,000 Employees Globally
- Leading market positions in cement, Aggregate and ready-mixed concrete
- 3,000 production sites in more than 50 countries
- Cement capacity 184 Mn T (inclusive of joint ventures)
- Aggregates resources and reserves 19.2 Bn T



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Jhansi Unit - Milestone

0.5 MTPA

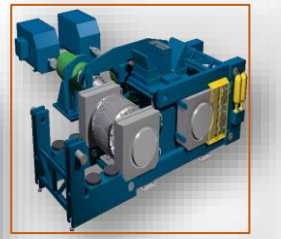
1989

- 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

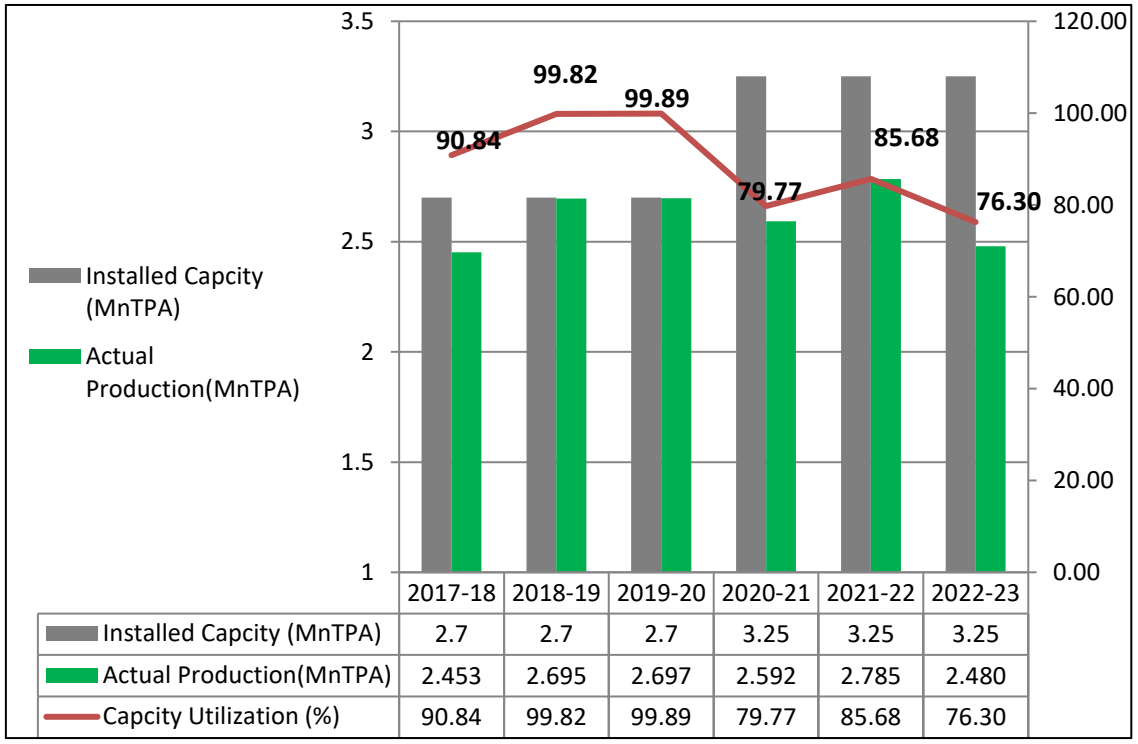
- Jhansi Cement Grinding & Packing Unit Commissioned in 1989,
- Initial capacity started with 0.5 MTPA
- 100 % PPC Manufacturing, Close to Power Plants (PTPP 920 MW & LPP 1920 MW)
- Capacity Expanded to 2.7 MTPA, Installed VRM in 2013
- Capacity Expanded to 3.25 MTPA by upgrading High efficiency Separator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

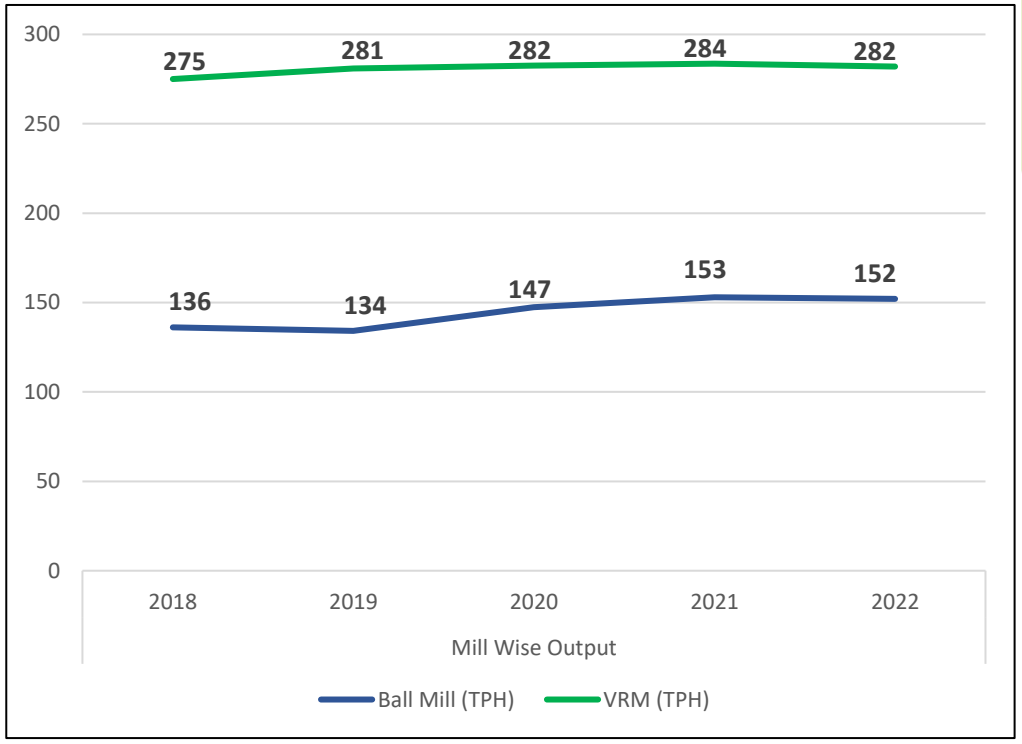
HeidelbergCement India Limited – Unit Jhansi

Capacity Utilization



	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Installed Capcity (MnTPA)	2.7	2.7	2.7	3.25	3.25	3.25
Actual Production(MnTPA)	2.453	2.695	2.697	2.592	2.785	2.480
Capcity Utilization (%)	90.84	99.82	99.89	79.77	85.68	76.30

Mill Wise Output



- Less capacity utilization in FY2020-21 due to COVID Pandemic.
- Less capacity utilization FY2021-22 & FY2022-23 due to low market demand.
- Increasing trend of output of VRM & BM (TPH).

Section wise Significant Energy Uses – VRM & Ball Mill

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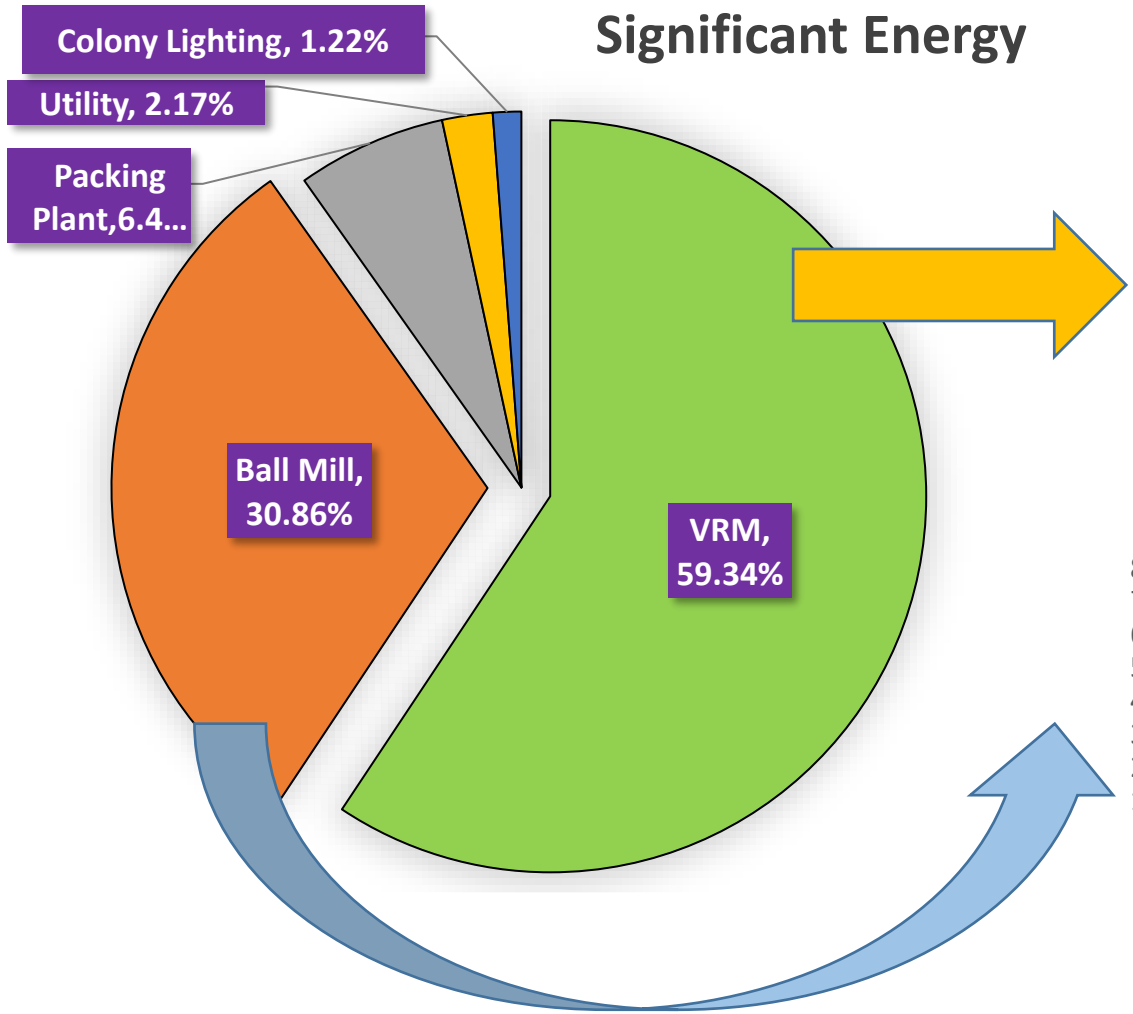
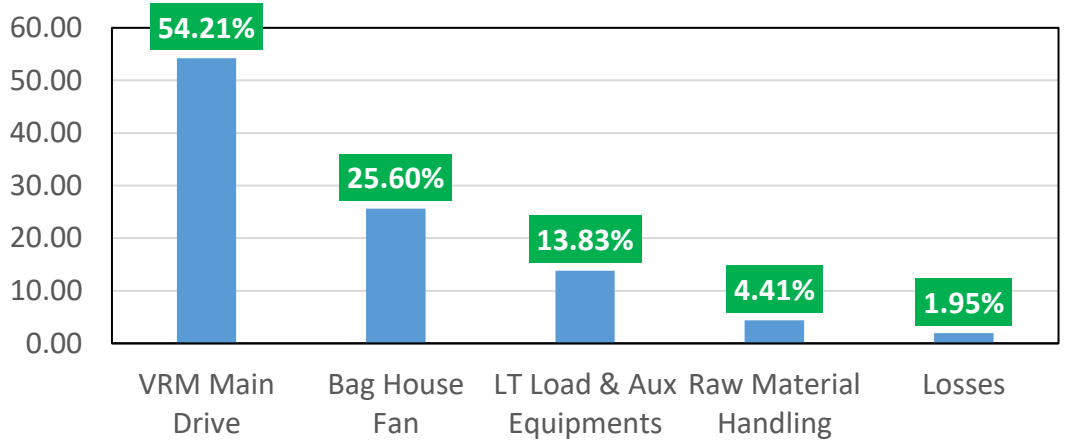
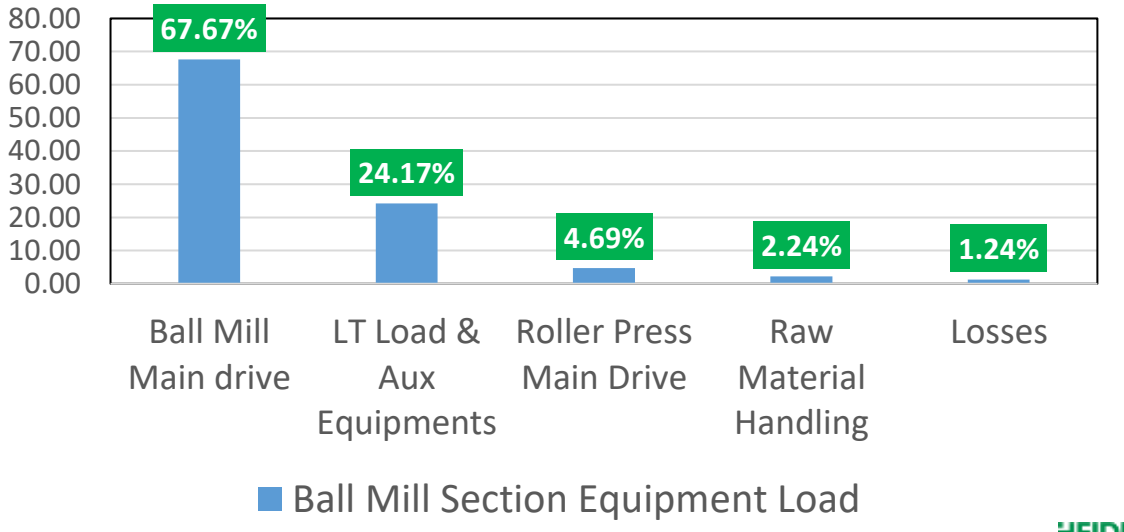
Performance Evaluation of Energy Intensive Equipment







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Specific Energy Consumption

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

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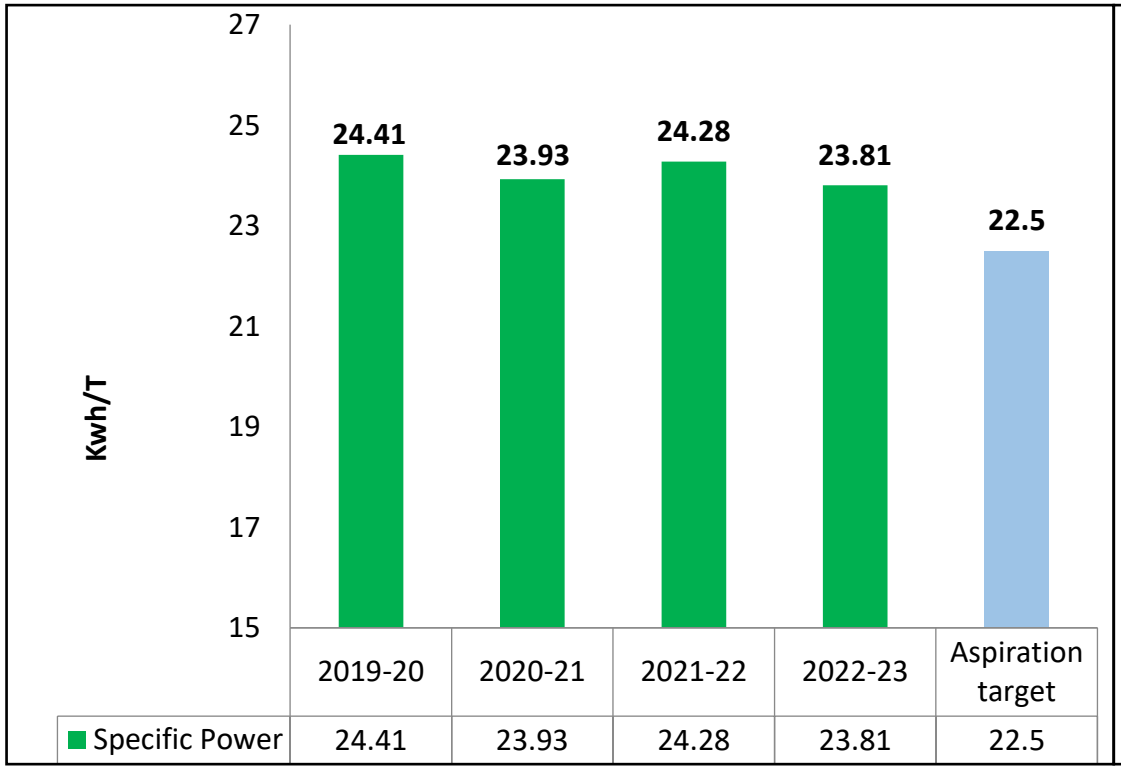
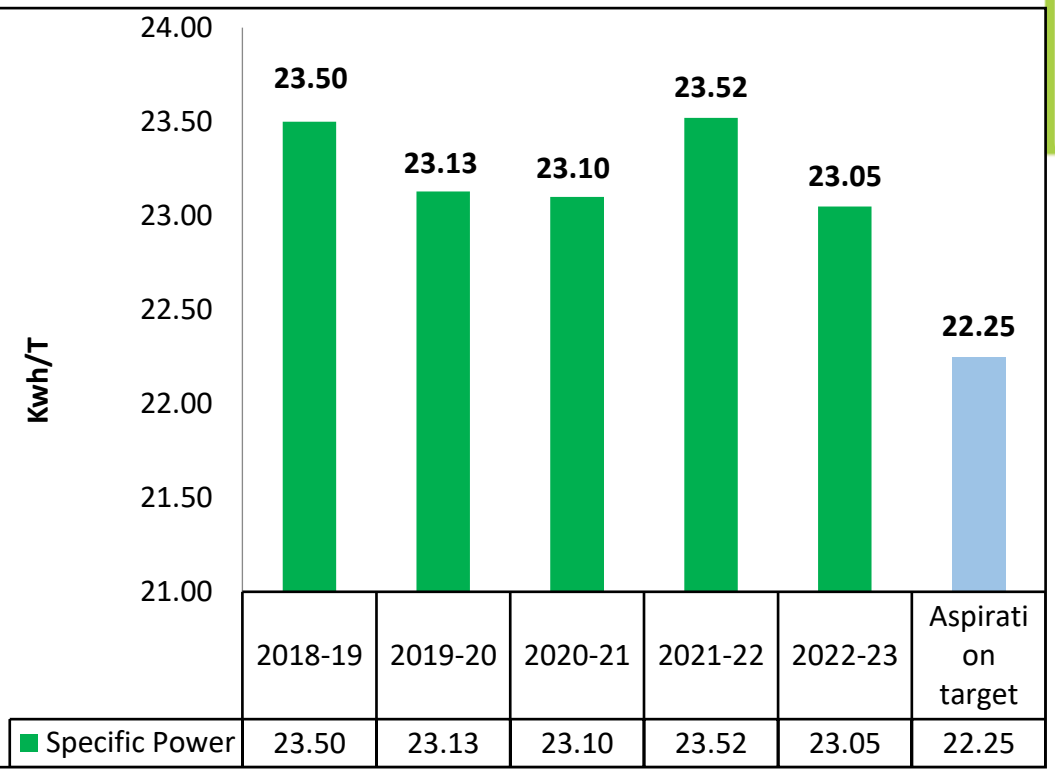
Ball Mill SEC – PPC (CM-1)



	2019-20	2020-21	2021-22	2022-23	Aspiration target
Specific Power	24.41	23.93	24.28	23.81	22.5

VRM SEC – PPC (CM-2)



	2018-19	2019-20	2020-21	2021-22	2022-23	Aspiration target
Specific Power	23.50	23.13	23.10	23.52	23.05	22.25

- 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)

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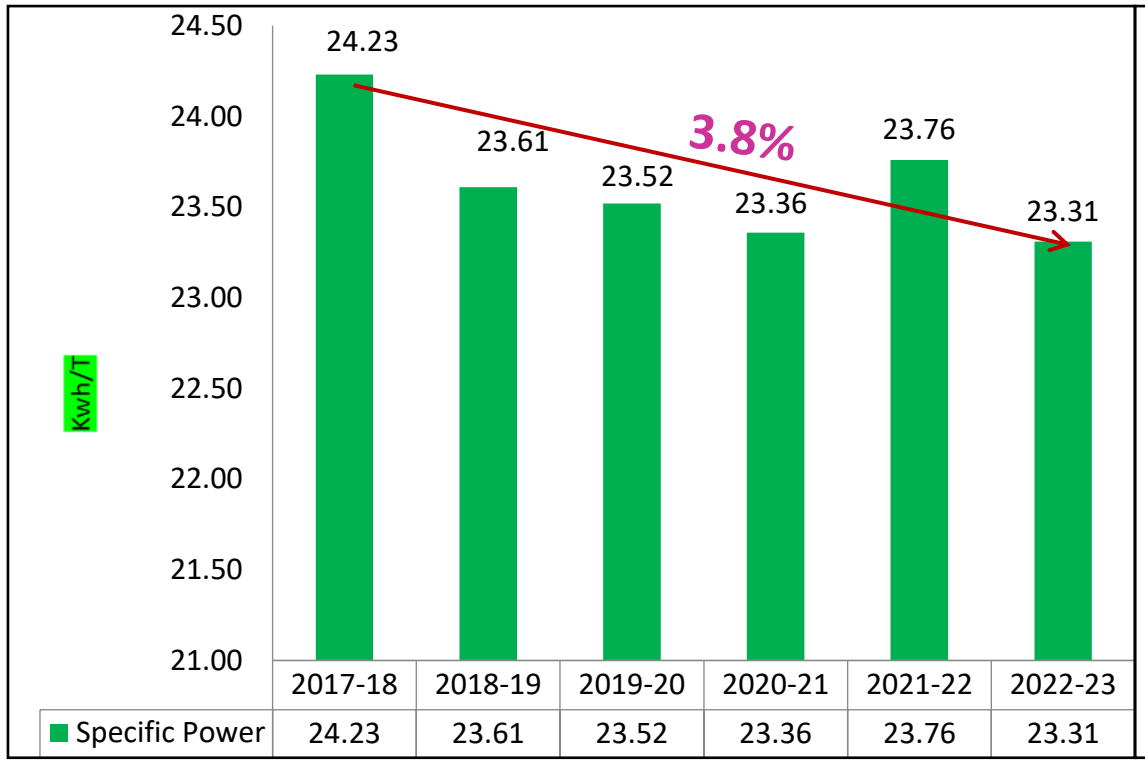
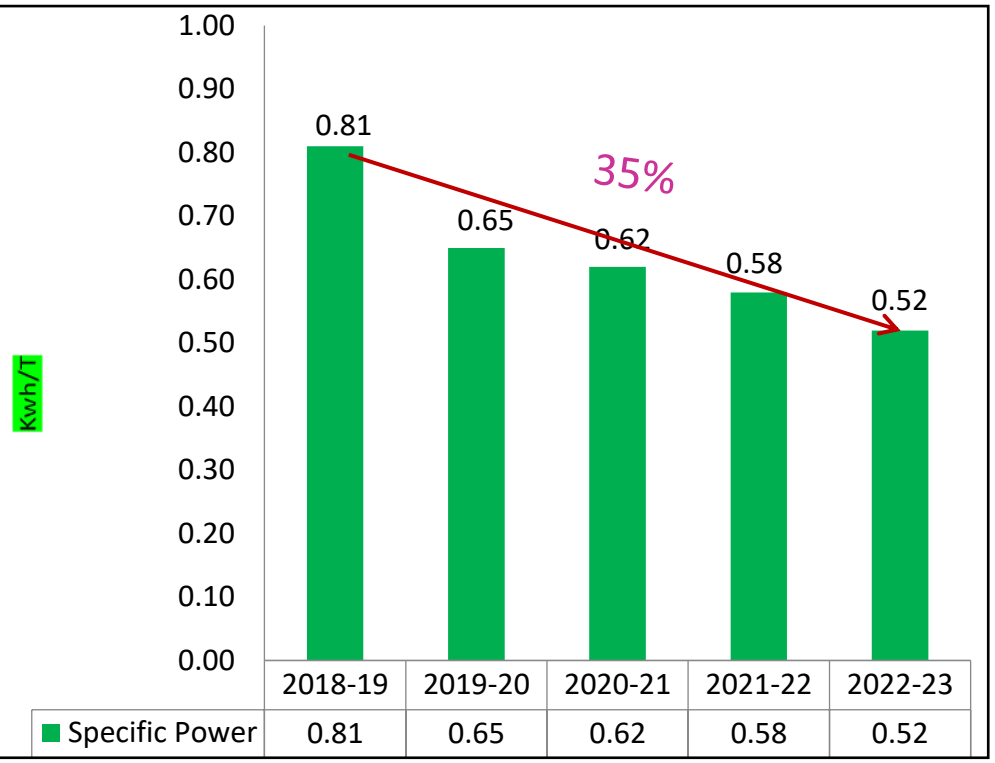
Overall SEC PPC (BM+VRM)



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

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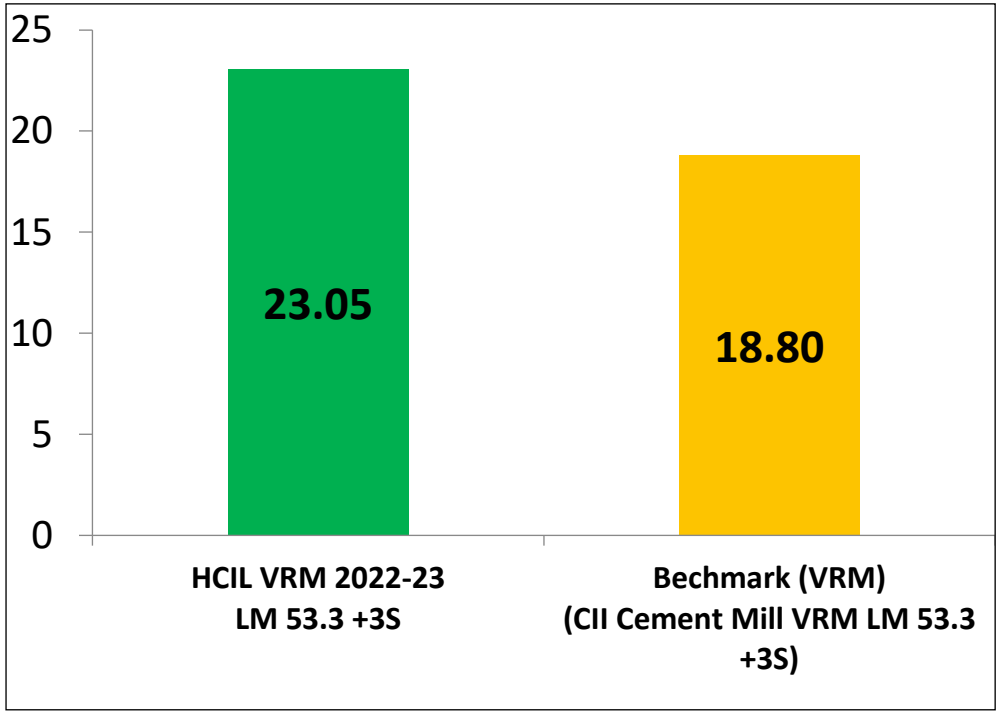
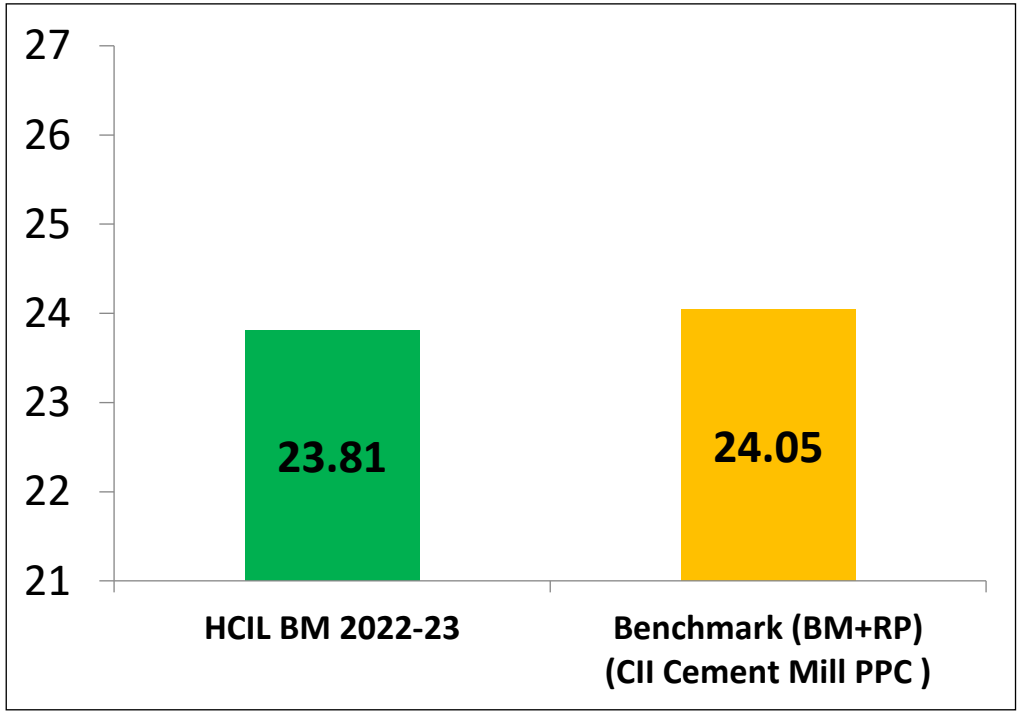
VRM



- VRM Main Drive SEC – **13.86 KWh/T**
- VRM Bag House Fan SEC – **6.55 KWh/T**
- VRM Classifier SEC – **0.45 KWh/T**
- VRM Aux. – **2.19 KWh/T**

Ball Mill



- BM Main Drive SEC – **17.22 KWh/T**
- RP Main Drive SEC – **1.19 KWh/T**
- BM CA Fan SEC – **2.59 KWh/T**
- BM SEP SEC – **0.42 KWh/T**
- BM Bag House Fan – **0.35 KWh/T**
- BM Aux.– **2.04 KWh/T**

Energy Target setting & Planned Encon Project

Long Term Commitment to Reduce Energy & Road Map To Achieve Aspiration targets

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	2023-2025
Removal of stub cone in VRM	0.05	0.2	VRM	2023-2024
Up gradation of Roller press hydraulic system & Replacement of Old Rollers	15	0.1	Ball Mill	2024-2025
Reduction in Ball Mill first chamber length by 0.5 meter.	5.5	Under Study (0.5 Kwh/T)	Ball Mill	2024-2025
Increase in Ball mill speed from current 72.18% (15.5 rpm) to 76% (16.4 rpm)	20	Under Study (0.25 Kwh/T)	Ball Mill	2024-2025
Close circuiting of Roller Press	25	Under Study	Ball Mill	2024-2025
Procurement of Energy Efficient Compressor for Packing Plant	3	0.12	Packing plant	2024-2025
Replacement of old & inefficient LT motors with high efficient motors of ball mill section	5	0.07	Overall	2024-2025
Strategic replacement of old wagon loading machine to improve the reliability	100	0.05	Packing plant	2024-2026
Installation of Additional Packer	150	Under Study	Packing plant	2023-2024
Installation of VFD for wagon tippler and other dust collector fans	4	0.02	Overall	2024-2025

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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 2020-21	5	97.93	1241611	9.31
FY 2021-22	5	81.08	648155	4.2
FY 2022-23	6	76.12	1395994	9.46

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.
- 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 screw compressors in place of old vane compressors for dry fly ash unloading and reduced the timing of unloading & maintenance cost also reduced.
- Optimisation of dust collector fans in packing Plant & Raw material handling section.
- Stopped one Bag Filter (22 KW)fan with RAL of Packing Plant by connecting venting line from other Bag filter.
- Replacement of Conventional lights with LED lights.
- Control of plant lighting & street lighting through DCS.
- Install occupancy sensors at various locations in office lighting, toilets & area lighting.

Major Energy Saving Projects Implemented in Last 3 Years

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- LV capacitor bank Panels for Old Substation (700 KVAR & 500 KVAR) to improve power factor.
- Optimisation of VRM & Ball Mill Operations by proper monitoring of parameters.
- Monitoring of compressor power on daily basis to optimise the compressor power.
- Idle running of equipment reduced by providing idle running interlock.
- 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.
- Replaced existing festooning system with cables by Energy Chain in Tripper Car & Gypsum Crane to reduce the breakdown and improve the performance.
- Installation of Energy Chain Arrangement in place of old festooning cables in wagon & truck loading machines to improve the performance.

Energy Saving Projects Implemented in 2022-23

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Sl. NO.	Title of Project	Year	Category	Investment Made (million INR)	Annual Electrical Cost Saving (million INR)	Annual Electrical Saving (kWh)
1	Optimisation of Ball Mill Circuit a) Optimisation of grinding media charging pattern, removed 90 mm and topped up 17 mm & 20 mm grinding media b) Repaired the square bar on wear out portion and reduced the separator seal gap 15-18 mm to 1.5-4 mm. c) Bag House fan RPM increased from 1000 to 1200 RPM to increase the gas velocity inside the mill. d) Roller Press chick plate gap reduced from 25-30 mm to 6-10 mm.	2022-23	Process	0.25	0.24	31687
2	VRM Classifier Rotor Replacement	2022-23	Process	20	2.92	512468
3	Optimisation of VRM Circuit a) VRM rotor vertical seal gap reduced from 25-30 mm to 10 mm. b) Reduced the mill gas velocity from 54 m/s to 50 m/s by increasing nozzle area c) Increased water spray nozzle angle from 15 to 35 from vertical	2022-23	Process	0	0.07	9218
4	Modification in rake loading circuit resulted reduction in loading time and equipment utilization increased	2022-23	Process	55	4.23	564166
5	Stopped two nos 3 KW screw conveyor by installing airslide system in Packer 3&4 reject discharge	2022-23	Process	0.1	1.43	190317
6	Replacement of LED Lights	2022-23	Illumination	0.771	0.57	88137
TOTAL				**76.12**	**9.46**	**1395994**

Reduced nozzle velocity from 54 m/s to 50 m/s by increasing nozzle area

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This has reduced in fan total pressure of 118 mmwg, due to less resistance in overall mill circuit.
Saving achieved due to reduction in mill nozzle velocity is **0.41 kWh/t**
Avg. Power Cost as per OP23 - 6.56 Rs/Unit
Cement Production per OP23 -1765161 MT
Power saving- 0.41 Kwh/T

Parameter	Unit	Before Nozzle Opening	After Nozzle Opening	Difference
Mill Production	t/h	275	294	+19
Fan Power absolute	kW	1694	1715	
Fan Power consumption Specific	kWh/t	6.38	5.83	-0.55
Fan Flow	m3/hr	672261	728000	
Increase in power expected due to increase in fan flow	kW		140	
Actual Fan Power Increase			21	
Net Saving due to reduce in nozzle velocity	kWh/t		0.41	0.41
Nozzle Velocity	m/s	54.5	50	
Pressure at mill inlet	mmwg	-63	-46	
Pressure at mill outlet	mmwg	-600	-572	
Mill DP	mmwg	537	526	
Pressure at fan Inlet	mmwg	-720	-690	
Pressure at mill fan outlet	mmwg	-14	-12	
Fan total pressure		706	678	
Expected increase in fan pressure			90	-118
Actual increase in fan pressure			-28	
Mill Outlet Dust Concentration	gm/m3	442.00	442.00	

Modification in rake loading circuit

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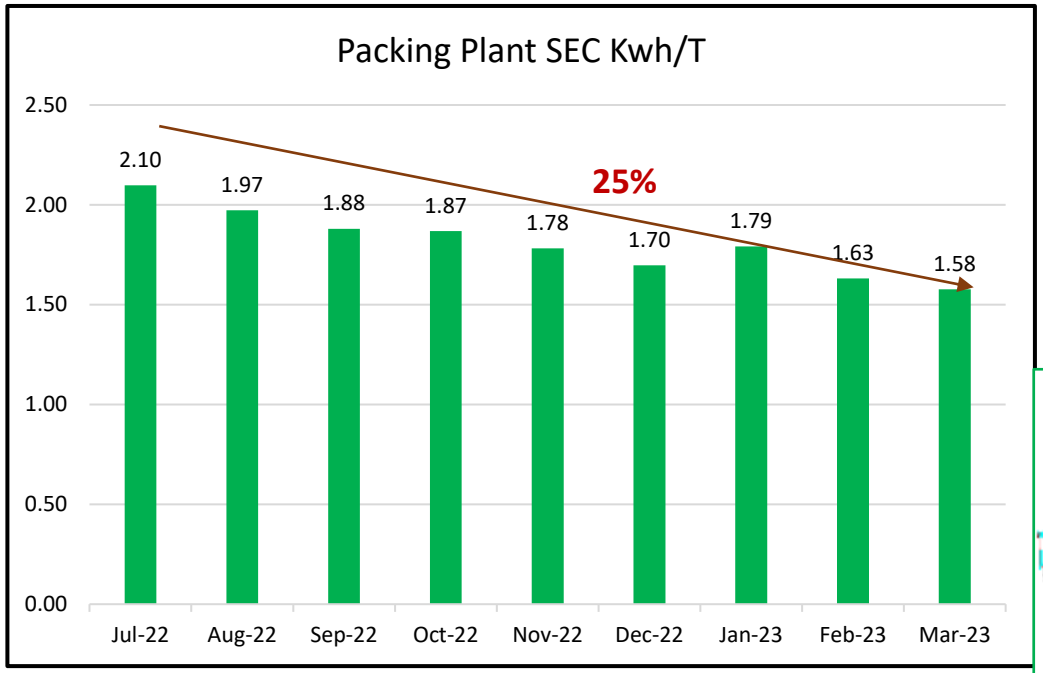
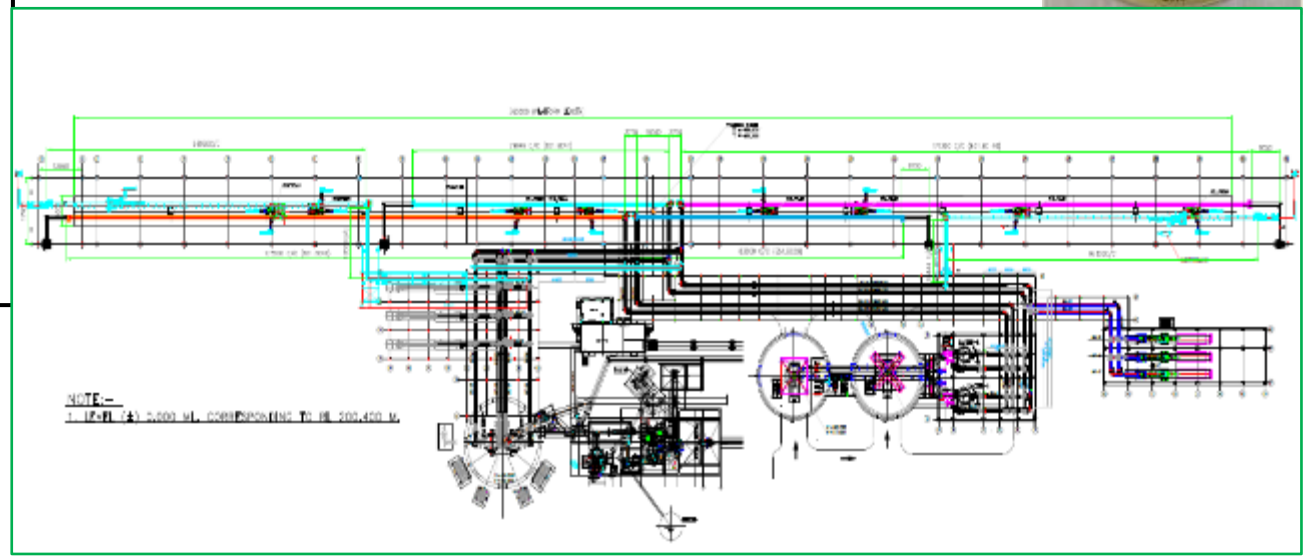
Modification done in rake loading circuit by adding 2 nos additional wagon loaders and 6 nos belt conveyors. Resultant effective utilization of packers and SEC reduction of packing section after implementation of project since sep-22.





Total Investment Made – 55 MINR
Electrical Energy saved in FY 23 – 564166 Kwh
Saving in FY 23 – 4.23 MINR

Replacement of Conventional Lights with LED Lights

Material details	Qty	Present Watt/ led	Existing watt / light	power saving in kw	Days used	Hours used (12 hours in a day)	Kwh Saving =(SAVING kw * used hours)	Saving in INR(per unit charges 6.5 Rs.)
FIXTURE LIGHT;LED STREET;240VAC;45W	30	45	100	1.65	167	2004	3307	21493
HAND LANTERN;LEDSC;24VAC;7-10W	28	10	10	0	193	2316	0	0
LIGHT;SPIKE;LED;230vac;6w;ALUMINIUM;50h>	11	6	12	0.066	293	3516	232	1508
LIGHT;TUBE;LED;230vac;20w;4 FT	45	20	40	0.9	394	4728	4255	27659
LIGHT FIXTURE;LED;230AC;18W	4	18	40	0.088	217	2604	229	1489
FIXTURE LIGHT;LED;230VAC;20W- 30W	16	35	70	0.56	248	2976	1667	10833
FITTING;LED TUBE LIGHT;4 FEET;19 WATT,	80	20	40	1.6	394	4728	7565	49171
LIGHT;SURFACE;LED;230VAC;11W	18	11	20	0.162	860	10320	1672	10867
FIXTURE LIGHT;LED;230VAC;50W	27	50	100	1.35	911	10932	14758	95928
FIXTURE LIGHT;LED FOOD LIGHT;230V;100-17	22	100	250	3.3	1179	14148	46688	303475
BULB;LED HIGH POWER;60W, BASE-E27	5	60	100	0.2	888	10656	2131	13853
FIXTURE LIGHT;LED WELL GLASS;240VAC;45W	253	45	70	6.325	73	876	5541	36015
FIXTURE LIGHT;LED FLOOD LIGHT;240VAC;100	17	100	250	2.55	3	36	92	597

Total Investment Made – 0.77 MINR

Electrical Energy saved in FY 23 – 88137 Kwh

Saving in FY 23 – 0.57 MINR

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Installation of Expert System for Ball Mill & VRM

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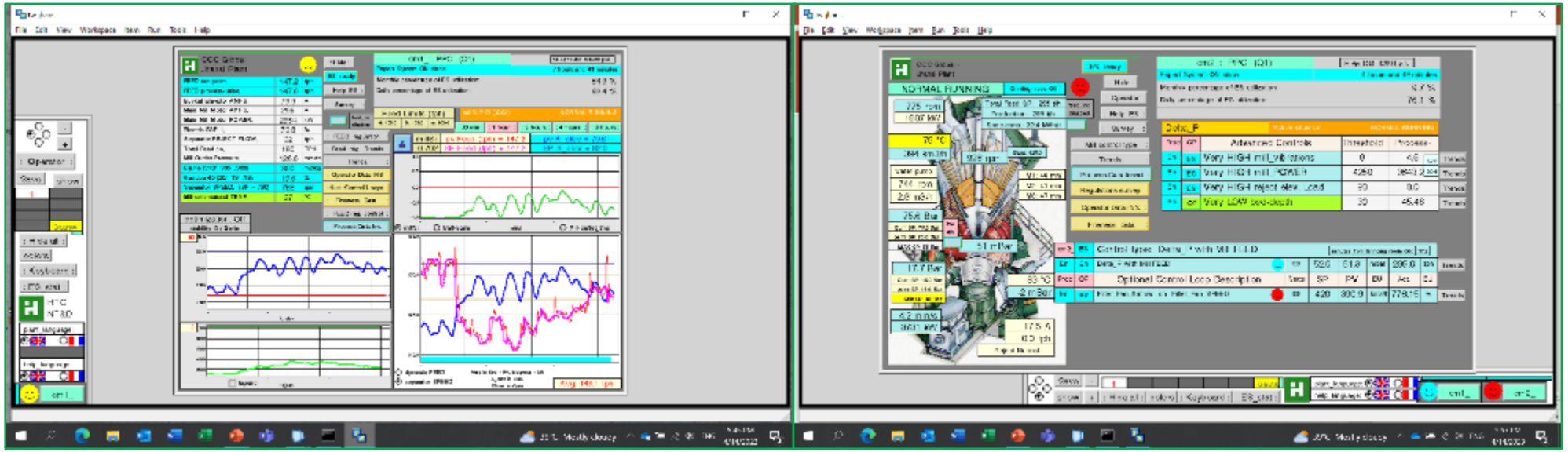
HC Group developed Expert Control System (ECS) for Mills optimization is installed for Cement Mills (VRM, BALL MILL).
The basis for evaluation of savings at Jhansi is based on the results achieved through ECS by operating for Cement Mills.
Once mill starts and after preconditions healthy and by selection ECS ON, expert control system will take over control of Mills in auto mode and execute the necessary corrective changes in system by observing real field signals.
i.e., during operation of VRM if vibration increases ECS will took corrective action by applies changes in mill feed, grinding pressure, Mill Differential pressure etc.

Presently operation and control of mills (VRM, Ball Mill) is done by operator discretion in control room. Where all corrective action is being performed by process engineer discretion in Control room. Expert control system implemented at HCIL Jhansi.

Expected Saving in Ball Mill – 0.329 Kwh/T (2.30 MINR/Y)
Expected Saving in VRM – 0.25 Kwh/T (3.55 MINR/Y)



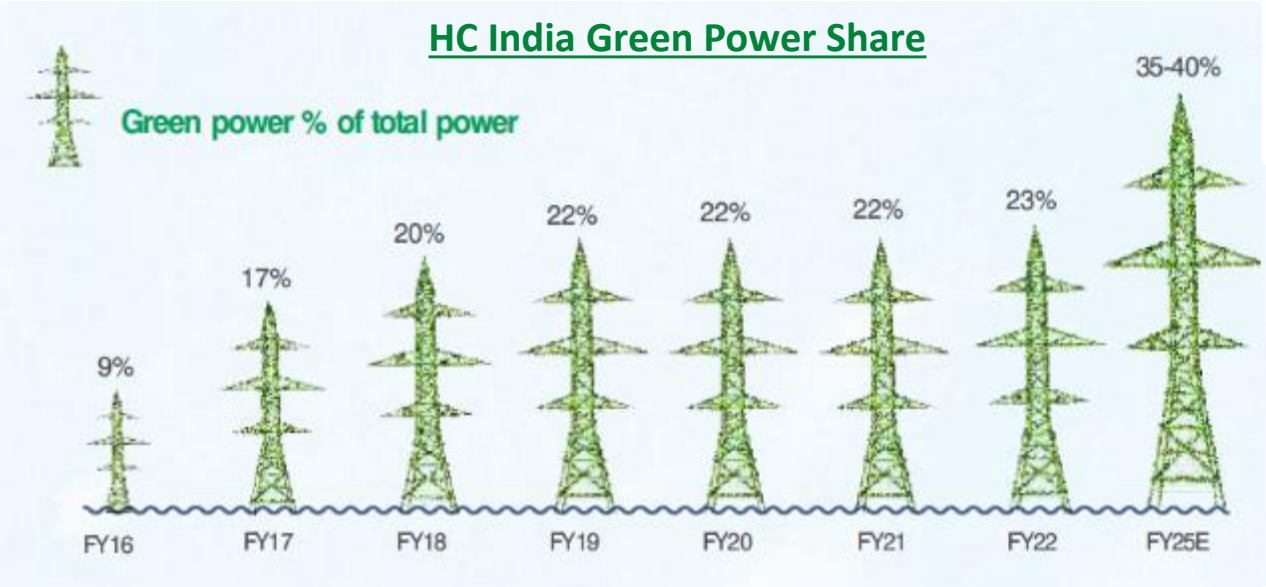
Utilisation of Renewable Energy sources

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
6	Solar	2022-23	MWH	185	0.56

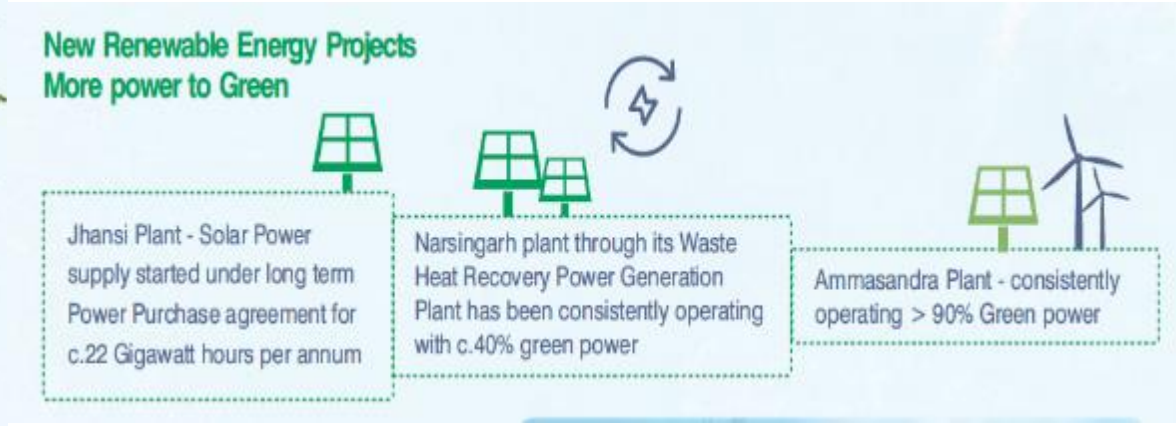
Sr. No.	Project Description	Status	Saving in Kwh per year	Saving in Kg of CO2 eq.
1	Installed 7.5 Kw Solar system at 5 locations	Completed	14600	11.97 Ton
2	Installed transparent sheets in plant building to use day light	Completed	11242	9.21 Ton
3	Installation of Turbo Ventilators (36 Nos.)	Completed	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

Sr No.	Technology	FY	UOM	Renewable Energy Consumption million kWh	%
OFF Site					
1	Solar	2020-21	Million kWh	00	00
2	Solar	2021-22	Million kWh	00	00
3	Solar (PPA 10.6 MW)	2022-23	Million kWh	23.29	33.21
4	Non-Solar RE (IEX)	2022-23	Million kWh	0.82	1.17



- **Green Power Share of Jhansi Unit– Approx 23% of Total HC India Green Power.**



Utilisation of Renewable Energy sources

- 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		MUs	MUs	MUs	REC	MUs
FY 18-19	10.8	1%	0.11	0.11	0	0	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
FY 22-23	12.93	5%	0.65	0.65	23.68	0	0.00
TOTAL	**150.06**		**4.56**		**23.758**	**3842**	**0.00**

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		MUs	MUs	MUs	REC	MUs
FY 18-19	10.8	5%	0.54	0.54	0	0	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
FY 22-23	12.93	7.65%	0.99	0.99	0.82	175	0.00
TOTAL	**150.06**		**10.27**		**1.92263**	**9343**	**0.00**

- 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).

GHG Inventorisation

Focus and Long-Term Target By Group

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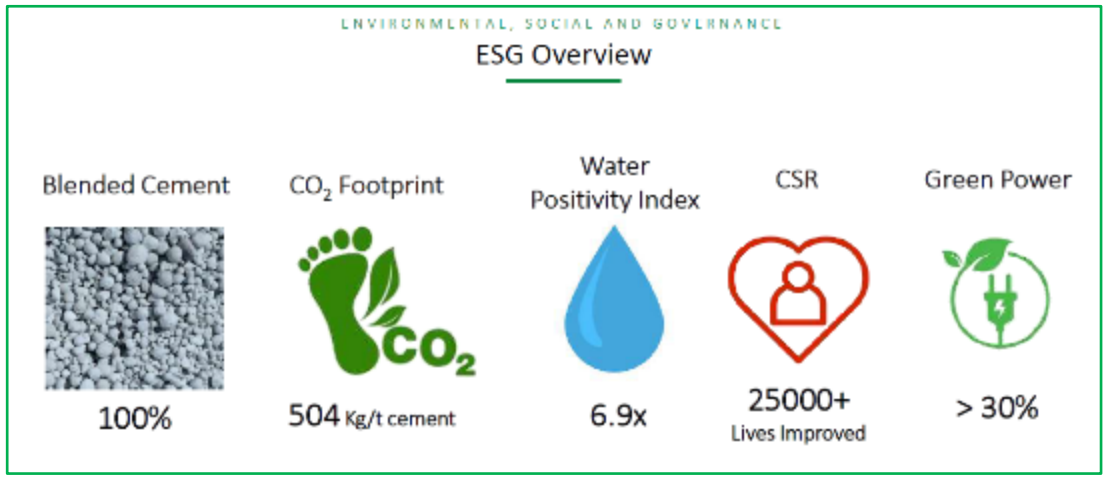
	Medium-term: 2020-2030	Long-term: 2030-2050
Reducing Intensity	**Reduction of CO_2 content in clinker** – Further improve energy efficiency – Increase use of alternative fuels, raw materials, and new binder concepts **Reduction of CO_2 content in cement and concrete** – Use clinker with lower CO_2 content and secondary cementitious materials – Optimise concrete mixes through new cement types	**Continued R&D into improving processes and energy efficiency** **Alternative cementitious materials** **Increasing variety of low-carbon / zero-carbon products** **Hydrogen as a fuel & kiln electrification**
Mitigating remaining emissions	**Projects for CO_2 capture and usage** – Process-integrated CO_2 capture – Recarbonation of recycled concrete – Use of CO_2 in circular economy (e.g. chemical products)	**Long-term R&D efforts** to support new technologies, e.g. process-integrated CO_2 capture, recarbonisation of recycled concrete **Rollout of new technologies in industrial scale**

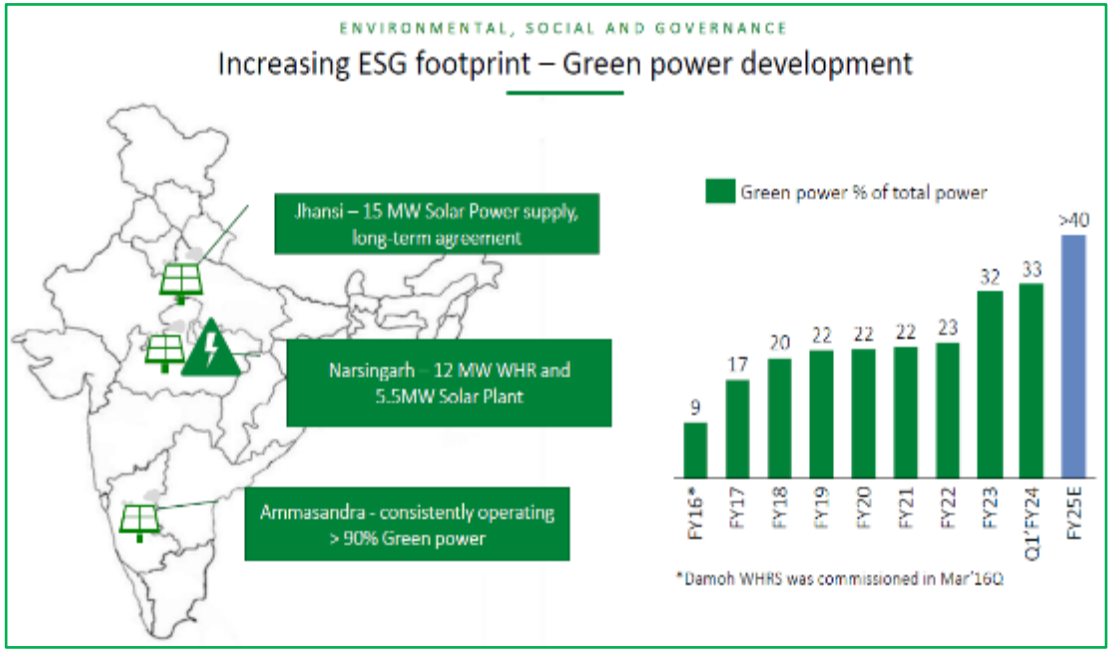
An adequate political framework is the prerequisite for successful decarbonisation.

- ❑ 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.

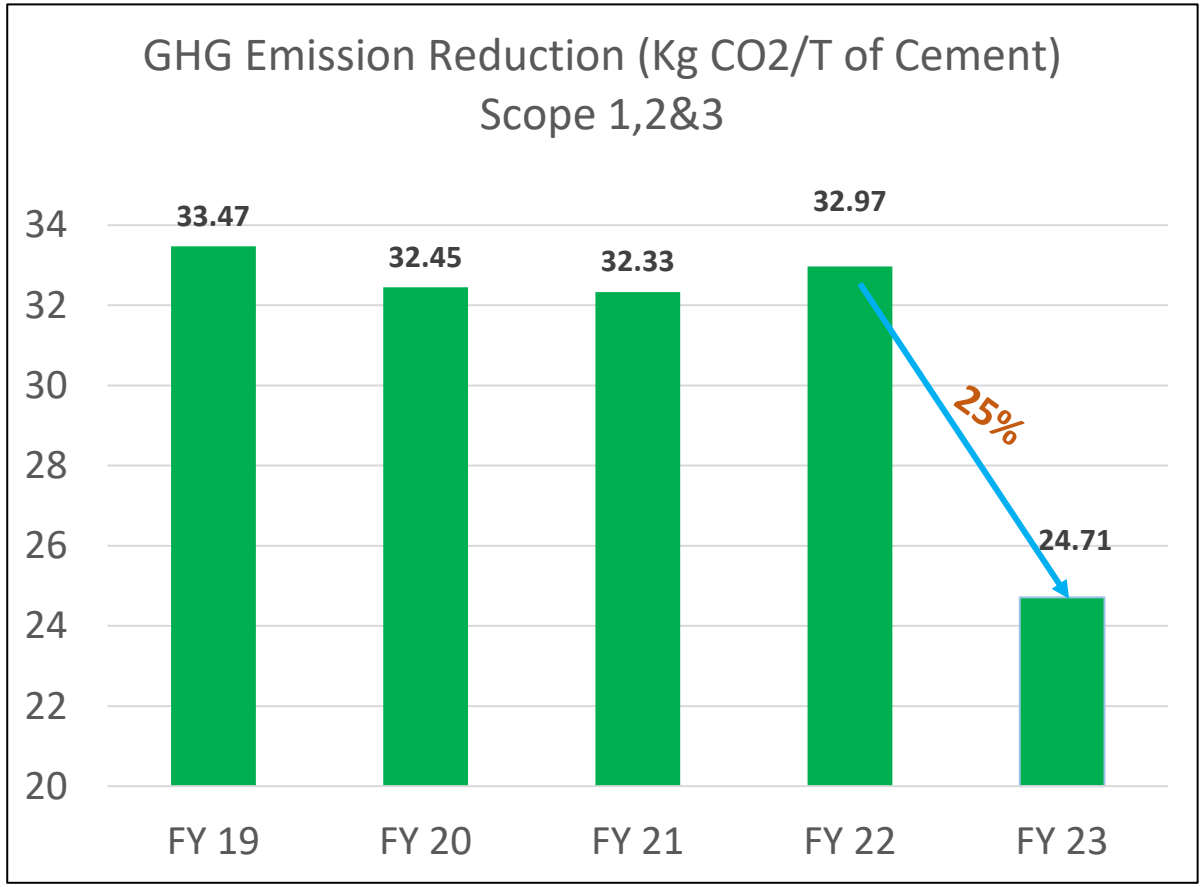
Major Achievement by HC India & Jhansi Unit for Sustainability

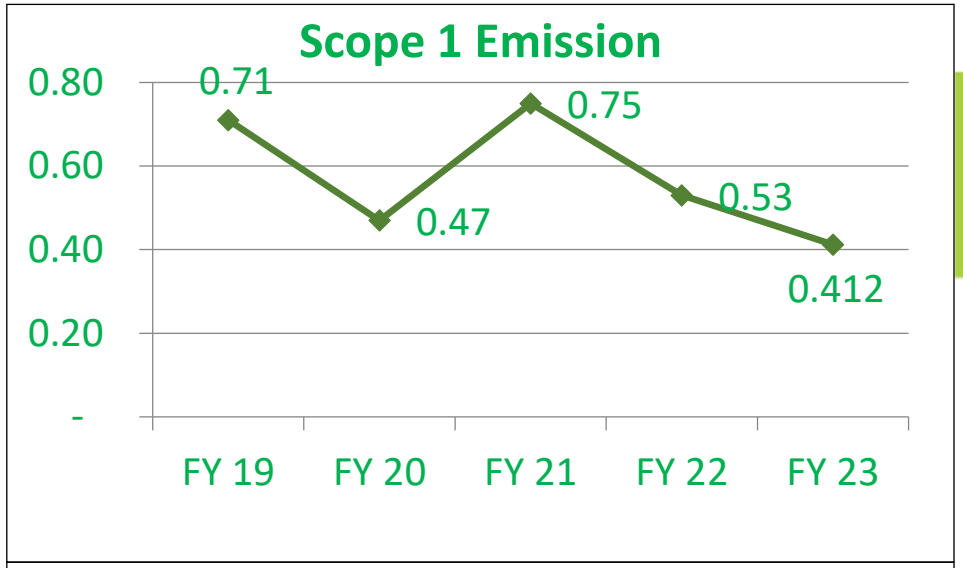


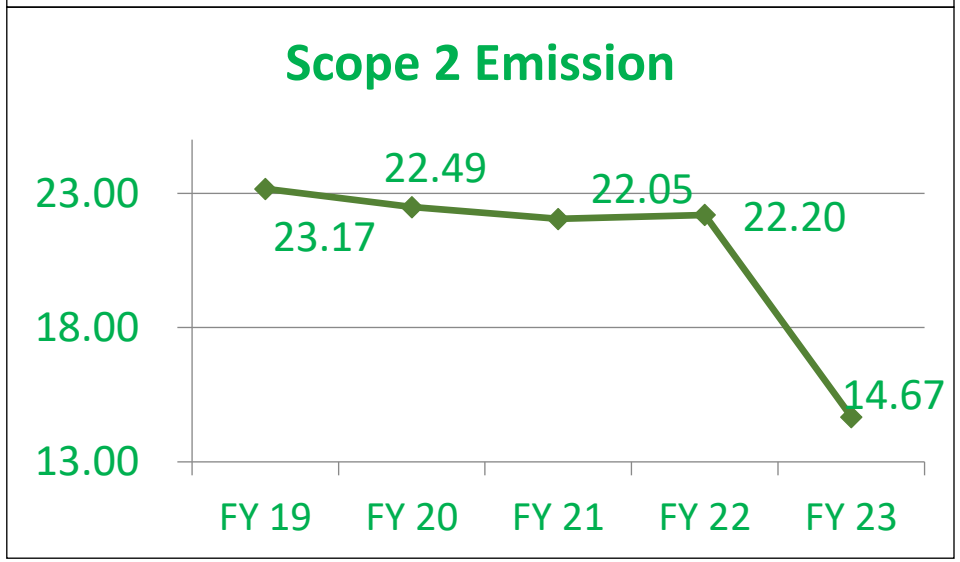
- HC India has share of 100% Blended Cement.
- Current CO2 Footprint of HC India – 504 Kg/t Cement.
- HC India 6.9 X Water Positive.
- More than 30 % of Green Power Share.
- HC India Plants have a target to achieve 2˚C lower temp within our plant as compared to 1 KM away, Jhansi unit achieved 2.2˚C temp difference.
- HC India has proudly achieved the milestone of planting more than 100,000 Trees and registered on HC India's website **hcfriendsofearth.com**



GHG Emission Intensity Reduction Scope 1, 2 &3

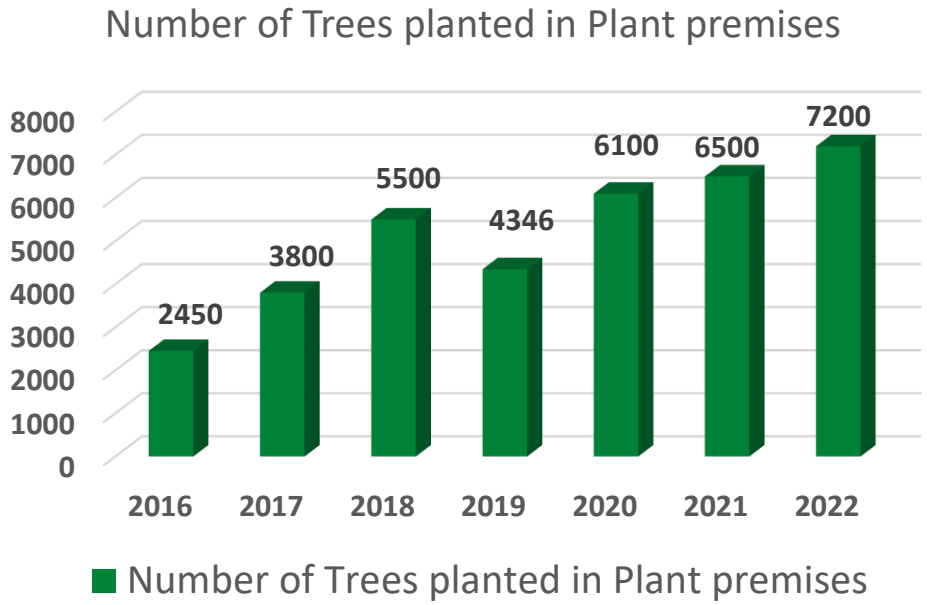






- 34% Reduction for scope 2 emission by maximizing green power share.

Carbon Neutral Approach



- Many Trees planted in near by Village to reduce carbon footprint.
- Mass Tree Plantation Near Technical Office and other locations of plant.
- Miyawaki Forest development in Plant on Van Mahotsav.
- **Survival rate > 90%**

Carbon Neutral Approach

- Plantation of trees near technical office and various locations in plant & Colony
- Total number of trees Planted in 2022: **7200**
- 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	1318	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
FY 2022-23	107415	1121	28425	2.09

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

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

CERTIFICATE OF APPRECIATION

Date:
16-08-2023

This is to certify that
DIAMOND CEMENTS(PROP.HEIDELBG CEMENT IND LTD)
has contributed in reduction of Carbon Emission by opting Rail Transportation over Road for movement of its cargo and earned

79195 RGPs

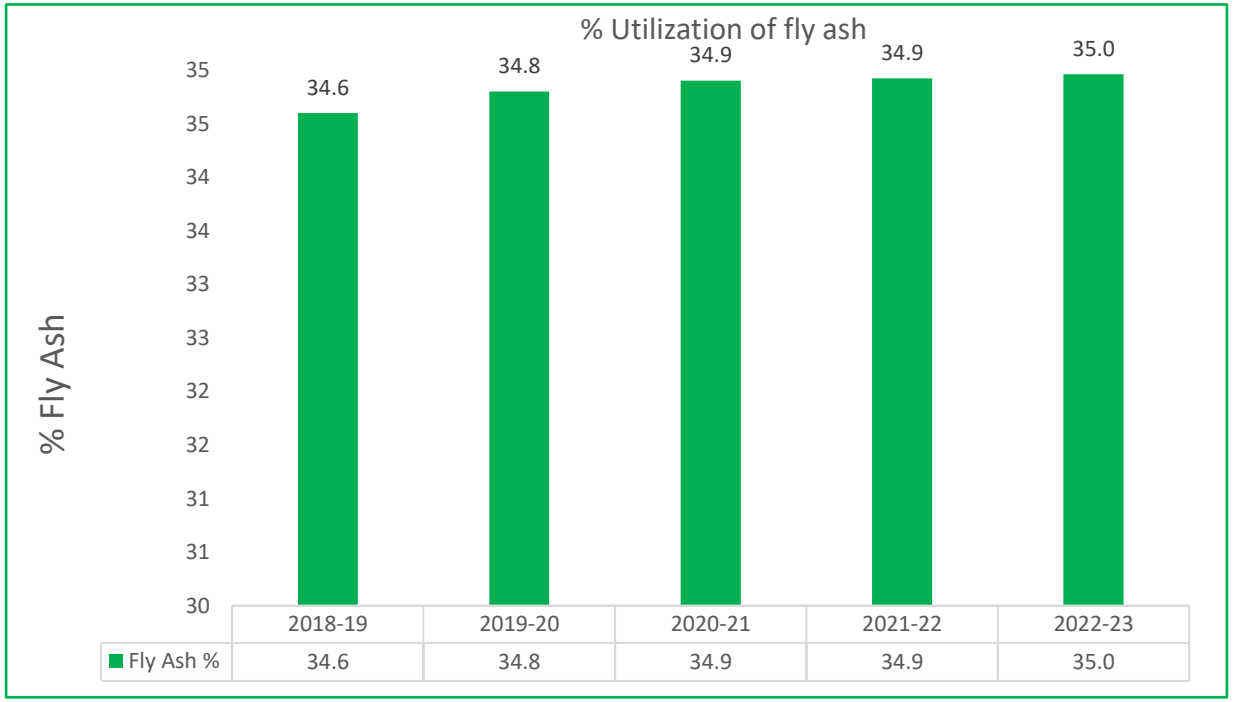
since 01.04.2022. This contribution towards a **Clean and Green India** is highly appreciated.

The month-wise earning of RGPs is as follows:

Month	Rail Green Point: Earned
01-04-2023	55671
APR-2023	4540
MAY-2023	5193
JUN-2023	5550
JUL-2023	5407
AUG-2023	2834
CLOSING BALANCE	79195

-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 79195 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%



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Team Work, Employee Involvment and Monitoring

Energy Monitoring System

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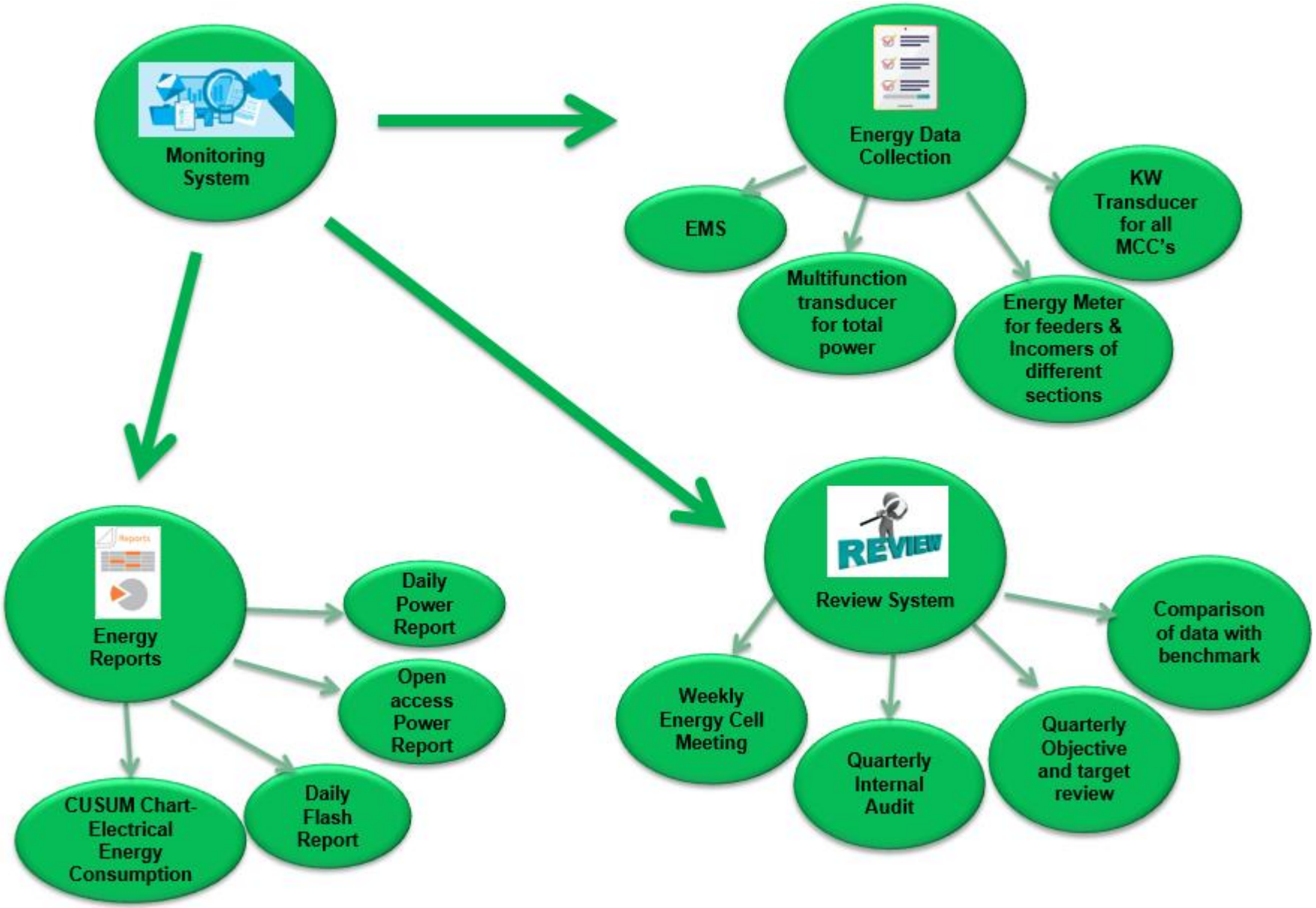

Energy Target setting & Energy Monitoring System & Review

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- 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

Mar-23

GRINDING UNITS - PPC	Meas Points	Mesuring Points name		05-Mar	06-Mar	07-Mar	08-Mar	09-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar
HT (Ball Mill)	103143	HT CM-1	- Kwh	63710	37600	0	0	0	0	36280	62220	61460	62660
HT (R Press)	103144	HT- RP	- Kwh	4920	3330	0	0	0	0	2700	4710	4920	4910
LT(BM)	103136	LT-CM1	- Kwh	21810	11860	560	3230	3030	120	10510	21390	21390	19850
HT (VRM)	103145	HT-CM-2(VRM)	- Kwh	78500	84000	95670	95540	81560	0	0	35820	92690	95190
HT (BH)	103147	HT-BAG HOUSE FAN \	- Kwh	38700	37210	41930	41800	36390	0	0	16150	41130	41350
LT (VRM)	103137	LT-CM2(VRM)	- Kwh	19000	20870	21900	20970	20520	5800	4280	8050	24390	21010
Total Ball Mill			- Kwh	90440	52790	560	3230	3030	120	49490	88320	87770	87420
Total VRM			- Kwh	136200	142080	159500	158310	138470	5800	4280	60020	158210	157550
Raw material (Ball Mill)	103142	RMATERIAL CM-1	- Kwh	1016	675	263	282	140	270	610	1010	970	1020
Raw material (VRM)	103148	RMATERIAL-CM-2(VR	- Kwh	4190	6430	6440	6080	3040	4260	3300	2360	6250	6680
Total Grinding Units BM			- Kwh	93416	54605	1073	3912	3630	850	51130	91260	90660	90360
Total Grinding Units VRM			- Kwh	143030	151300	169100	167490	144270	10810	8330	63500	167570	167380
Production BM-PPC			M.T.	3725	2172	0	0	0	0	2003	3752	3715	3692
Production VRM			M.T.	5620	5946	6803	6792	5893	0	0	2470	6964	6966
Unit Per Ton Ball Mill-PPC			Kwh\t	25.08	25.14	0.00	0.00	0.00	0.00	25.53	24.32	24.40	24.47
Units per Ton VRM			Kwh\t	25.45	25.45	24.86	24.66	24.48	0.00	0.00	25.71	24.06	24.03

HEIDELBERG CEMENT INDIA LIMITED

JHANSI UNIT

Operating Plan 2023 (month wise)

PARTICULARS		Jan-23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec-23	OP-2023 YTD	2024 12 Months	2025 12 Months
Power																
Power-Cement Grinding																
PPC-Ball Mill	Kwh/t	25.40	25.40	25.40	25.40	25.40	25.40	25.60	25.60	25.60	25.40	25.40	25.40	**25.45**	25.45	25.45
PPC-VRM	"	25.65	25.65	25.65	25.60	25.60	25.60	25.70	25.70	25.70	25.60	25.65	25.65	**25.65**	25.65	25.65
Avg	"	25.56	25.56	25.55	25.51	25.53	25.53	25.67	25.66	25.66	25.53	25.56	25.56	**25.57**	**25.58**	**25.58**
Power-Cement Packing																
-Packing-ball Mill	Kwh/t	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	**1.78**	1.78	1.78
-Packing-VRM	"	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	**1.78**	1.78	1.78
Avg	"	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	**1.78**	**1.78**	**1.78**
Auxilary																
-Auxilary-Ball Mill	Kwh/t	0.90	0.73	0.69	0.69	0.78	0.68	0.83	0.84	0.75	0.81	0.80	0.68	**0.76**	0.76	0.76
-Auxilary-VRM	"	0.52	0.42	0.45	0.52	0.44	0.38	0.44	0.49	0.42	0.46	0.45	0.39	**0.44**	0.44	0.44
-Auxilary-avg.	"	0.66	0.53	0.54	0.59	0.56	0.49	0.58	0.62	0.53	0.59	0.57	0.50	**0.56**	**0.56**	**0.56**
Total Power		**28.00**	**27.87**	**27.87**	**27.88**	**27.87**	**27.80**	**28.03**	**28.06**	**27.97**	**27.90**	**27.91**	2[illegible]4	27.91	**27.92**	**27.92**
VRM Fuel -Consumption	Ltr	5,117	5,791	5,909	4,954	6,045	16,797	15,056	13,739	15,522	4,340	4,331	5,089	**102,688**	108,849	115,380
-Per ton of Cement	Ltr/t	0.04	0.04	0.04	0.04	0.04	0.10	0.10	0.10	0.10	0.03	0.03	0.03	**0.06**	0.06	0.06

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Awareness for Reducing Energy Consumption & Sustainability Targets

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

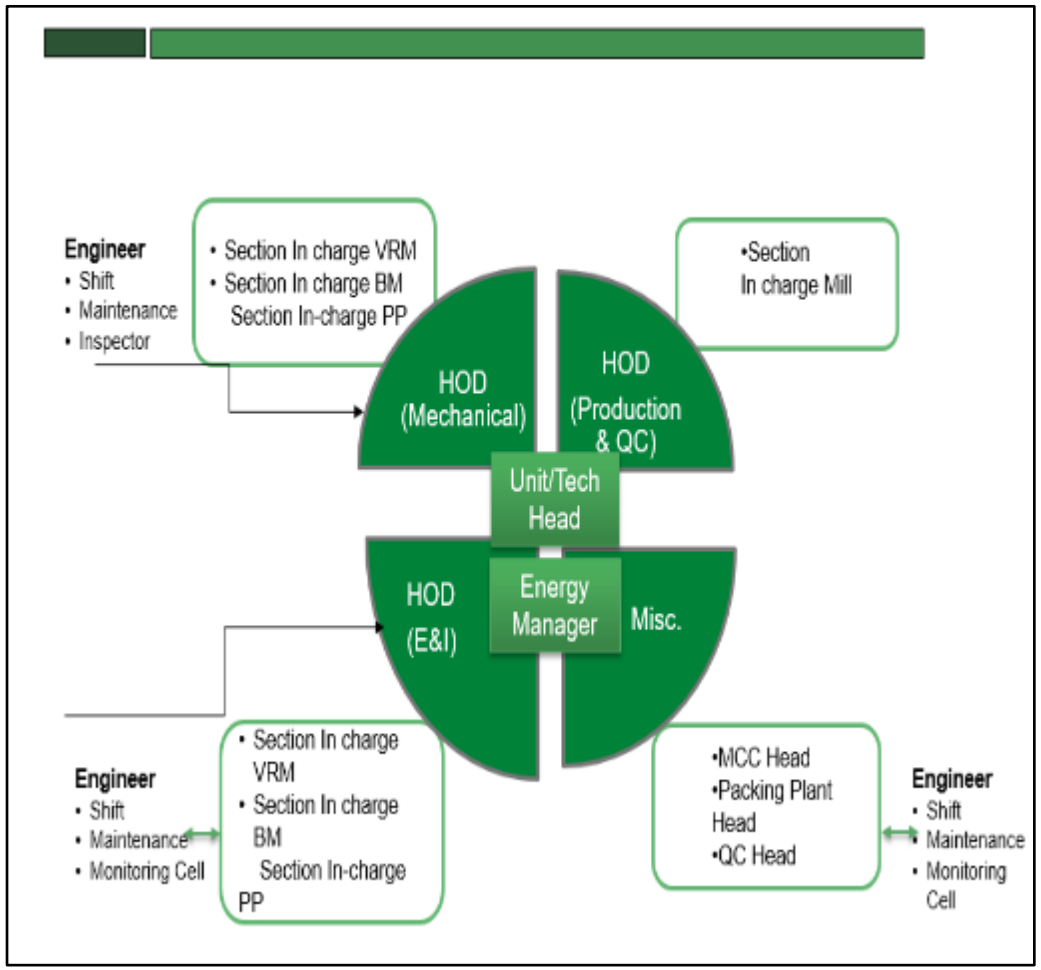
Awareness for Reducing Energy Consumption

No vehicle week celebrated during National Energy Conservation Week for colony resident.

Training on Energy Efficiency in cement grinding unit and latest technology absorption

HCIL Jhansi Unit has joined the Biggest Hour for Earth by participating in this global “lights out event” by switching off the non-essential lighting fixtures and electrical appliances

Plant Energy Committee & Energy Policy



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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.

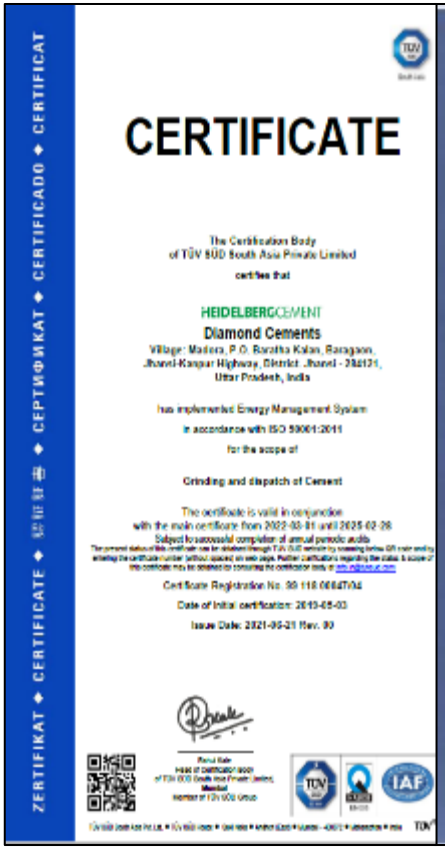
Date: 1.07.2017

-sd-
Plant & Unit Head

- ❑ 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.

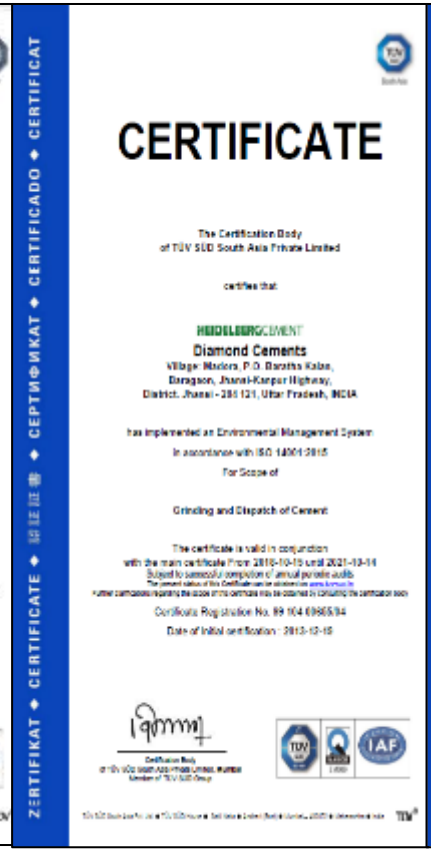
ISO Certificates

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

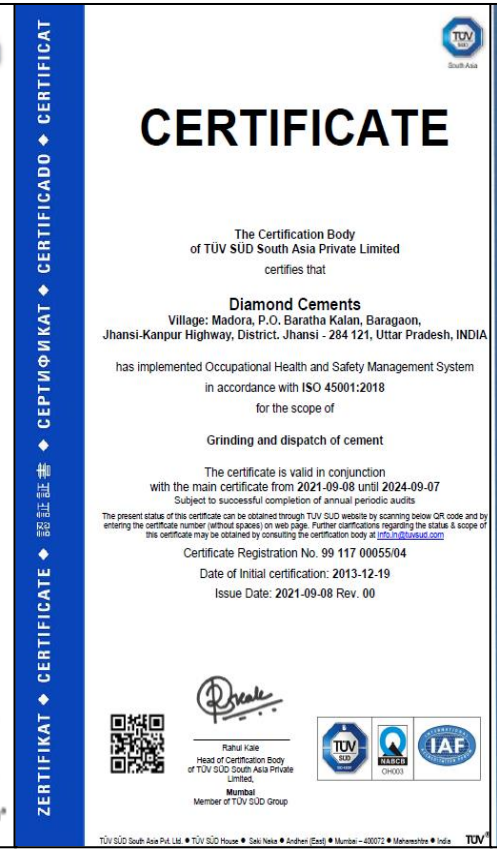


ISO 50001 (Energy Management System)

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 seven consecutive years since 2016 out of which 2 times won the award of Excellent Energy Efficient Unit.

Award & Accolades

HEIDELBERGCEMENT

Award - Green CO GOLD Unit by CII

CII - Sohrabji Godrej Green Business Centre

hereby certifies that

Heidelberg Cement

Jhansi

has successfully achieved the standards as required for the following level of certification under the GreenCo - Green Company Rating System which is valid for a period of 3 years

GreenCo Gold

September 2018

Jamshyd N Godrej	Pradeep Bhargava	L S Ganapati	K S Venkatagiri
Chairman	Chairman	Chairman	Executive Director
CII-Godrej GBC	GreenCo Rating System	GreenCo Assessor Panel	CII-Godrej GBC

- ❑ **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.**

Net Zero Commitment by HC Group

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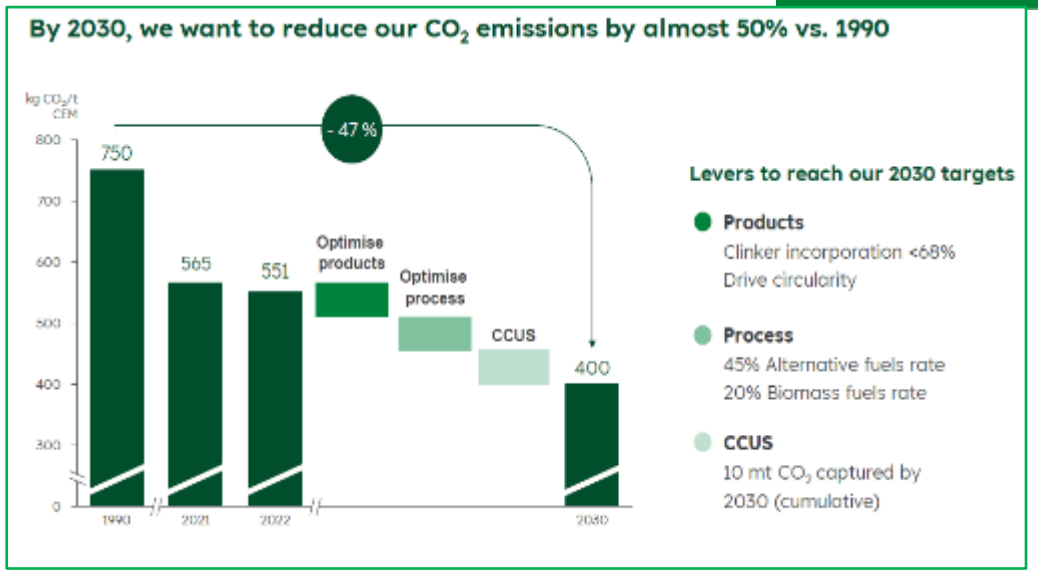

- HC Group set a target of reducing CO_2 emissions to 400 kg per tonne of cementitious material by 2030 and achieve net zero by 2050 at the latest.
- Medium and Long-Term Target Set by HC Group to reduce the carbon footprint.
  - Further Improvement Towards Energy Efficiency.
  - Carbon Capture Storage & Utilization (CCUS).
  - Continual R&D Towards Process Optimization.
  - Rollout New Technology in Industry Scale.
- Reducing total CO2 footprint according to the SBTi 1.5°C pathway

Initiatives for Digitization & IOTs

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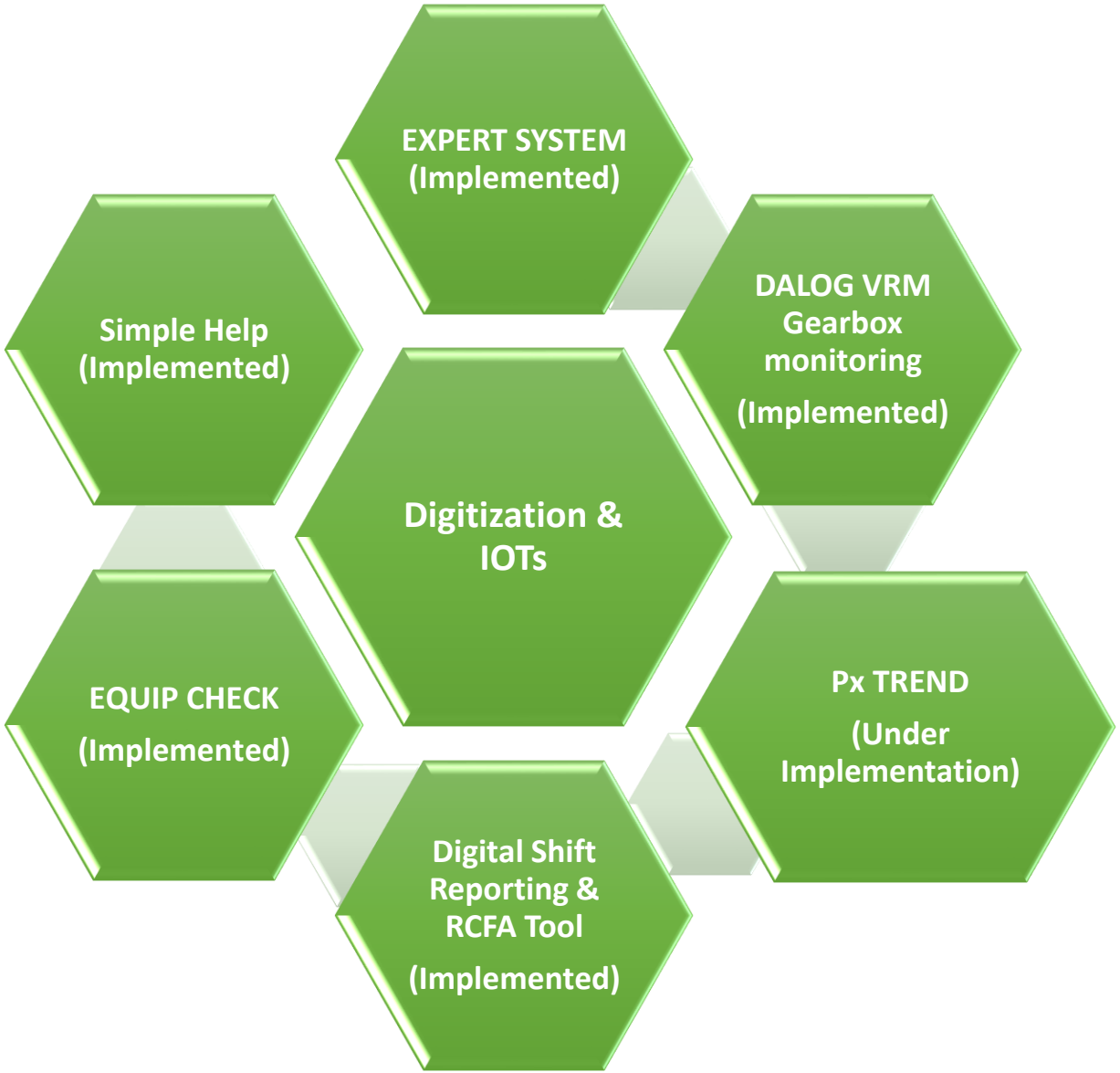

Biodiversity

Learning From CII Energy Awards

- 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

- Replacement of conventional lights with LED lights
- Reduction in nozzle ring velocity of VRM.
- 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.

Thank you

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for better building

Safety is our

Foremost priority