adani

24th National Award for Excellence in Energy Management 2023

Plant Name: Maratha Cement Works

Date : 13.08.2023

udaaan

Welcome to Maratha Cement Works

Raghavendra (CMO, West II)

K Subbulakshmanan(COM, MCW)

Content:

Adani At Glance

- **Adani Group** is an Indian multinational conglomerate, headquarter in Ahmedabad. Founded by Shri. Gautam Adani in 1988

India's Largest Cement Manufacturer

India's Largest Integrated Port Network

India's Largest Thermal Power Generation Company

India's Largest Airport Operator

India's Largest Renewable Energy Company

India's Largest City Gas Distribution Network

India's Largest Private Power Transmission Network

India's Largest Food and FMCG Companies

Adani Cement at a Glance

Total Capacity: 72 Mio T
(~10% of India's total capacity)

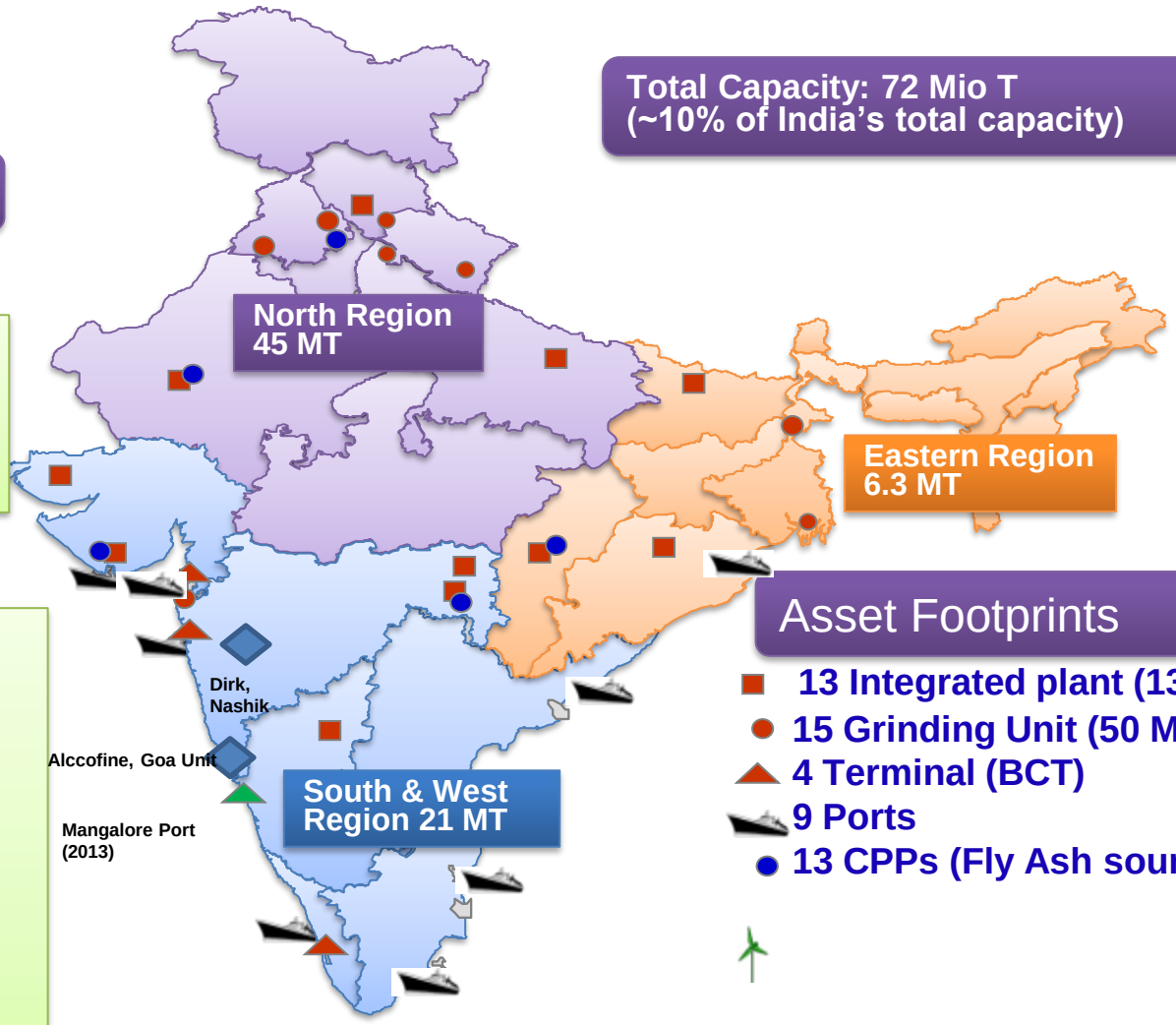
Distribution Footprints

Distribution Mix achieved:

Road: 60%
Rail: 27%
Ship: 13%

Through a distribution network in 3 regions comprising:

- 3 RMO offices
- 9 RSO offices
- 8600+ Dealers
- 9258 ARS
- 30,000+ Retailers
- 70 Branches
- 250 Warehouses/Dumps
- 7 T-points



Asset Footprints

- 13 Integrated plant (13 Kilns)
- 15 Grinding Unit (50 Mills)
- 4 Terminal (BCT)
- 9 Ports
- 13 CPPs (Fly Ash source)

Plant Capacity Overview- MCW

Mines
4.2 MTPA

Kiln
2.5 MTPA
7500TPD

Clinker Storage
CSP 1- 0.75 Lac MT
CSP 2- 0.75 Lac MT
Open- 0.25 Lac MT

Cement
5.0 MTPA
14500 TPD

Packing
5.0 MTPA
16120 TPD

EC/Consent to operate	
Limestone	4.20 MTPA
Clinker	2.85 MTPA
Cement	4.75 MTPA

Grade	Capacity %	Mix 2018 %
PPC	100	95
APRS	85	5

Silo Connectivity

- **CM 1** 1.0 MTPA 130 TPH → 1,2,4
- **CM 2** 1.0 MTPA 130 TPH PPC → 1,2,3 ,4,5
- **CM 3** 1.0 MTPA 130 TPH PPC → 3,4,5
- **CM 4** 1.0MTPA 130 TPH PPC → 1,2,3 ,4
- **CM 5** 1.0MTPA 130 TPH PPC → 1,2,3, 4,5

Packer Connectivity

- **Silo-3** 7500 MT A+ → 1,2, 6
- **Silo-1** 7500 MT PPC → 1,2
- **Silo-4** 7500 MT PPC → 3,4,5, 6
- **Silo-2** 7500MT OPC → 3,4,5
- **Silo-5** 2500 MT Ambuja Kawach → 3,4,5,6

Packer –1 to6
No. of Spouts-12
Double discharge

Bulk loading capacity:
1 X 200 TPH
1 x 50 TPH

Mass Flow Manufacturing Clinker, Cement & Dispatch Bottleneck analysis

Quarry

148 Mio T reserve, expected mines life 41 Yrs, stripping ratio : 1: 0.28

Crusher

1000 TPH limestone crusher, L and T make

Stacker

1200 TPH limestone stacker, Elecon make

Reclaimer

720 TPH limestone reclaimer, Elecon make

Raw Mill

480 TPH, Pfeiffer make

RM Silo

21,500 MT, Polysius make

ILC, PH

Double string, DOPOL 90, Polysius make

Kiln

Original 6000 TPD, Upgraded to 8000 TPD, Polysius make

adani Cement

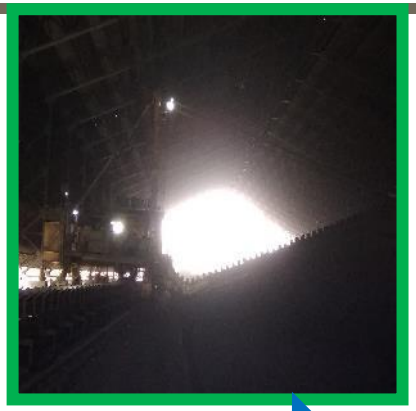
Mass Flow Manufacturing Clinker, Cement & Dispatch Bottleneck analysis

Cooler

Grate cooler, very low efficiency 58%,65 tpd/m2 vol loading Polysius make

Clinker Silo

80,000 MT X 2, Polysius make



Coal Stacker

275 TPH Coal stacker, Elecon make

Coal Reclaimer

200 TPH Coal Reclaimer, Elecon make

Coal Mill

60 TPH Coal Mill, Pfeiffer make

Geocycle

Geocycle Platform

Ball Mill

130 TPH X 5 Ball Mill, Polysius make

Cement Silo

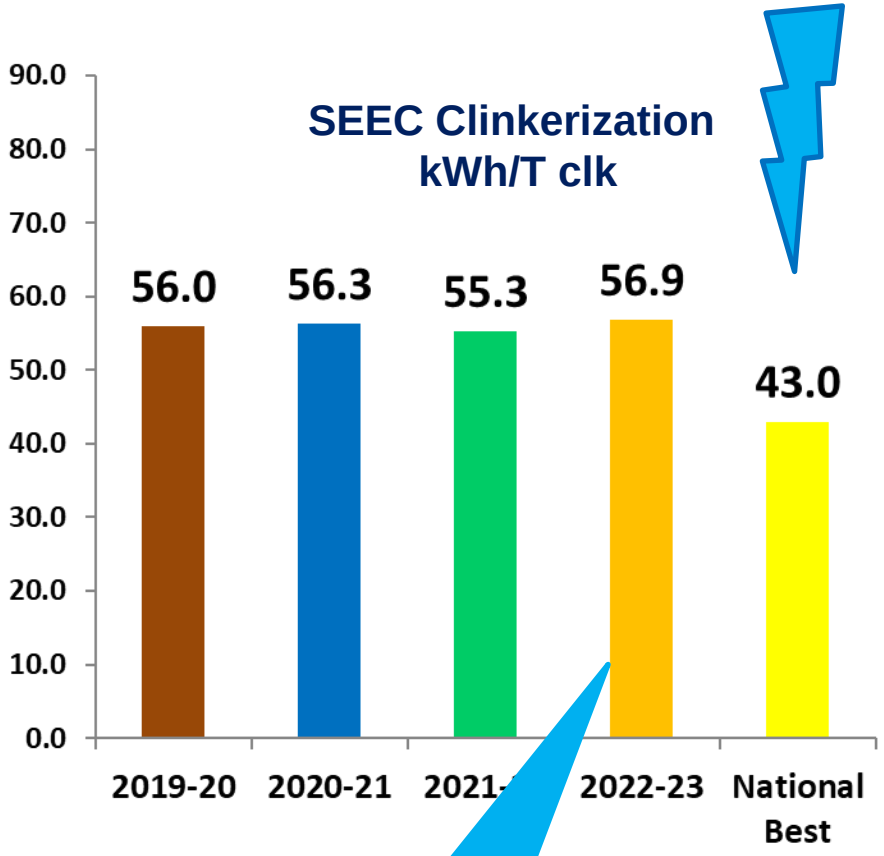
7700 X 4 PPC & 2500 X 1 OPC, CIMMCO Birla make

Packing Plant

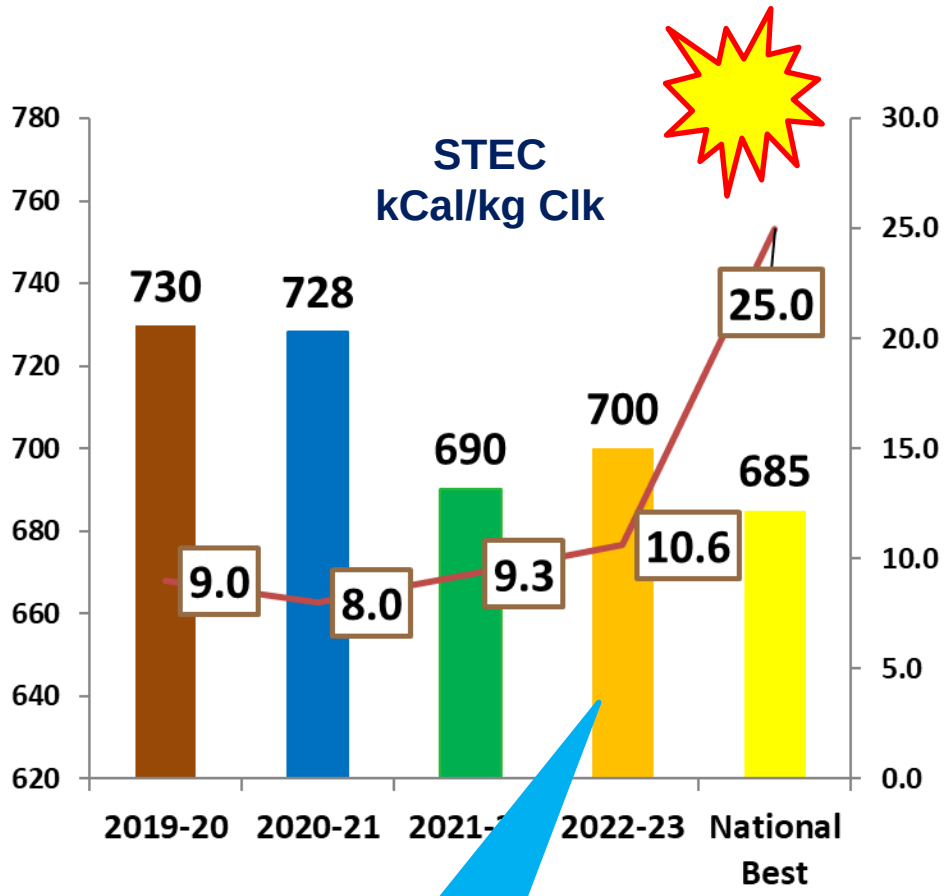
3600 bags / hr X 6 packer, EEL India make

Cement

Specific Energy Consumption in Last 4 Years

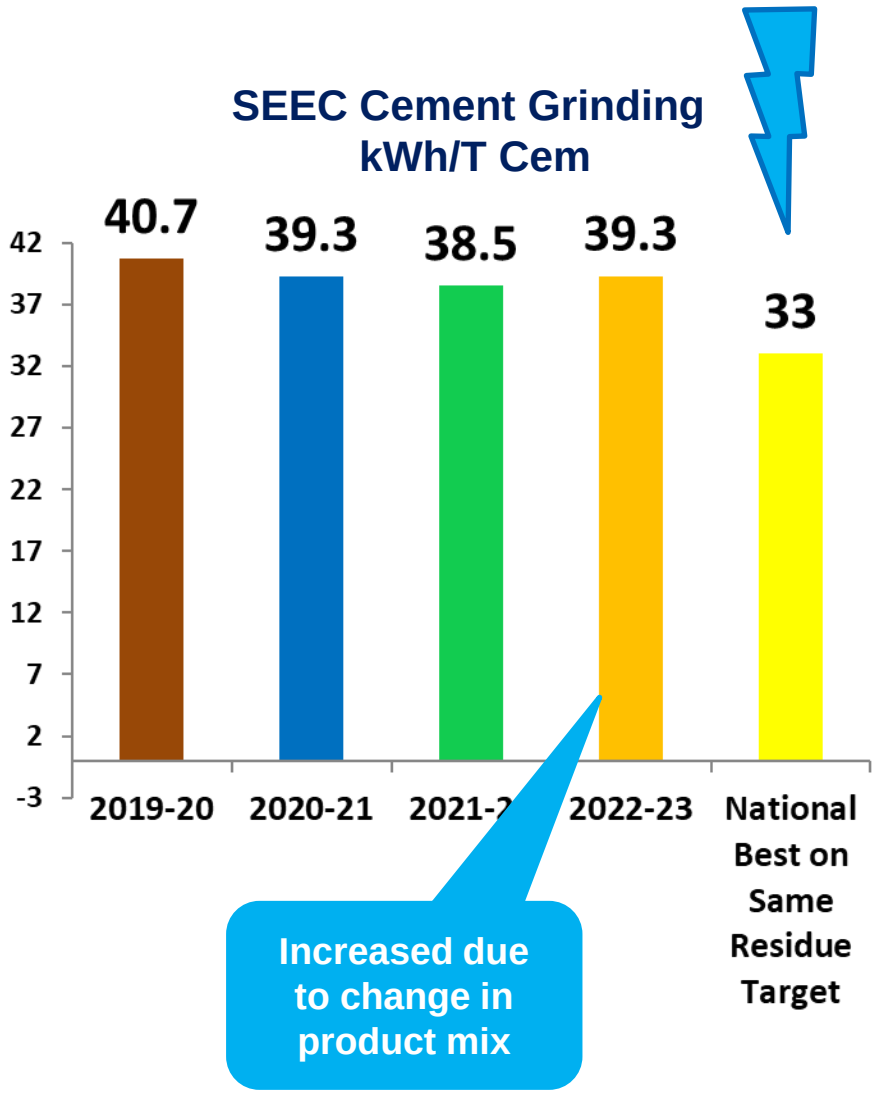


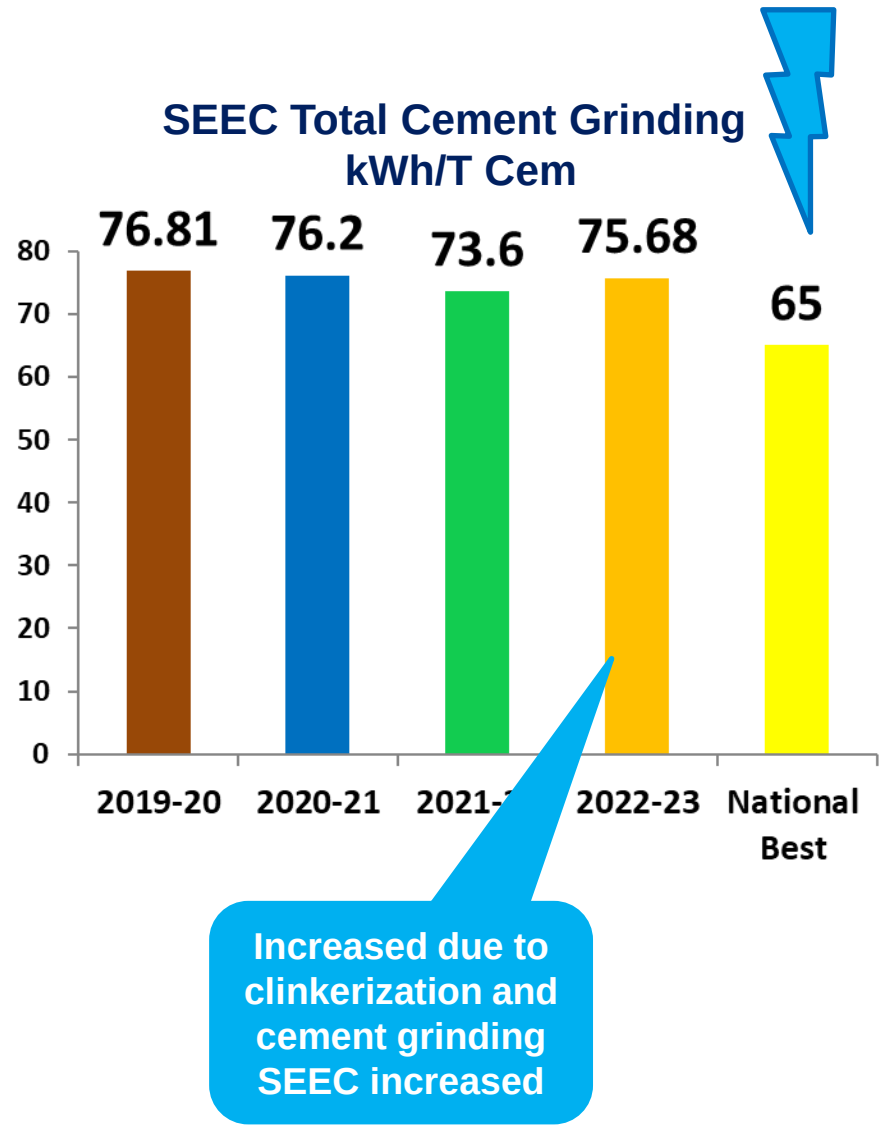
Increased due to installation of higher capacity PH Fan



Due to increase of TSR%

Specific Energy Consumption in Last 3 Years

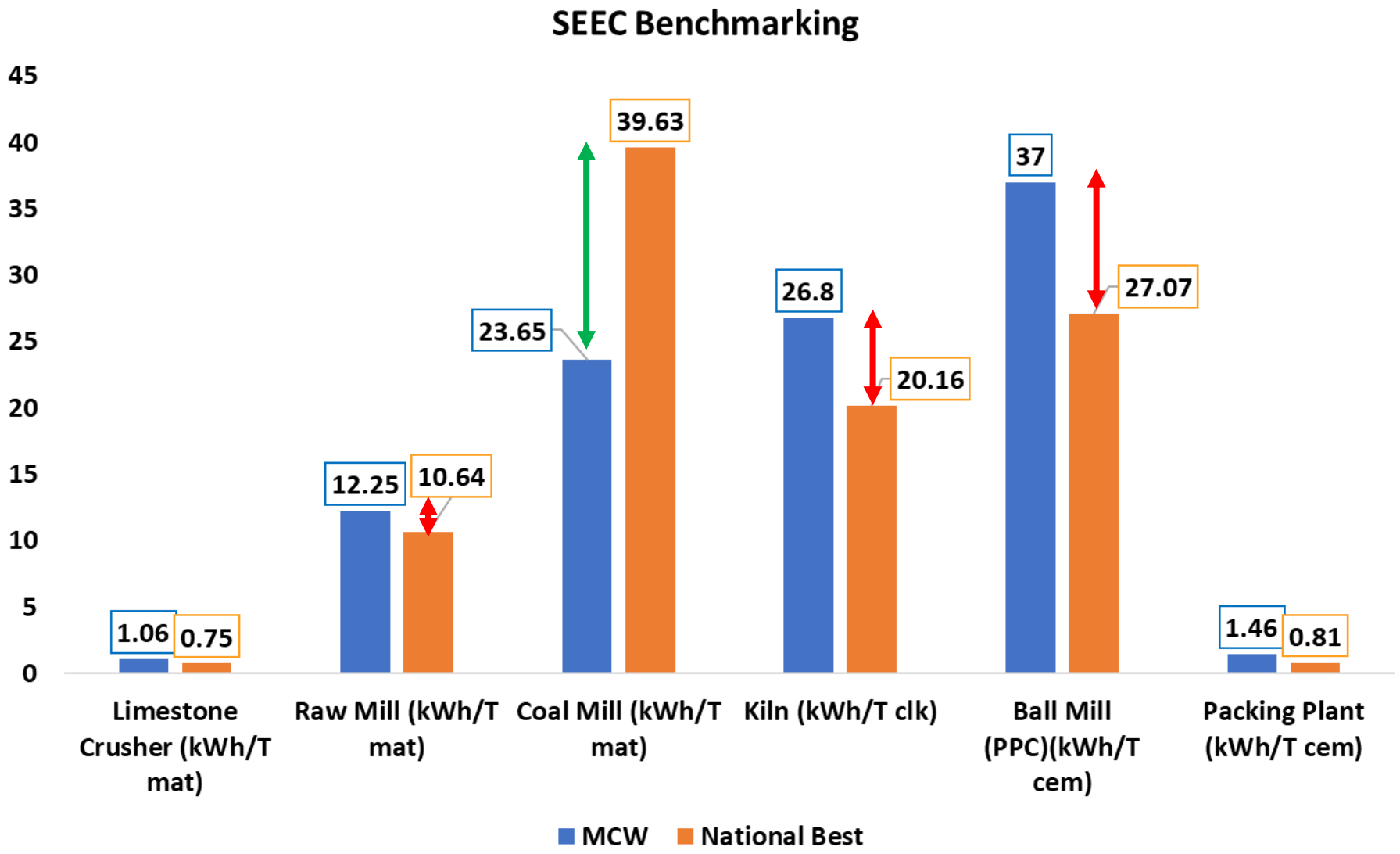




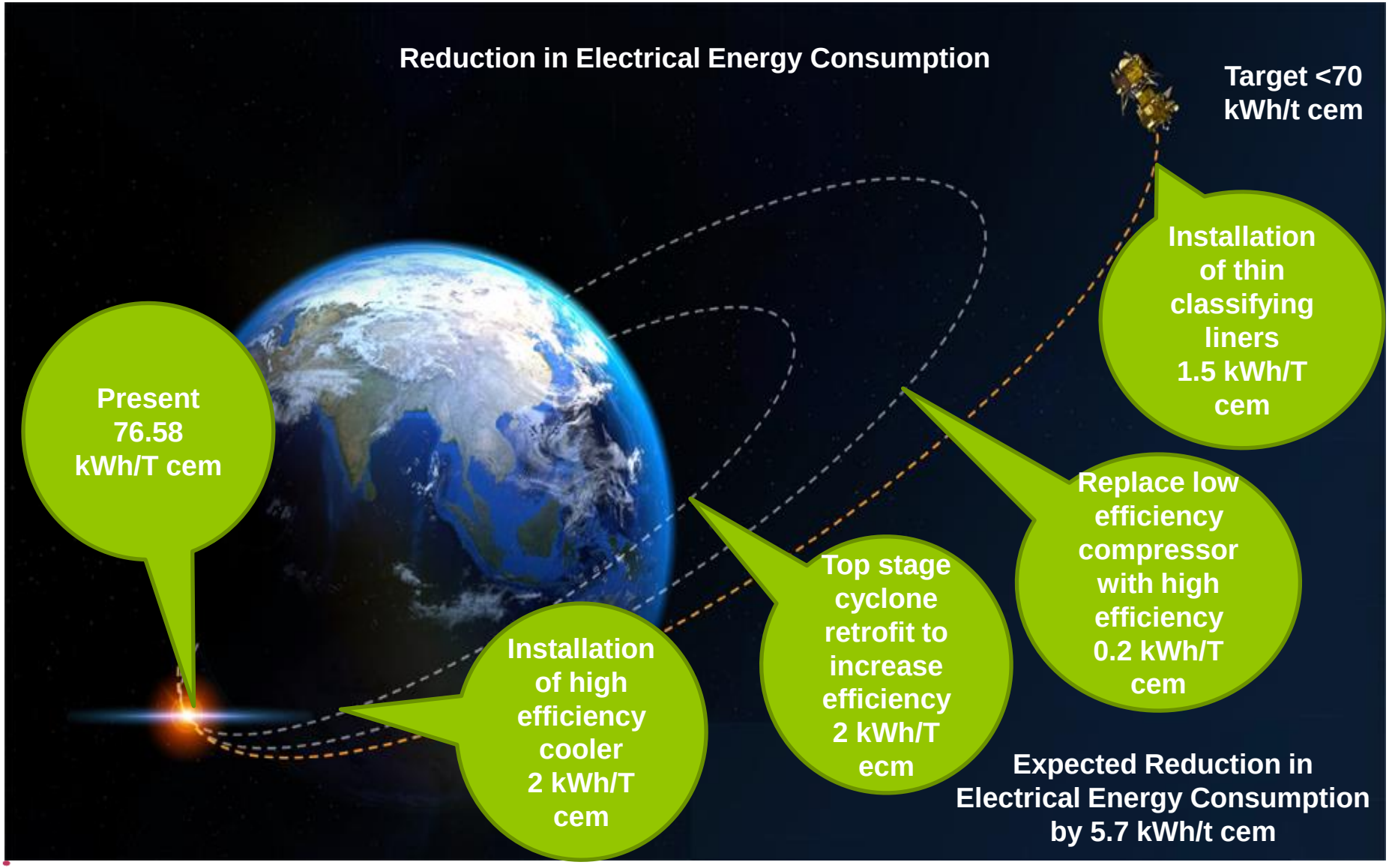
Information on Competitors, National and Global Benchmark as per CII Benchmarking Details

Energy Benchmarking		
Parameters	**Total SEEC (kWh/T cem)**	**STEC (kCal/kg Clk)**
Ambuja Cements (Unit : MCW)	**75.68**	**700**
Competitor 1	**69.30**	**735**
Competitor 2	**71.40**	**746**
Competitor 3	**71.65**	**758**
National Benchmark	**56.15**	**676**
MCW Target for 2023-24	**70**	**670**

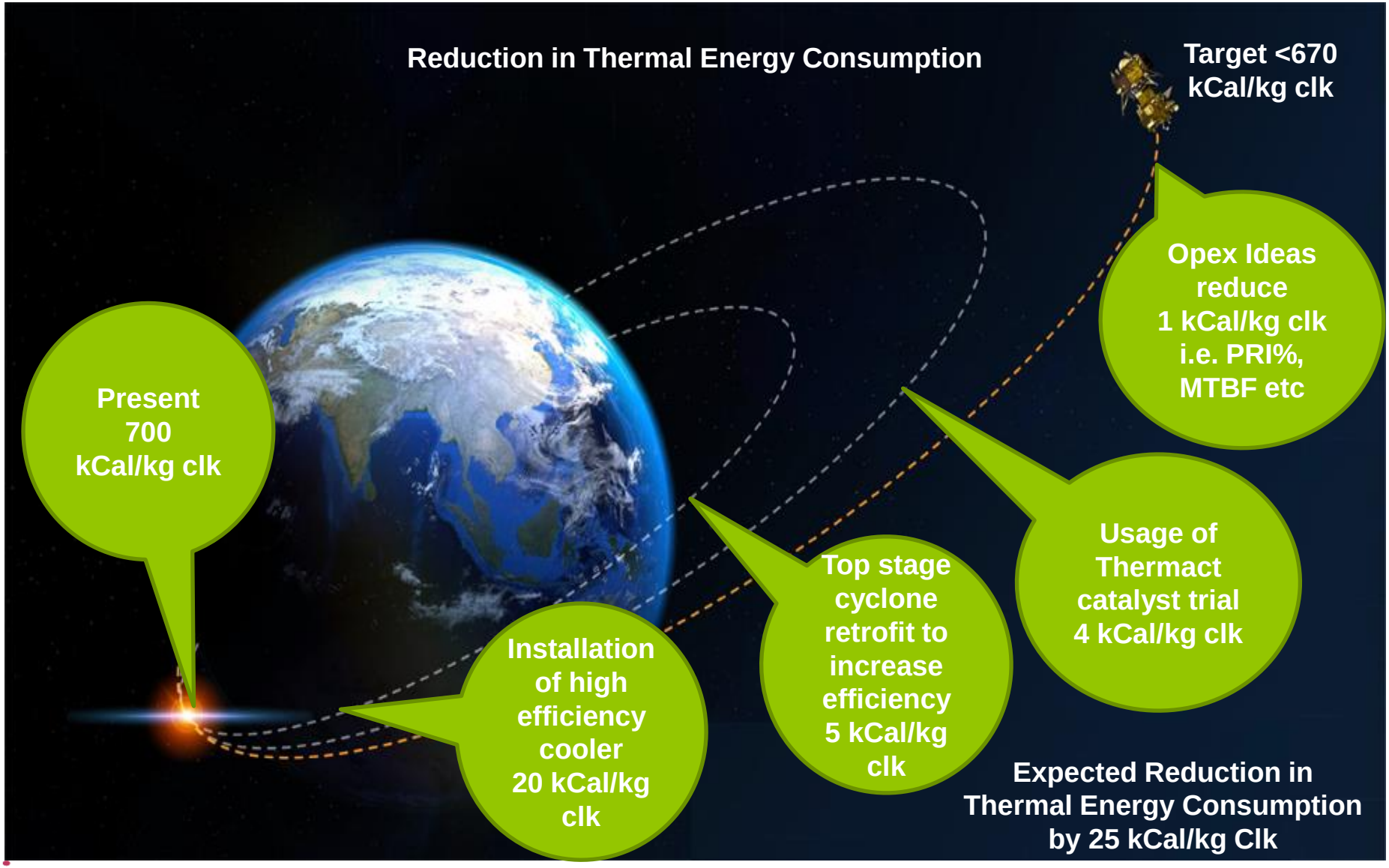
Information on Equipment Wise, National and Global Benchmark as per CII Benchmarking Details



Road Map To Achieve Benchmark/National/Global Best



Road Map To Achieve Benchmark/National/Global Best



Major ENCON projects

Reduction in Thermal Energy Cost

Reduction in Electrical energy cost

Reduced Clinker Factor

Reduction in Raw material cost

Reduced Maintenance Cost

Year	With Investment				Without Investment	
	No. Of Proposals	Investments in Cr	Savings in Cr	Payback Years	No. Of Proposals	Savings in Cr
2021	10	28	9	3.2	8	1.5
2022	12	23	8	3.1	9	1.5
2023	17	129	43	3.5	15	3
Total Cost Saving in Cr			60			6

List of Major ENCON project planned in FY 2023-24

Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Cr)	Annual Thermal Saving (Ton/year)	Annual Thermal Saving (Rs Cr)	Total Annual Savings (Rs Cr)	Investment Made (Rs Cr)	Payback (Years)
1	High efficiency clinker cooler	1246780	3	4,179	7	10	45	4.5
2	MV drive for coal mill fan	391105	0.5			0.5	1.73	3.2
3	Kiln coal firing loss in weight system replaced by Coriolisis			209	0.8	0.8	2.8	3.5
4	Thin classifying liners for 2nd chamber in cement mills and V shape liners for 1st Chamber	1046787	1			1	3	3
5	High efficiency compressor replace with low efficiency	260737	0.24			0.24	0.78	3.3
6	Additional Shredder installation			1,045	7.25	7.25	29	4
7	Installation of RAL at CMs BF hopper	46787	0.1			0.1	0.3	3
8	Replacement of Kiln inlet orifice for productivity improvement	97858	0.6			0.6	1.2	2
9	High efficiency fan for cooler ESP	60737	1			1	2	2

List of Major ENCON project planned in FY 2023-24

Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Cr)	Annual Thermal Saving (Ton/year)	Annual Thermal Saving (Rs Cr)	Total Annual Savings (Rs Cr)	Investment Made (Rs Cr)	Payback (Years)
10	Installation of storage and feeding facilities for CFA in Cement Mills	1246780	1.5			1.5	6	4
11	High frequency transformer control panel for Cooler ESP field 3 & 4	45614	0.13			0.13	0.4	3.1
12	Upgradation of Kiln down-comer duct water spray system	45503	0.25			0.25	0.38	1.5
13	CPP Improvement Laksha Projects	1004538	2.86			2.86	10	3.5
14	Installation of WHRS system 14.7 MW	3054348	20			20	200	10
15	MV drive for PH fan	456289	1.67			1.67	5	3
16	Replaced Raw Mill fan damper operation to GRR+SPRS	82903	1.4			1.4	2	2.8
17	Pylon type reclaimer to bridge type reclaimer in coal			1928	2	2	6	3
Total Savings						**51**		

List of Major ENCON project planned in FY 2022-23

Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Cr)	Annual Thermal Saving (Ton/year)	Annual Thermal Saving (Rs Cr)	Total Annual Savings (Rs Cr)	Investment Made (Rs Cr)	Payback (Years)
1	Replaced PH fan for TSR% increased			2500		1.4	4.5	3.2
2	Coal mill 1st generation separator changed with 3rd generation			2800		1.8	6	3.3
3	New high momentum burner for kiln			980		0.72	1.8	2.5
4	Installation of 32 nos of VVFD's in Pre and Post Clinkerization area	35000				0.4	0.8	2
5	Separate raw coal hopper to feed low NCV coal in PC and high NCV coal in Kiln			1200		1.2	3	2.6
6	Cooler fans bell mouth modifications	43380				0.03	0.04	1.5
7	High pressure and flow fans installed in static grate of cooler			400		0.6	0.8	1.4
Total Savings						**6.15**		

List of Major ENCON project planned in FY 2021-22

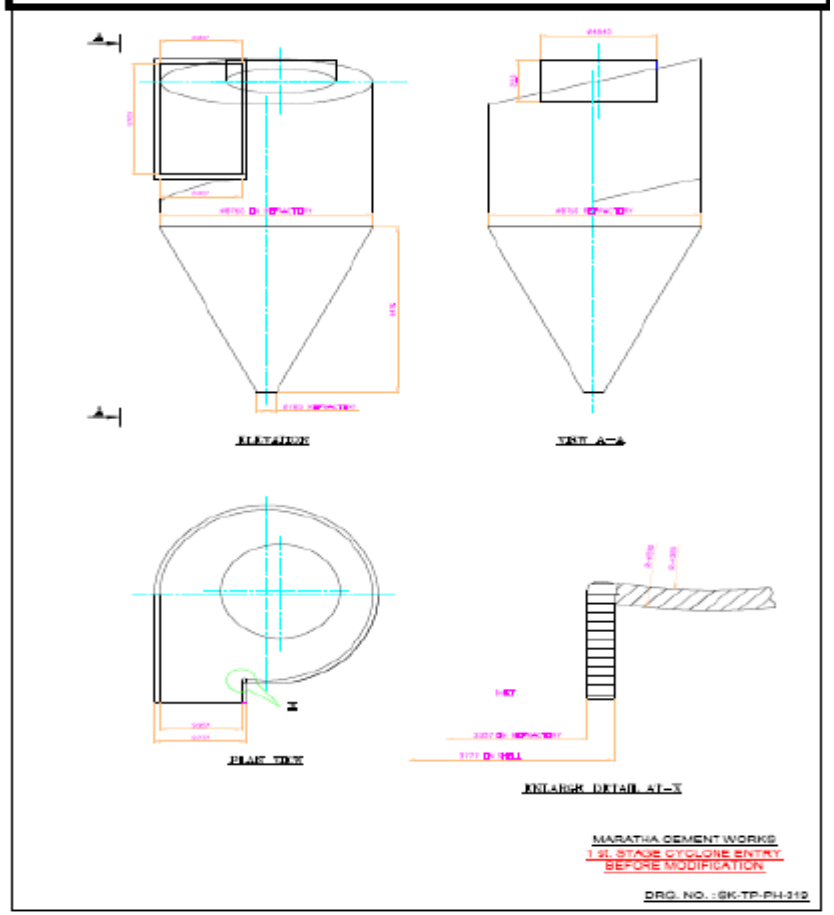
Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Cr)	Annual Thermal Saving (Ton/year)	Annual Thermal Saving (Rs Cr)	Total Annual Savings (Rs Cr)	Investment Made (Rs Cr)	Payback (Years)
1	Cooler step profile static inlet replaced with inclined step			1200	2	2	6	3
2	Coal blending system installed in reclaimer area			3000	6	6	30	5
3	Online coal ash analyser mounted on stacker belt			200	0.7	0.7	2	3
4	PC coal firing combi flame nozzle installed			100	0.25	0.25	0.5	2
5	Top stage and bottom stage cyclone modified based on CFD study			10	0.15	0.15	0.3	2
6	Increased bottom stage feed pipe size to reduce pressure drop			12	0.3	0.3	0.6	2
7	Raw mill fan inlet cone modified to reduce pressure drop and increase flow	35000	0.04			0.04	0.06	1.5
8	Raw mill SEEC reduced by 1 kWh/T mat through Opex measures							
Total Savings						**9.44**		

Energy saving project 1 : (Cooler Inlet Modification)

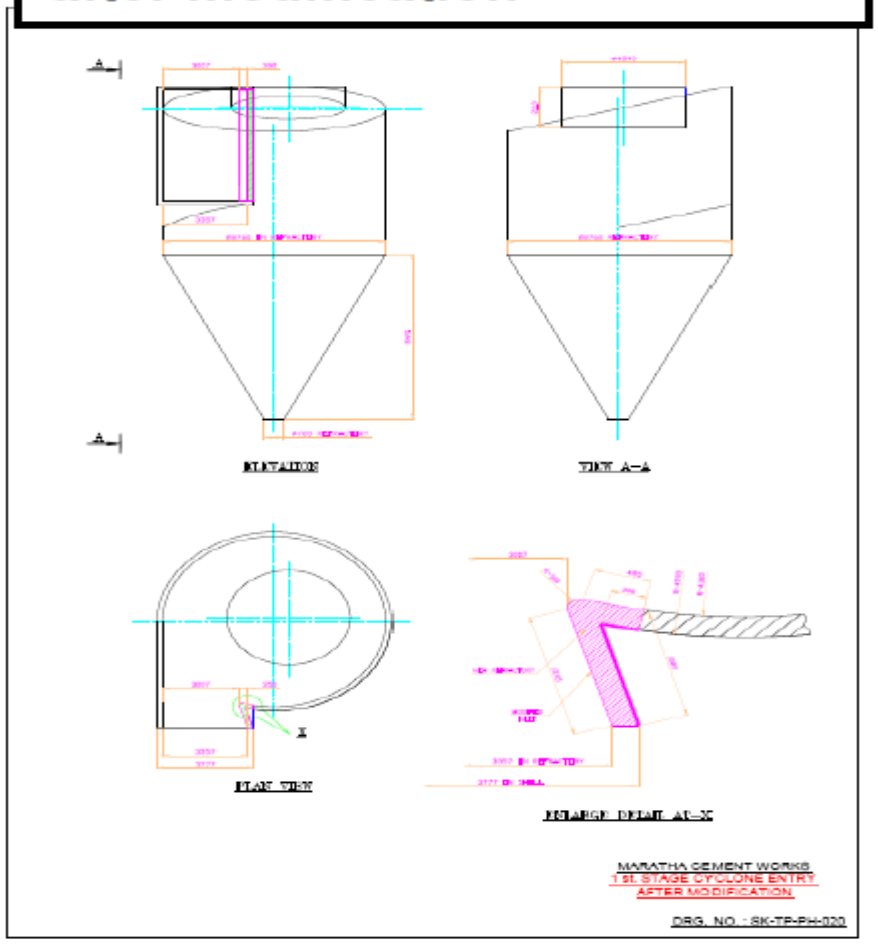
- Cooler Bed Height improved From 650 mm to 700 mm (Maintaining UGP1 - 70 mbar from 65 mbar).
- Fuzzy logic fine tuning done for cooler grate drive vs UGP-1.
- Benefit of Improved secondary & tertiary air temp due to improve bed height.
- Clinker retention time increased as cooler spm also reduced from 22spm to 18.5 spm (as margin in cooler hydraulic).

Energy saving project 2 : (PH bottom and top cyclone modification to reduce PH exit temperature)

1 st stage bottom cyclone before modification

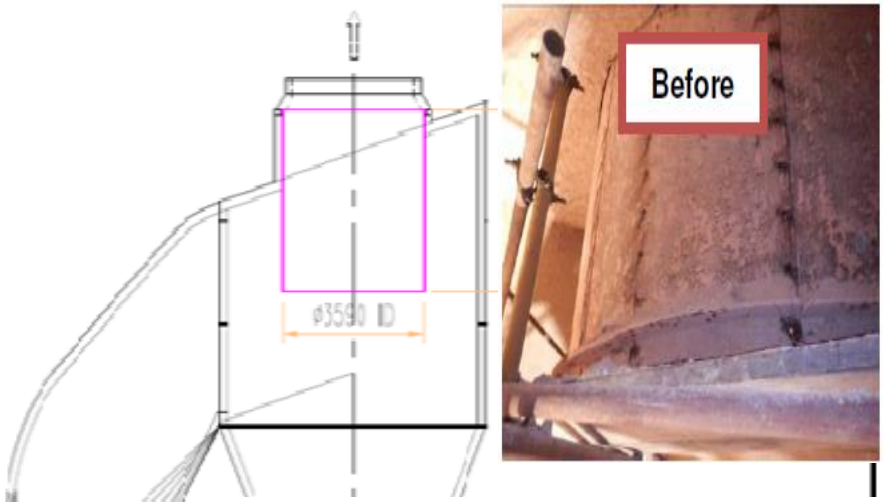


1 st stage bottom cyclone after modification

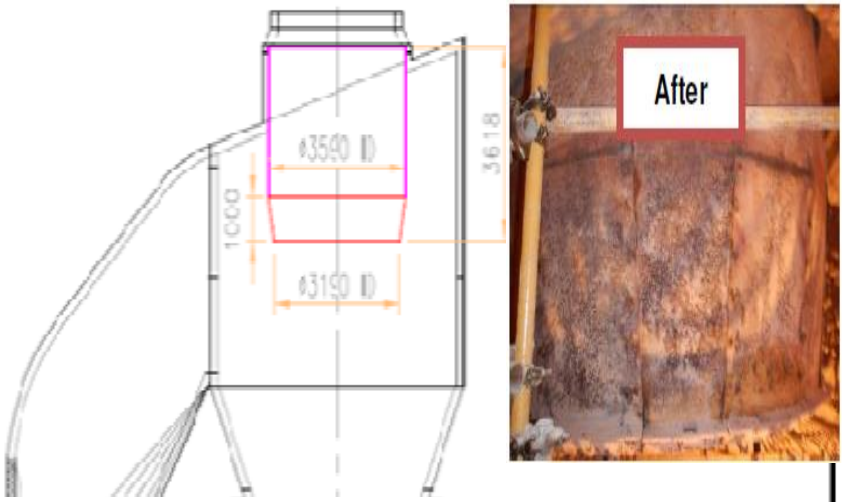


Energy saving project 3 : (PH bottom and top cyclone modification to reduce PH exit temperature)

6 th stage top cyclone dip tube before modification



6 th stage top cyclone dip tube after modification

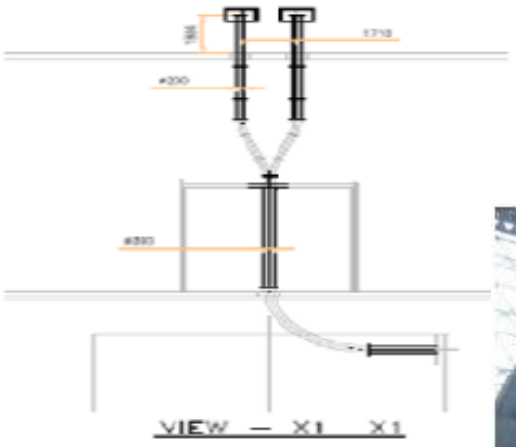


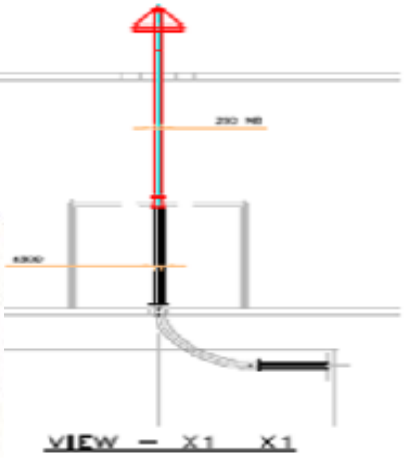
Preheater bottom and top cyclone CFD modification results:

- Decrease PH exit temp. by **9 degree C**
- Pressure drop reduction across PH is **50 MMWC**
- Saving of specific power on PH fan by **0.45 kWh/MT clk**
- Top cyclone efficiency improved by **1%**

Energy saving project 4 : (Modified PC firing nozzle)

PC firing nozzle before modification	PC firing nozzle after modification





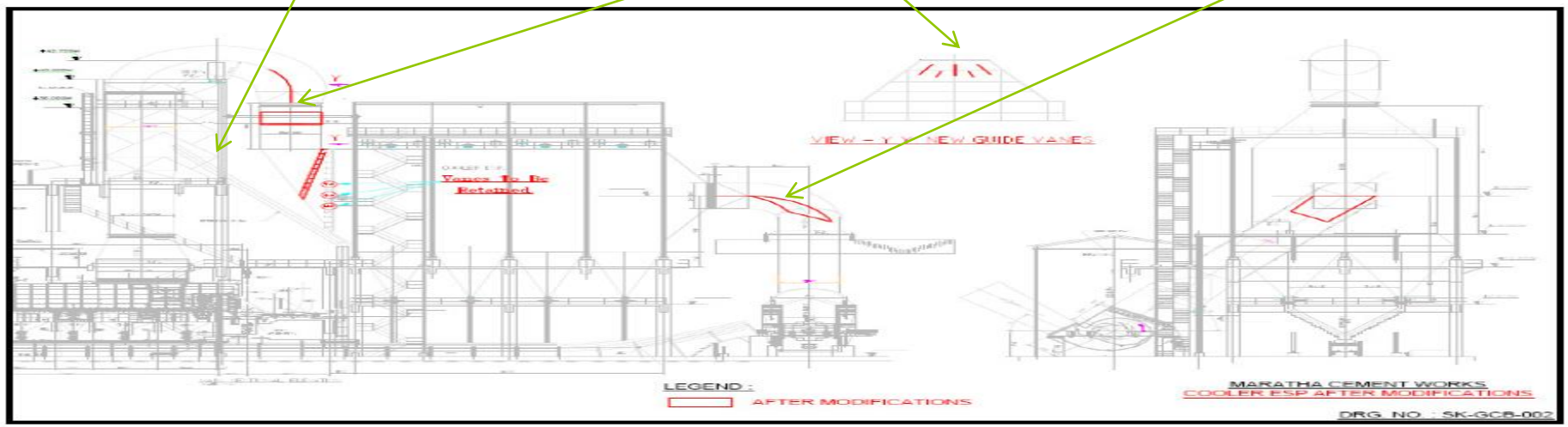
Secondary firing CFD modification results:

- Decrease CO formation at calciner outlet **from 0.1% to 0.03%**
- Heat loss due to incomplete combustion is **4 kCal/kg clk**

Energy saving project 5 : (Inlet and outlet duct modification of cooler ESP)

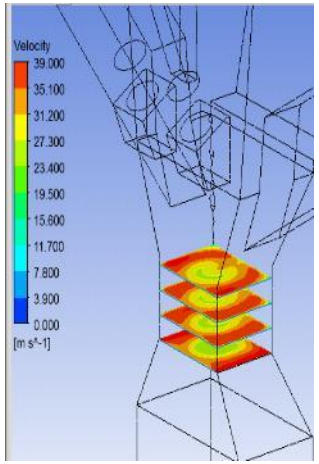
Layout before modification (Fig 3)

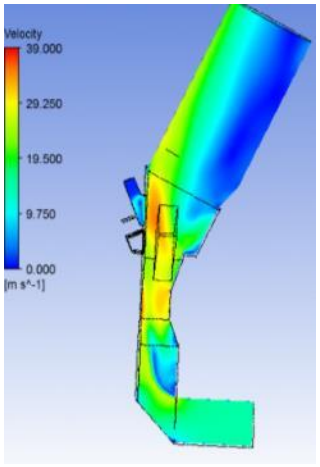
Layout before modification (Fig 4)

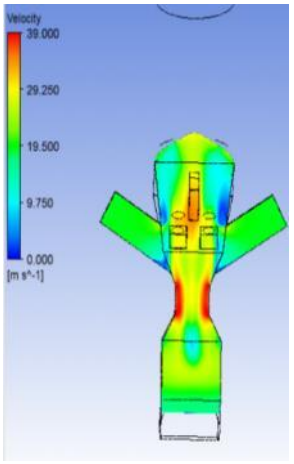


Energy saving project 6 : (ORIFICE MODIFICATION)

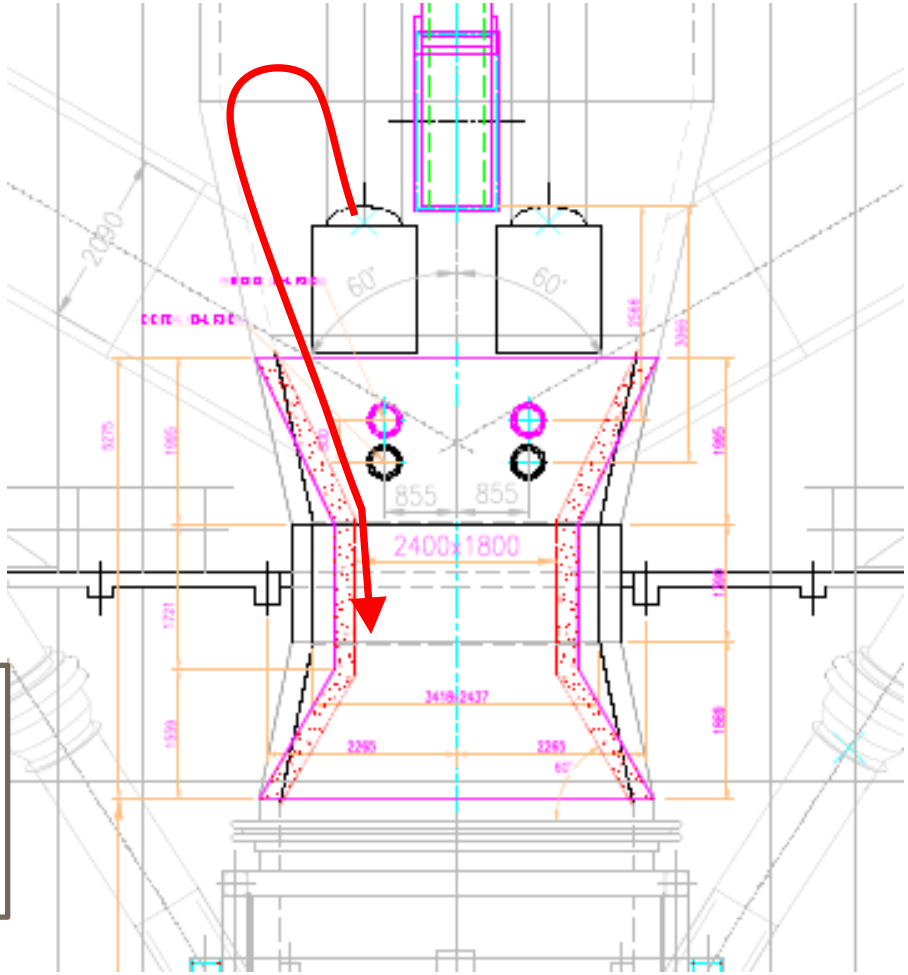
- To find out the velocity profile over the cross section of orifice
- To find out the particles trajectory in Calciner feeding Dispersion box







•In the orifice area the velocity is varying from 27 m/s to 39 m/s and average velocity is 33 m/s.
•The minimum velocity in all the sections of Orifice is >27 m/s. There are no regions with very less velocity which may cause dropping of particles



Energy Saving Project 7 : Installed 3rd generation separator in Coal Mill

Energy Saving Project 8 : Maratha WHRS Project

PH BOILER

DM Tank and Auxiliary Cooling Tower

AQC BOILER

STG Building

Maratha WHRS Project	
Guaranteed Power Generation	14.7 MW
Project Value (INR Crs)	213.5
Zero Date	18-Oct-2022
First Power (AQC)	8 MW
Target Date of 1st Power (AQC)	30-Sep-2023
Date of Full Commissioning	14-Nov-2023

ACC BUILDING

Innovative project 1
(Coal Blending System and Additional Raw Coal Hopper)

Issue:

1. Usage of Indigenous coal with very high coal ash %
2. Pylon type reclaimer having variation in ash% from 26% to 38%

Innovation:

1. Blend the coal based on Ash%
2. Fired low ash% coal in kiln and high ash% coal in PC

Benefit:

1. Improve clinker C3S and its Reactivity
2. Reduction in STEC

Innovative project 2 (Increased AF feed)

Root Cause Analysis done: how you arrived at the root causes -

Analysis 1

High CO Peaks at PC Outlet

Analysis 2

Old Weighfeeder after BC-2

Analysis 3

Multiflex Twin Screws

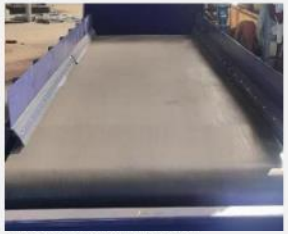
Analysis 4

Frequent Jamming of Multiflex due to screws

Point of Concern-

- Continuous Generation of CO Peaks at both PC Outlet and KI
- Huge Variation in PC Temperature
- Frequent Jamming of Multiflex Bin Agitators
- Issues in AF Materials Size
- Issues in PC firing Nozzle Location

Design of solution(s) -



Design of solution(s) -

Screen Size Reduced 75mm to 50 mm-

Relocation of AF Equipment's

Relocation of PC Firing Nozzle

Design of solution(s) -

Before AFR Feed Chute

After Extension of AFR Feed Chute by 250mm Casting inside PC

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Innovative project 3
(Usage of Thermact Catalyst)

Issue:

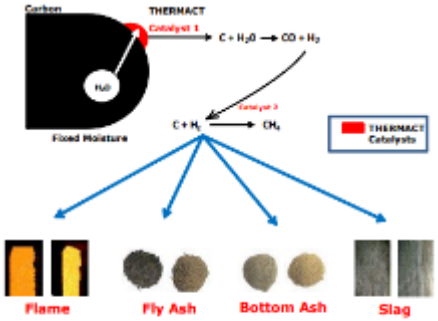
1. High IM% in coal
2. High Coal Ash%
3. Coal Mill Bottleneck

Innovation:

1. Use Thermact Catalyst to use this moisture to generate fuel

Benefit:

1. Reduction in STEC



Coal, in pulverized form, is fed into the combustion chamber of the boiler. This coal contains structural (inherent) moisture to the extent of 2 to 8%. In the combustion zone, this structural moisture is converted to superheated steam, which leaves the chimney resulting into sensible and latent heat loss.

$$\text{Moist Coal} \xrightarrow{\Delta} \text{Dry Coal} + H_2O\uparrow$$

The proprietary catalyst in THERMACT facilitates reaction between inherent moisture (H_2O) and Carbon to form syngas, which is a mixture of Carbon Monoxide and Hydrogen.

$$C + H_2O \xrightarrow[\text{THERMACT}]{\Delta} (CO + H_2)\uparrow$$

This combustible Syngas (CO & H_2) undergoes subsequent oxidation to generate heat. The Hydrogen present in Syngas combines with Carbon of coal to produce Methane, which on oxidation generates heat thereby helping in improved combustion.

$$CO + \tfrac{1}{2}O_2 \xrightarrow{\Delta} CO_2\uparrow$$
$$C + 2H_2 \xrightarrow{\Delta} CH_4\uparrow$$

Hence, due to THERMACT, the heat loss due to inherent moisture in coal is not only minimized but also utilized to generate combustible by-products in the combustion chamber. As a result, there is a increase in the heat generation in the system which can be utilized productively.

Innovative project 4
(Reduced Raw Mill SEEC by 1.5 kWh/T mat)

Issue:

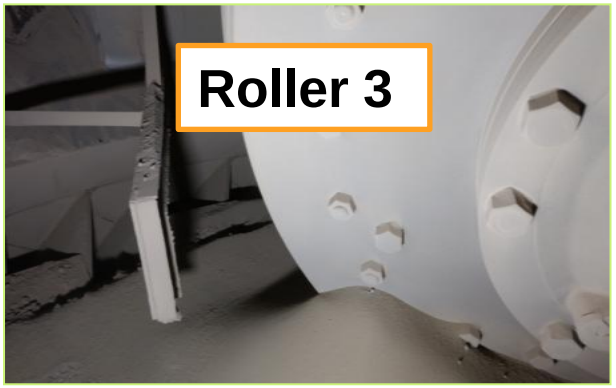
1. Low MTBF
2. Vibration Issue
3. High Pressure Drop

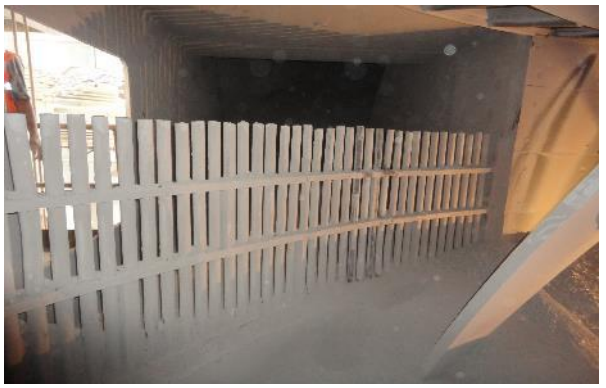
Innovation:

1. Inlet duct pressure drop reduced by putting barricading and installed blasters
2. Reject cone modify
3. Limestone input size reduced

Benefit:

1. Reduction in SEEC





Utilization of Renewable Energy Sources

20,434 MW total Renewable Portfolio

8,316 MW Operational Renewable portfolio

12 States

14,880 Mn units generated in FY23

13.5 Mn Tons CO2 avoided

Solar Power

4913 MW — In operation

10630 MW — Under Construction

Wind Power

971 MW — In operation

1180 MW — Under Construction

Hybrid Power

2140 MW — In operation

600 MW — Under Construction

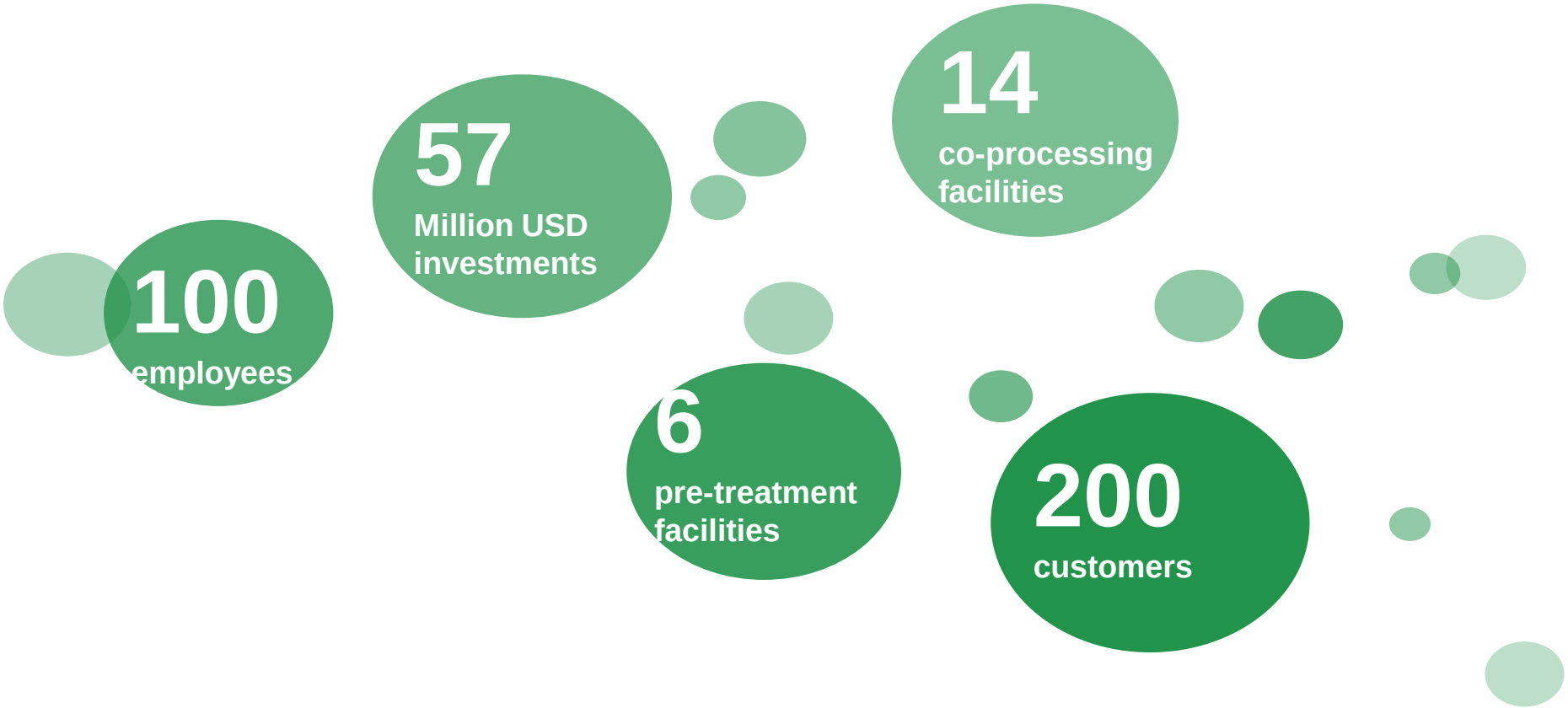
PROPOSAL FOR SOLAR POWER PROJECT - MARATHA

SR No.	Block No.	Total Area in ha.	Non Mineralized in ha.	ACL Purchased/Govt. Land	Non Purchase Land	Free Area for Solar Panel Activity in ha.	Latitude & Longitude	Remarks
1	Block-A	21.39	21.39	21.39	0.00	0.00		Block A Falls in mineralise zone area with good quality of limestone which is to be excavated with non- blasting tech. in near future. We are proposing mining plan also.
2	Block-B	8.00	8.00	5.60	2.40	8.00	19°44'12.08"N 79°11'1.35"E	Feasible for Solar installation
3	Block-C	98.00	98.00	0.00	98.00	98.00	19°46'15.10"N 79°11'3.07"E	Feasible for Solar installation, proposed land to be purchased
4	Block-D	19.80	19.80	4.30	15.50	19.80	19°41'20.72"N 79°12'43.00"E	Feasible for Solar installation, proposed land to be purchased
		147.19	147.19	31.29	115.90	125.80		

Total Free Area for Solar Power installation (existing & proposed) at MCW -125.80 Ha.

adani Cement

About Geoclean India at Glance…….



- The Geoclean brand was created in 2023 as the dedicated identity for the waste management solutions through co-processing, in the Adani Group
- Geocyclean has grown into a network of companies recognized as a leading provider of industrial and municipal waste management services worldwide

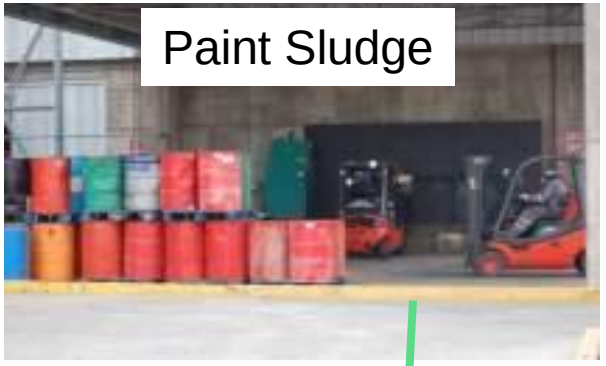
Co-processing, a safer more responsible solution

Co-processing refers to the safe disposal of waste materials in energy intensive industrial processes like cement such that not only are they disposed in an environmentally safe manner, but any inherent energy or material value in them is also utilized, leading to reduced consumption of natural resources.

Co-processing offers superior environmental performance because it:

- Completely destroys waste through high temperatures, oxygen excess and long residence time
- Avoids formation of dioxins and furans
- Leaves no residue that needs to be landfilled
- Reduces greenhouse gas emissions
- Preserves non-renewable fossil fuels and natural resources

Different waste pre-processed



Pre-processing facility at MCW



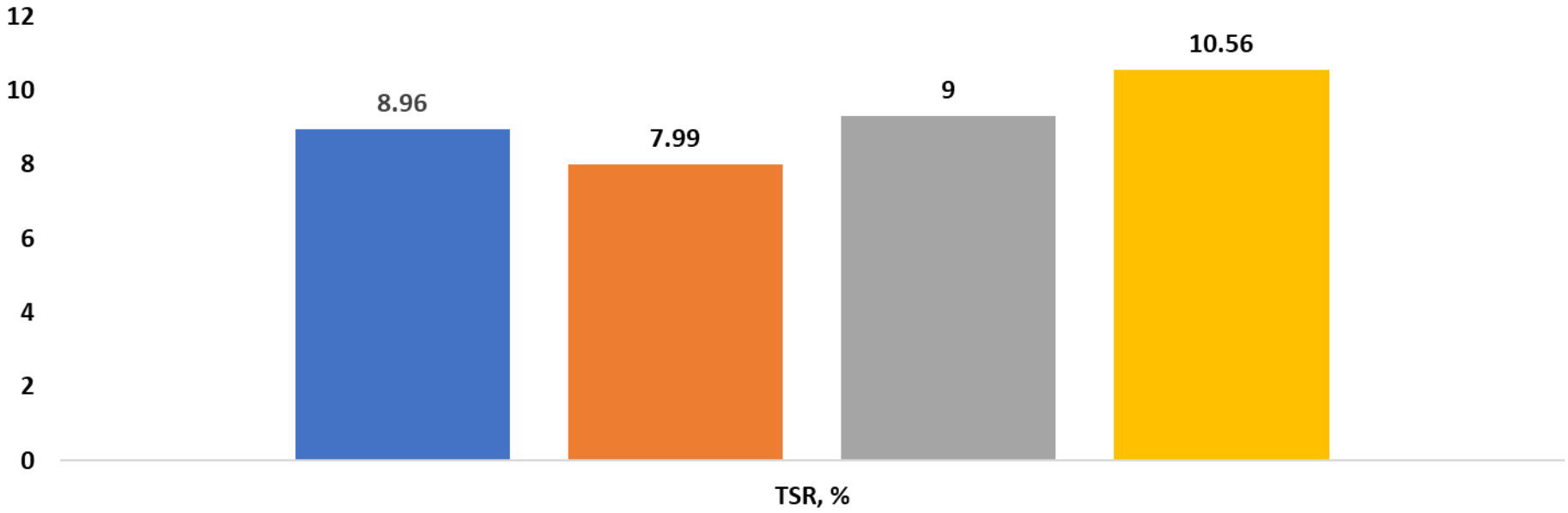






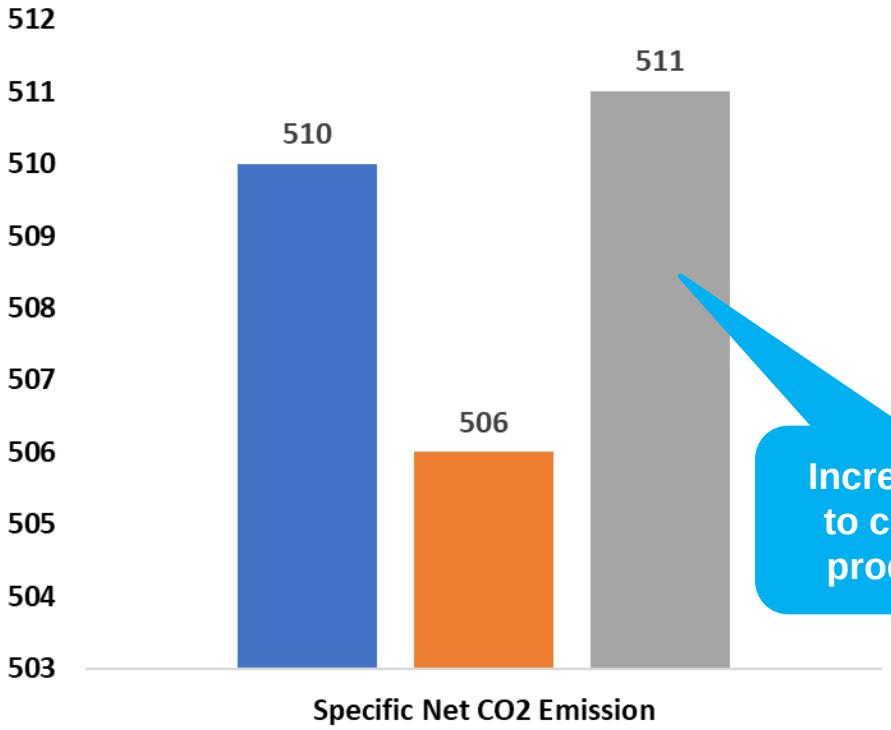

Constructed infrastructure for AFR with a total cost of Rs. 50 Cr.

AF Volumes Co-processed at Maratha in last 4 years



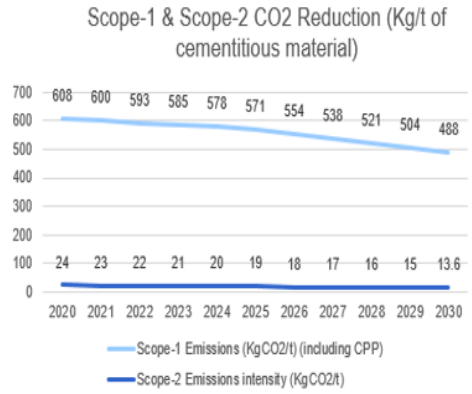
Name of Waste	Year 2019	Year 2020	Year 2021	Year 2022
NHZ	18,645	19,945	26,057	25,767
Biomass	16,162	14,082		
RDF	23,234	13,161	40,394	54,543
Trade Rejects	3,694	3,923	1,262	1,360
Pyrolitic Oil	45	20	0	36
AF Total	61,780	51,131	67,713	81,706
TSR, %	8.96	7.99	9	10.56

GHG Emission Reduction and Action Plan



Year-wise SBTI targets

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Scope-1 Emissions (KgCO2/t) (including CPP)	608	600	593	585	578	571	554	538	521	504	488
Scope-2 Emissions intensity (KgCO2/t)	24	23	22	21	20	19	18	17	16	15	13.6



Ambuja has taken CO2 emission intensity reduction measures such as

Clinker factor reduction
Improving Thermal Substitution Rate (TSR)
Installing Waste Heat Recovery System (WHRS)
Reducing Thermal & Electrical Energy intensities
Increasing renewable energy consumption
Adoption of new technologies

EMS System and Learning from Others

- The Think Tank Room
- Area Ownership Concept Launched
- Monthly Cluster wise manufacturing competition
- Half Yearly Udaaan Championship
- Quarterly Idea Generation Session
- Gate meeting every month for R and R
- Quarterly Conclave Meeting by CMO
- Weekly Rhythm Meeting

Learning from CII (MINIMIZE SUCTION SIDE PRESSURE DROP IN COOLER FANS)

Fan No.	Suction side pressure (MMWC)	Standard suction pressure at fan inlet	Suction drop Mmwc	Suction drop %	Head Mmwc	Power consumed kW	Power Saving (kW)
K11 FN 3 (2A)	-82	-30	82	7.3	712	84.1	6.1
K11 FN 4 (2B)	-80	-30	80	7.0	715	86.6	6.0

Learning from CII (Replaced conventional blower with high efficiency blower)

Learning from CII (TRANSFER CLINKER COOLER ESP MATERIAL TO CEMENT MILL OUTLET)

- The Cooler ESP has three chambers. The ESP material from each of the three hoppers is added to the clinker at the DBC.
- The cooler dust loading at the ESP inlet was measured to be about 20 g/m3. With this, the clinker cooler ESP material is estimated to be 6.5 TPH which comes to be 2% taking the total quantity of clinker output as 335 TPH.
- Presently the cooler ESP material is added to the fresh clinker in clinker hopper which results in flushing of weigh feeders resulting in operational difficultly of handling the fine cooler ESP material. Further the Cooler ESP material which is added to the DBC adds on to increased dust loading resulting in material loss.
- The cooler ESP material thus added to mill inlet is further finely grounded in the Cement mill, resulting in over grinding of ESP material

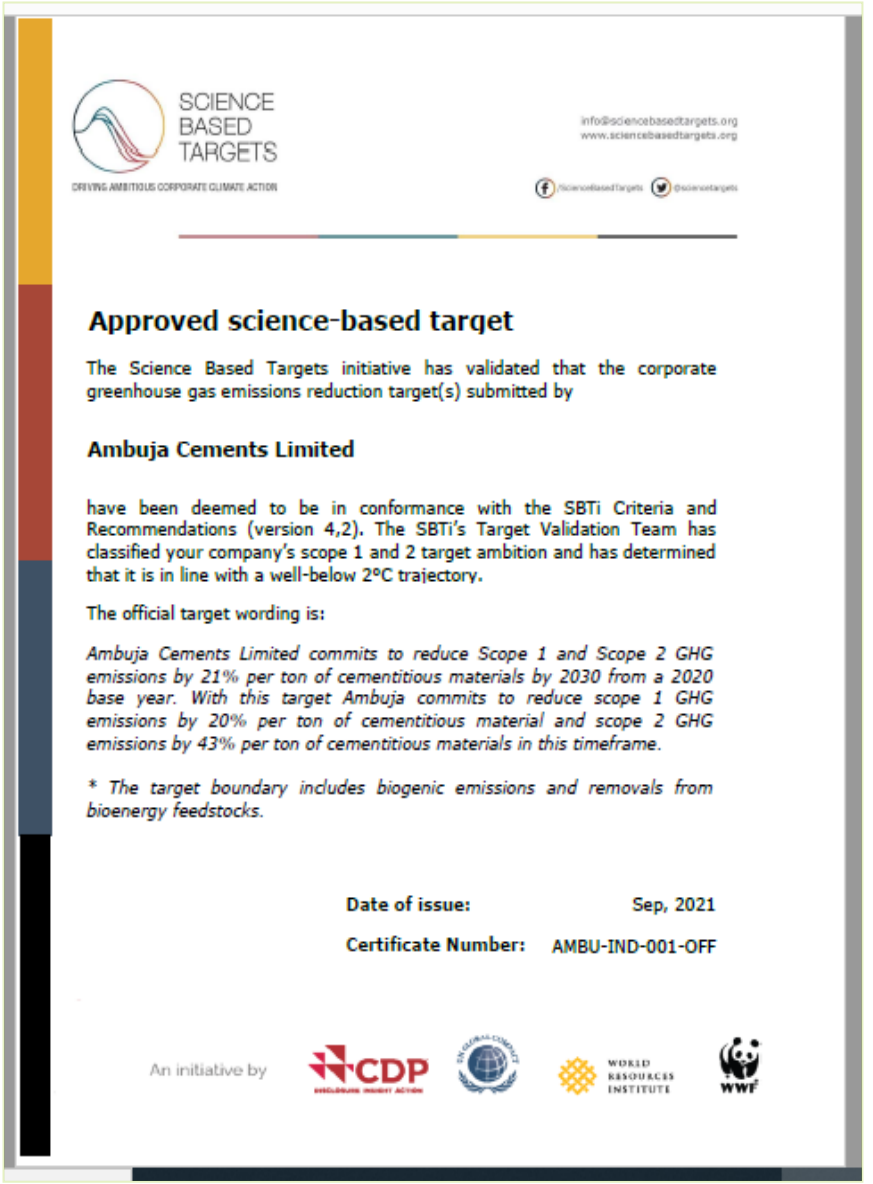
Our Net Zero Commitment

Being a responsible organization, Ambuja is fully aware of its responsibility towards Climate change and India's Net Zero commitment by 2070 made by our Hon'ble Prime Minister at COP 26 Summit held at Glasgow, UK.

As a leading and sustainable Indian Cement Company, we have been taking many initiatives towards Climate change and brief details are as given below:

ACL's Net Zero Pledge and Science Based Target Initiative (SBTi)

During September, 2021, **Ambuja became the second company (after our subsidiary ACC being the first) in the Indian construction sector to sign the Net Zero pledge** and join the "Business Ambition for 1.5°C" where we commit to set a long term science based target to reach net zero value chain greenhouse gas (GHG) emissions by no later than 2050 and to set interim science based targets (SBTs) in line with the criteria and recommendations of the Science Based Target Initiative (SBTi).



SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

info@sciencebasedtargets.org
www.sciencebasedtargets.org

Approved science-based target

The Science Based Targets initiative has validated that the corporate greenhouse gas emissions reduction target(s) submitted by

Ambuja Cements Limited

have been deemed to be in conformance with the SBTi Criteria and Recommendations (version 4,2). The SBTi's Target Validation Team has classified your company's scope 1 and 2 target ambition and has determined that it is in line with a well-below 2°C trajectory.

The official target wording is:

Ambuja Cements Limited commits to reduce Scope 1 and Scope 2 GHG emissions by 21% per ton of cementitious materials by 2030 from a 2020 base year. With this target Ambuja commits to reduce scope 1 GHG emissions by 20% per ton of cementitious material and scope 2 GHG emissions by 43% per ton of cementitious materials in this timeframe.

** The target boundary includes biogenic emissions and removals from bioenergy feedstocks.*

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An initiative by CDP WORLD RESOURCES INSTITUTE WWF

Moments of Glory

MCW has received "CII-ITC SUSTAINABILITY AWARD 2016 FOR EXCELLENCE IN CORPORATE SOCIAL RESPONSIBILITY".
The award was handed over by Hon'ble Mr. Prakash Javadekar, Union Minister of Human Resource Development, Govt. of India on 5th December 2016 at Hotel Le Meridien, New Delhi. Mr. Sushil Kumar Thakur (MCM – W&S) and Mr. Sapan Nagarnaje Site Head ACC Chandrapur received the award. Mr. Sanjiv Puri COO ITC, Amb Mr. Shyam Saran Jury Chair CII – ITC sustainability Award 2016 and Ms. Seema Arora, Executive Director CII – ITC Center of excellence of sustainable Development were present during the Ceremony.

MCW bagged Energy Conservation Award-2019, organised by IE&L Deptt, MEDA, IOE & Governement of Maharashtra

Maratha Cement has received the prestigious "SRISHTI" Good Green Governance Award – 2016 in Manufacturing Category. The Award was received by Sh. Sushil Kumar Thakur (Manufacturing Cluster Head (W&S) , Corporate Environment Head Sh. Sandeep Shrivastava and Plant Environment Head Dr. Vinod Mishra from Sh. Bhagat Singh Koshyari Former Chief Minister Uttarakhand and presently Member of Parliament on the occasion of the Earth day on 22.04.2016

Moments of Glory

Energy, Environment and Water Conservation Programme at Plant, School and Colony












हम करके दिखाते हैं

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