UltraTech Cement Limited
Unit: Narmada Cement Ratnagiri Works

Presenters:- 1) Mr. Neeraj Khare (Deputy General Manager)

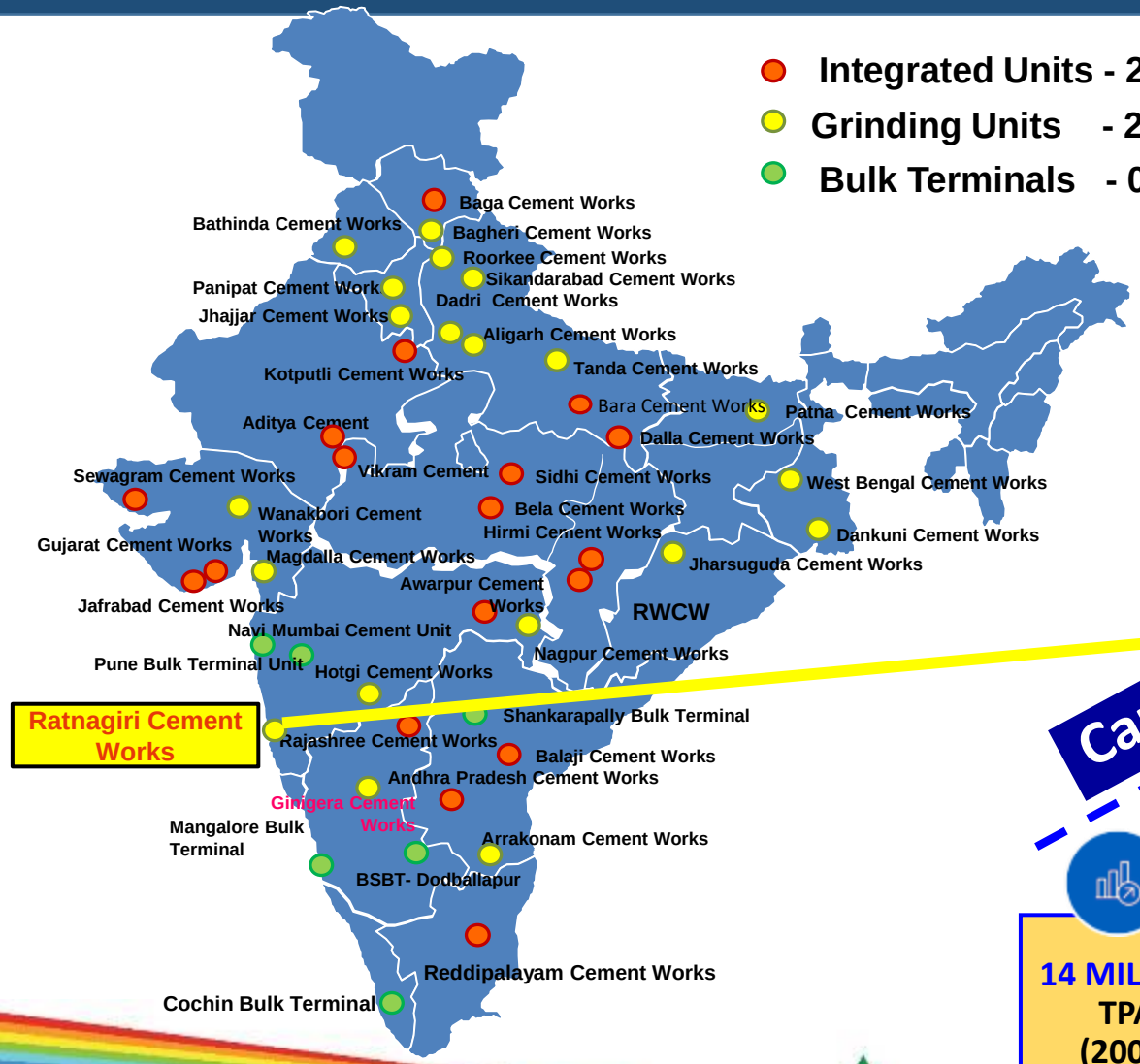
2) Mr. Dhananjay B. Kulkarni (Manager)

Integrity | Commitment | Passion | Seamlessness | Speed

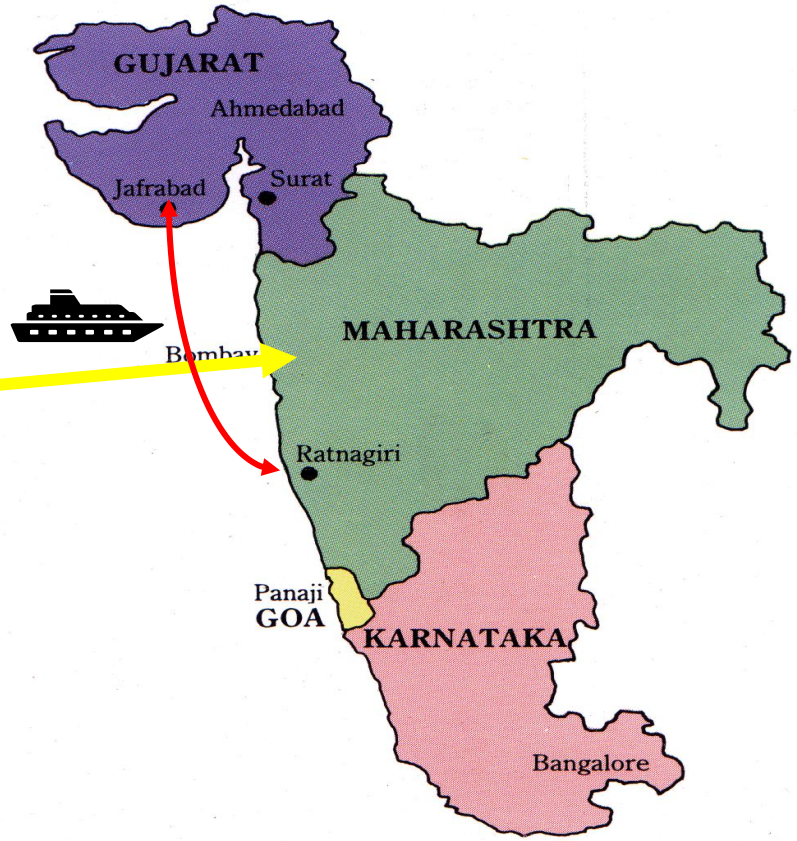
Business Overview

India's Largest Cement Producer – Lead by Miles

- Integrated Units - 23
- Grinding Units - 29
- Bulk Terminals - 08



Ratnagiri is a sea port city and district headquarter located about 350 kms towards south of Mumbai on National Highway No.17.



Capacity

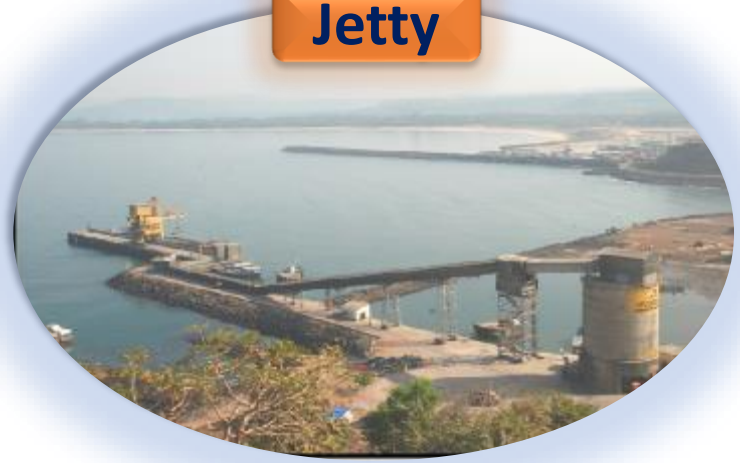
14 MILLION TPA (2004)

137.85 MILLION TPA (2023)

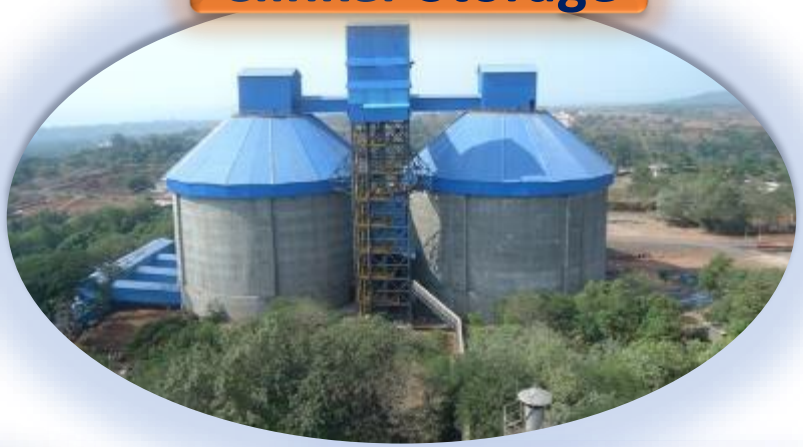
Integrity | Commitment | Passion | Seamlessness | Speed

Process at Ratnagiri Cement Works

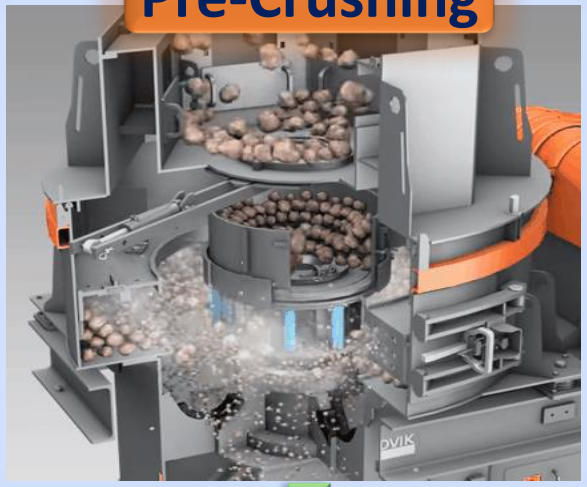
Jetty



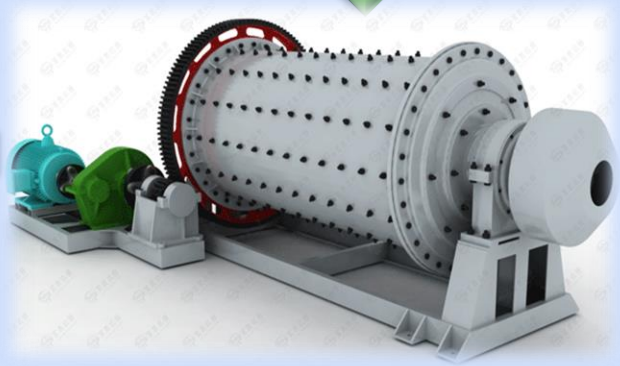
Clinker Storage



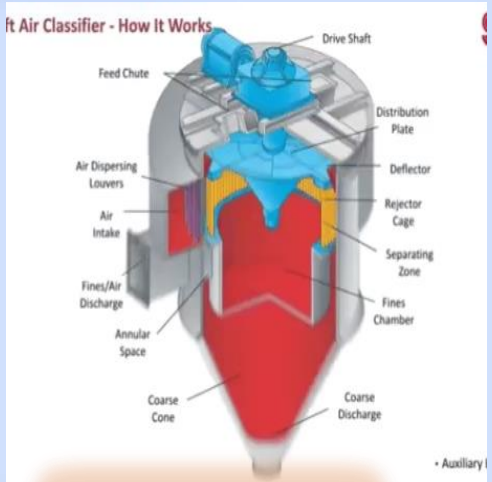
Pre-Crushing



Clinker Grinding



Separator



Packing

OPC43/53

PPC

Integrity | Commitment | Passion | Seamlessness | Speed

Major equipment

Equipment	Type	Make	Capacity	Age
Ship Unloader	Grab Bucket Type	Mukand	300 TPH	39 Years
EOT Crane	Grab Bucket Type	Mukand	200 TPH	39 Years
VSI Crusher	B8000 (Vertical Shaft Impactor)	Svedala / Metso	230 TPH (throughput)	24 Years
Cement Mill	2 Chamber / Single drive	Walchandnagar Industries	50 TPH - OPC 70 TPH - PPC	39 Years
Separator	Side Draft, High Efficiency	Strutvent SD80	142 TPH (throughput)	24 Years
Electronic Packer	6 Spout Rotopacker	Enexco Technologies	90 TPH	25 Years

Certifications


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

UltraTech Cement Limited
Unit Narmada Cement, Ratnagiri Works
Plot No. 1, 3, 4 & 7, MIDC, Zadgaon Block, Ratnagiri - 415 639, Maharashtra, India

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Handling, storage and grinding raw material

Storage, packing and loading cement

ISO 9001:2015


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

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Plot No. 1,2, 3, 4 & 7, MIDC, Zadgaon Block, Ratnagiri - 415 639, Maharashtra, India

has been found to conform to the Occupational Health and [illegible] System standard:
ISO 45001:2018

This certificate is valid for the following scope:
Handling, storage and grinding raw material

Storage, packing and loading cement

ISO45001:2018


DNV·GL

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Unit Narmada Cement, Ratnagiri Works
Plot No. 1, 3, 4 & 7, MIDC, Zadgaon Block, Ratnagiri - 415 639, Maharashtra, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2015

This certificate is valid for the following scope:
Handling, storage and grinding raw material

Storage, packing and loading cement

ISO 14001:2015


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

Ultratech Cement Limited
Unit: Ratnagiri Cement Works
MIDC Industrial Area, Zadgaon Block, Ratnagiri - 415 639, Maharashtra, India

has been found to conform to the Information Security Management System standard:
ISO/IEC 27001:2013

This certificate is valid for the following scope:
Management of information security pertaining to IT services provided by information technology Operations in accordance with the statement of applicability version dated 5-Feb-2019

ISO/IEC 27001:2013


ADITYA BIRLA
UltraTech

RATNAGIRI CEMENT WORKS

Our Vision

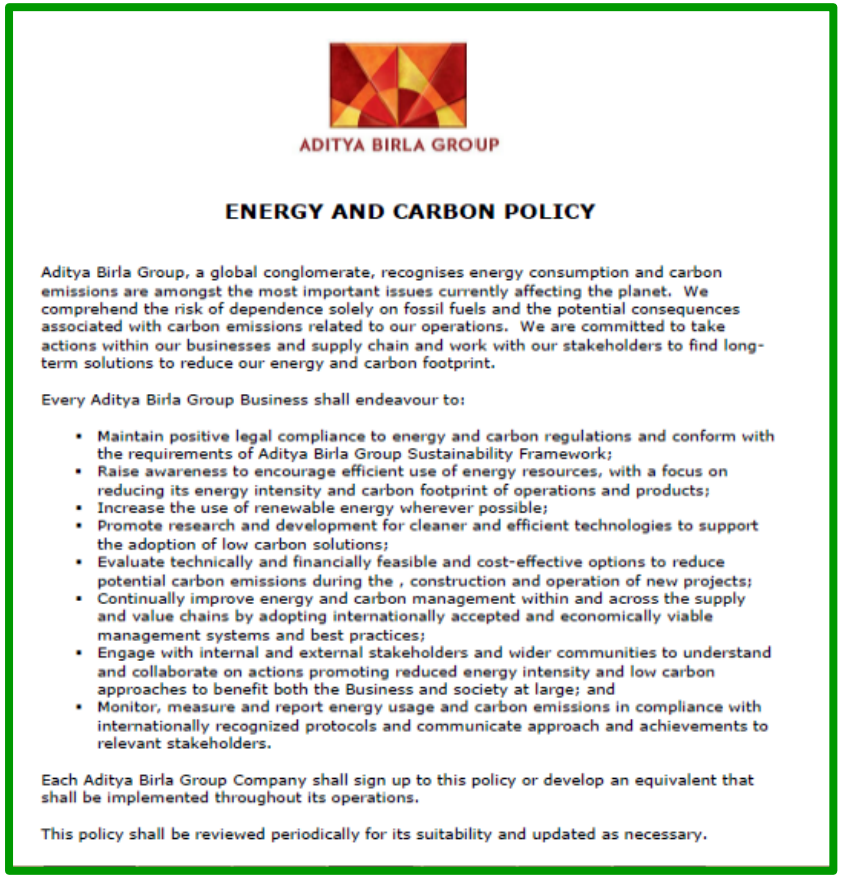
To be the most preferred cement in the market with a clear focus on all stakeholders.

Our Mission

To deliver superior values to all our stakeholders through

- Being Learning organization.
- Sustainability
- Customer satisfaction
- Operational excellence
- People Satisfaction

Vision/Mission


ADITYA BIRLA GROUP

ENERGY AND CARBON POLICY

Aditya Birla Group, a global conglomerate, recognises energy consumption and carbon emissions are amongst the most important issues currently affecting the planet. We comprehend the risk of dependence solely on fossil fuels and the potential consequences associated with carbon emissions related to our operations. We are committed to take actions within our businesses and supply chain and work with our stakeholders to find long-term solutions to reduce our energy and carbon footprint.

Every Aditya Birla Group Business shall endeavour to:

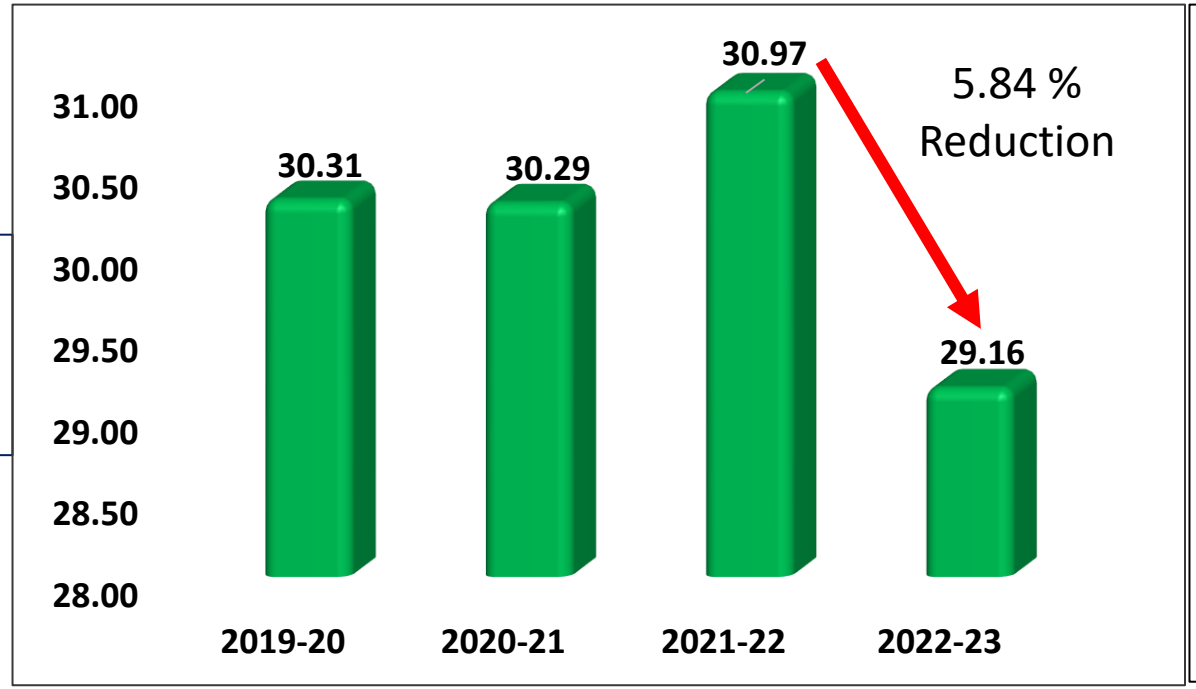
- Maintain positive legal compliance to energy and carbon regulations and conform with the requirements of Aditya Birla Group Sustainability Framework;
- Raise awareness to encourage efficient use of energy resources, with a focus on reducing its energy intensity and carbon footprint of operations and products;
- Increase the use of renewable energy wherever possible;
- Promote research and development for cleaner and efficient technologies to support the adoption of low carbon solutions;
- Evaluate technically and financially feasible and cost-effective options to reduce potential carbon emissions during the , construction and operation of new projects;
- Continually improve energy and carbon management within and across the supply and value chains by adopting internationally accepted and economically viable management systems and best practices;
- Engage with internal and external stakeholders and wider communities to understand and collaborate on actions promoting reduced energy intensity and low carbon approaches to benefit both the Business and society at large; and
- Monitor, measure and report energy usage and carbon emissions in compliance with internationally recognized protocols and communicate approach and achievements to relevant stakeholders.

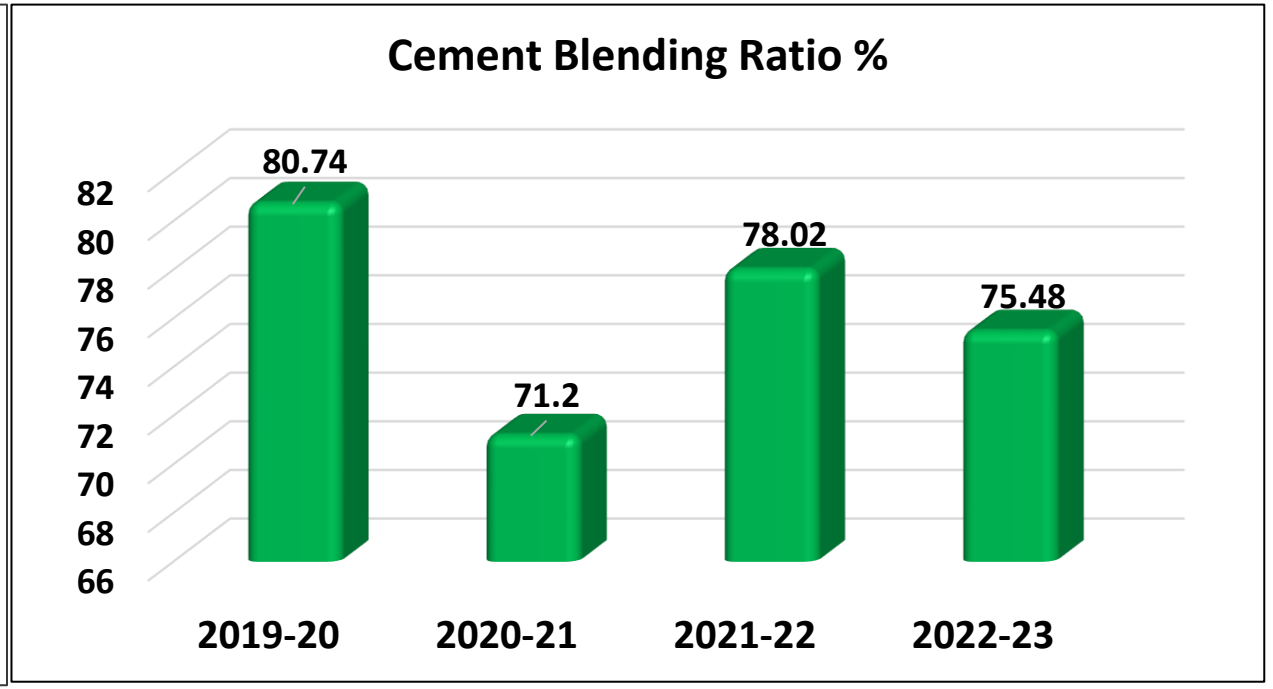
Each Aditya Birla Group Company shall sign up to this policy or develop an equivalent that shall be implemented throughout its operations.

This policy shall be reviewed periodically for its suitability and updated as necessary.

Energy Policy

Overall specific power consumption Kwh/Mt





Achieved Ever Lowest Overall Specific Power consumption for the FY 2023-24 i.e 29.216 kWh/MT.

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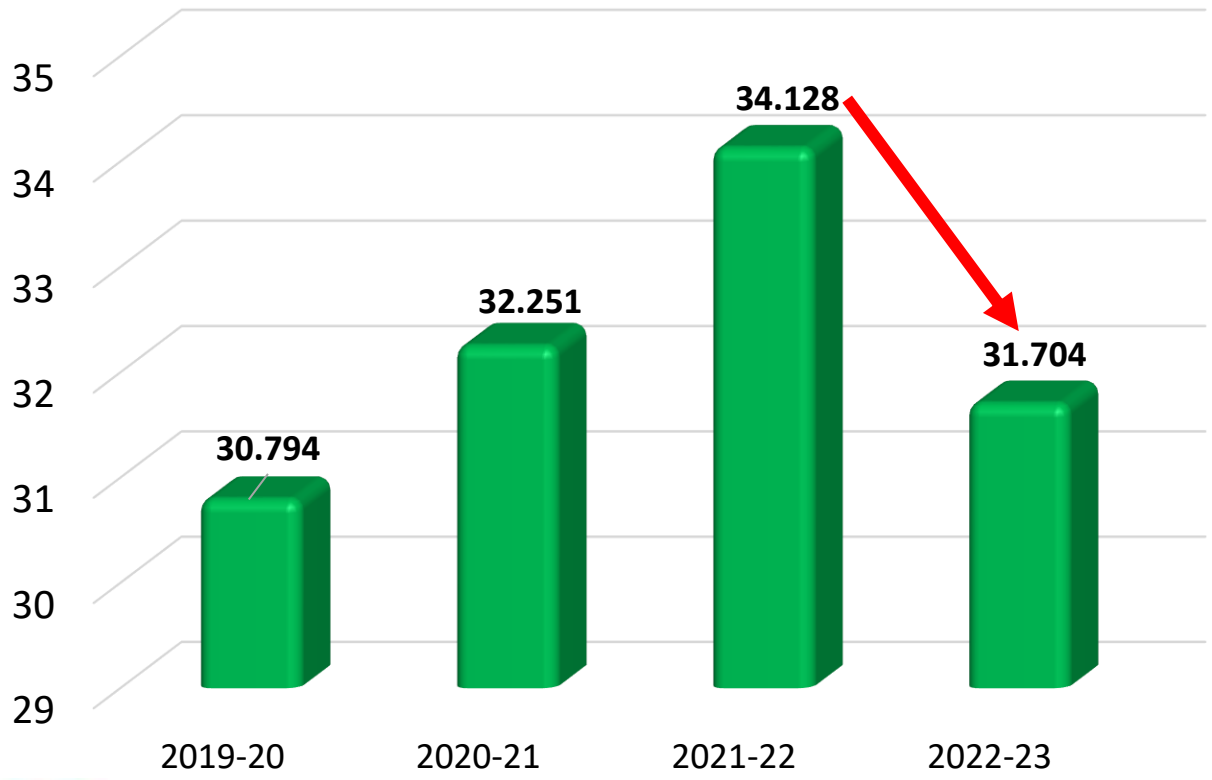
Specific power consumption in kWH/MT– Grinding

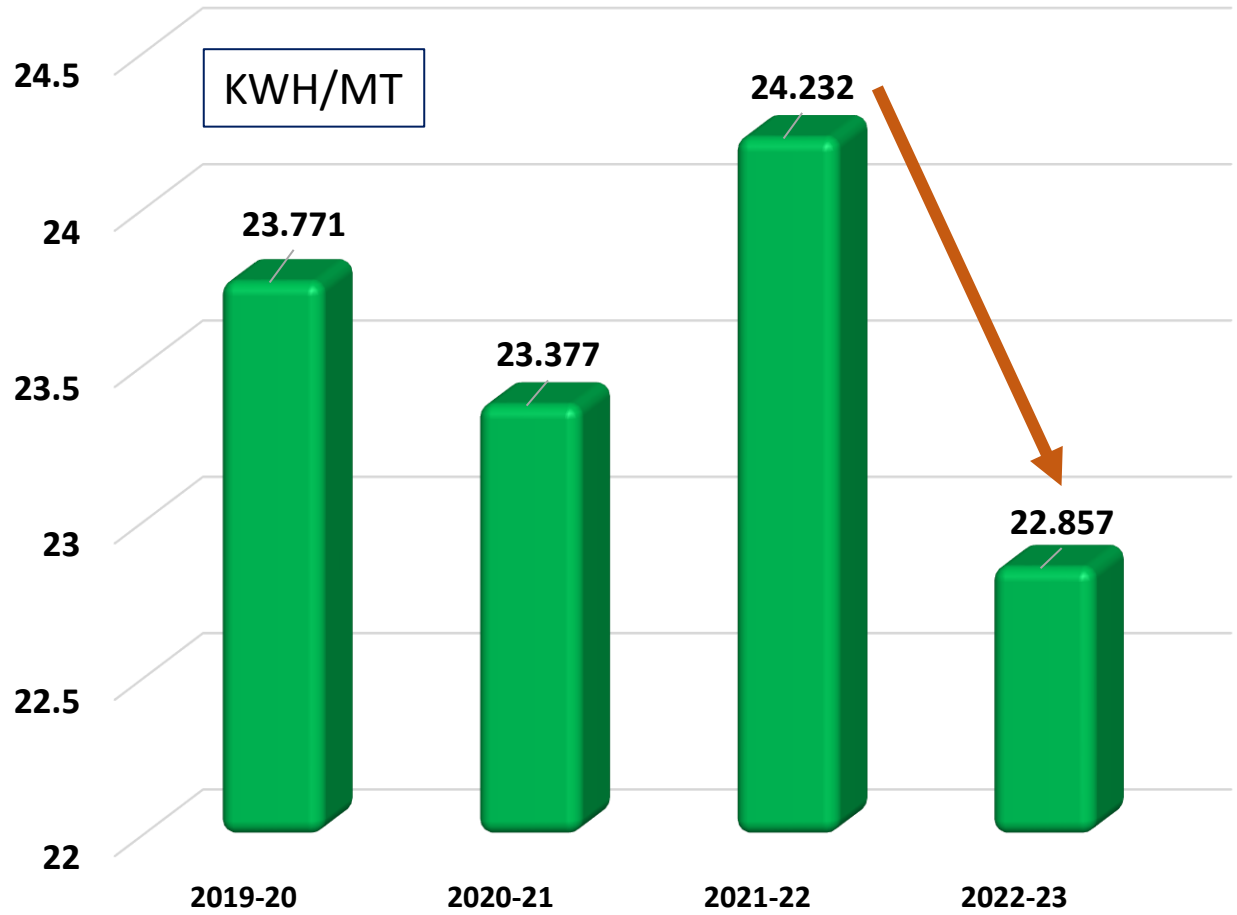
OPC

7.10 % Reduction



PPC

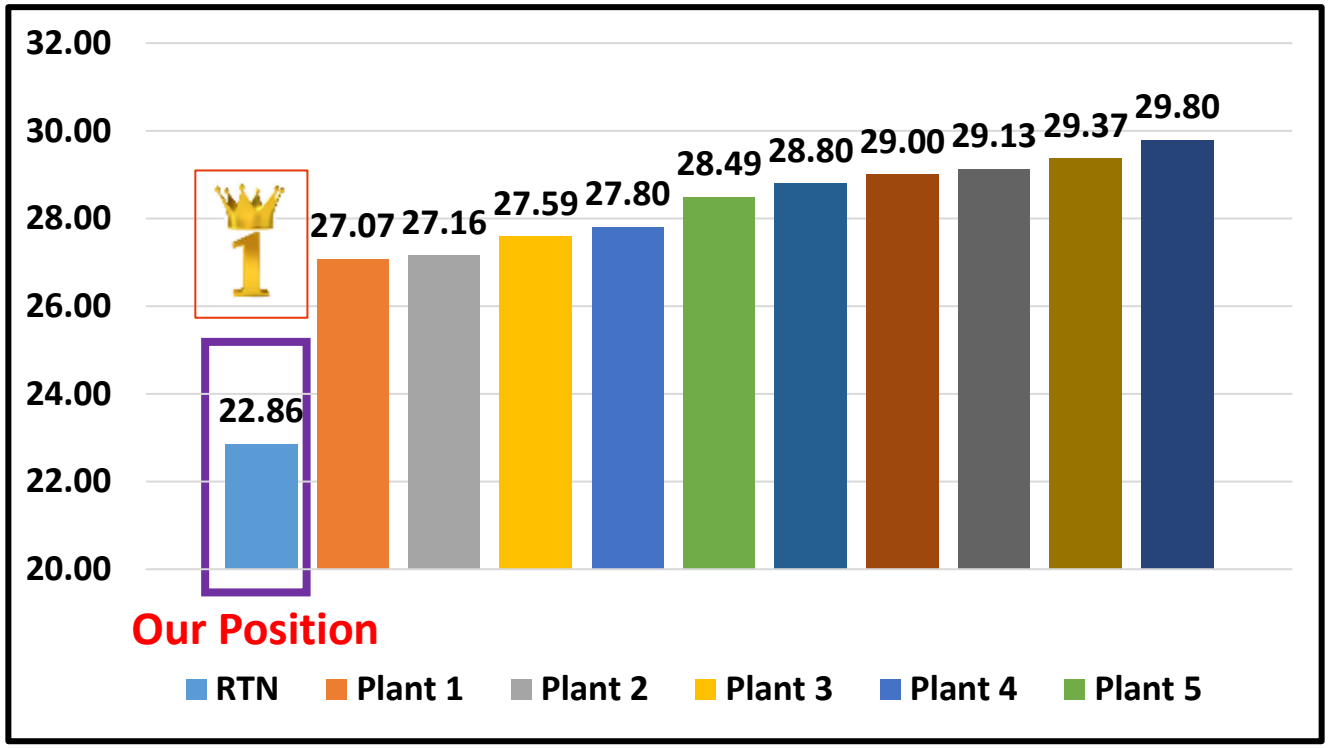
5.67 % Reduction



Integrity | Commitment | Passion | Seamlessness | Speed

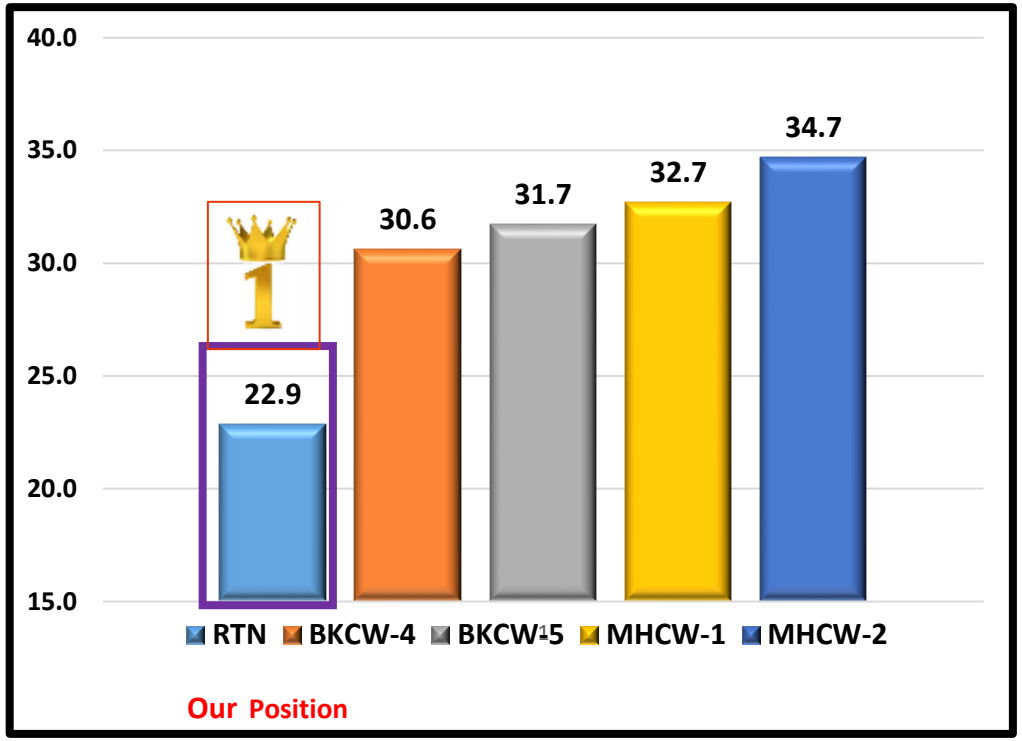
External & Internal Benchmarking-PPC SPC- 2022

External Benchmark



* Source – Energy Benchmarking for Indian Cement Industry **V6.0**

Internal Benchmark

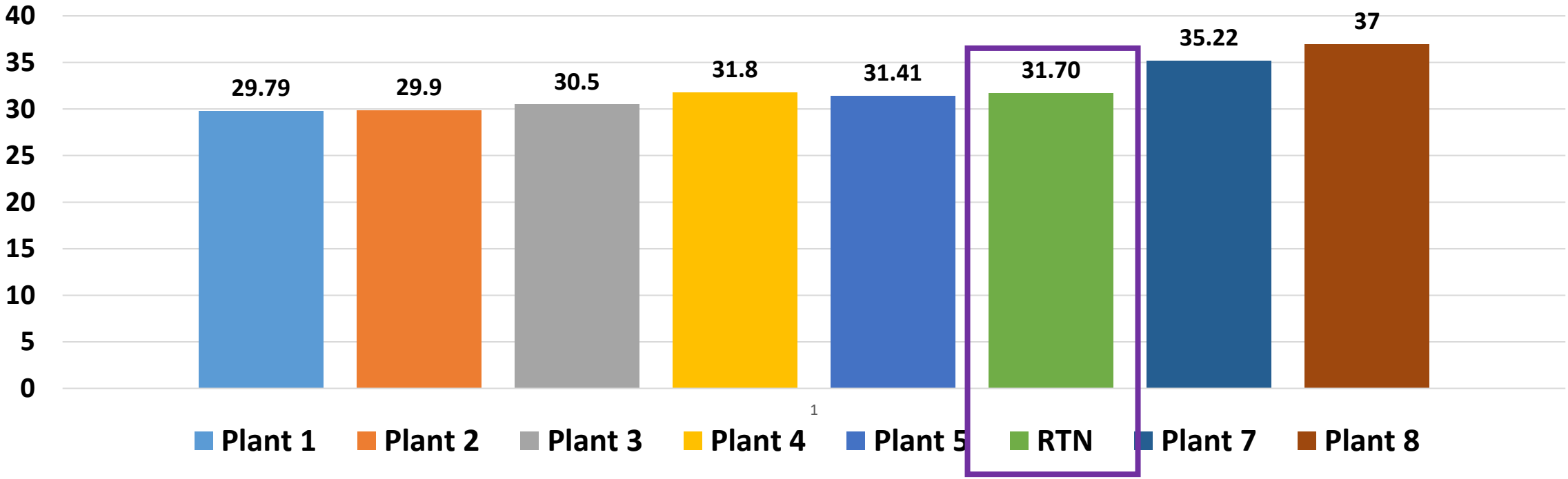


Internal bench mark

External Benchmarking-OPC

Benchmark in Specific Power -2022

Overall Grinding power- KWH/MT (Ball Mill – Close Circuit)



Our Position

* Source – Energy Benchmarking for Indian Cement Industry v6.0

List of Major Encon project Implemented in FY 2022-23

Sl No	Project Details	Investments (Rs.Lacs)	Savings (Rs.Lacs)	Payback (Yrs)
1	Increased VSI Bin Cap.	0	4.03	Immediate
2	Optimization of the compressors	0	7.30	Immediate
3	Increase Flyash % by optimize the Roto feeder –PID loop	0	0.45	Iimmediate
4	Conventional Blowers replacement with energy efficient blower (5 KW to 3.7 KW)	2.8	3.18	0.8
5	Installed VFD for Pneumatic Blowers	3.5	4.65	0.9
6	Implementation of the BLDC fans (60 No.s @0.17 Lacs)	6.5	3.0	2.1
7	Use of Exhaust Gas energy by using turbine	4.5	1.5	3.0
8	Upgradation of the separator Rotor	25.00	7.2	3.5
9	Replacement of mill liner with Low Lift	23 .00	5.8	4.0

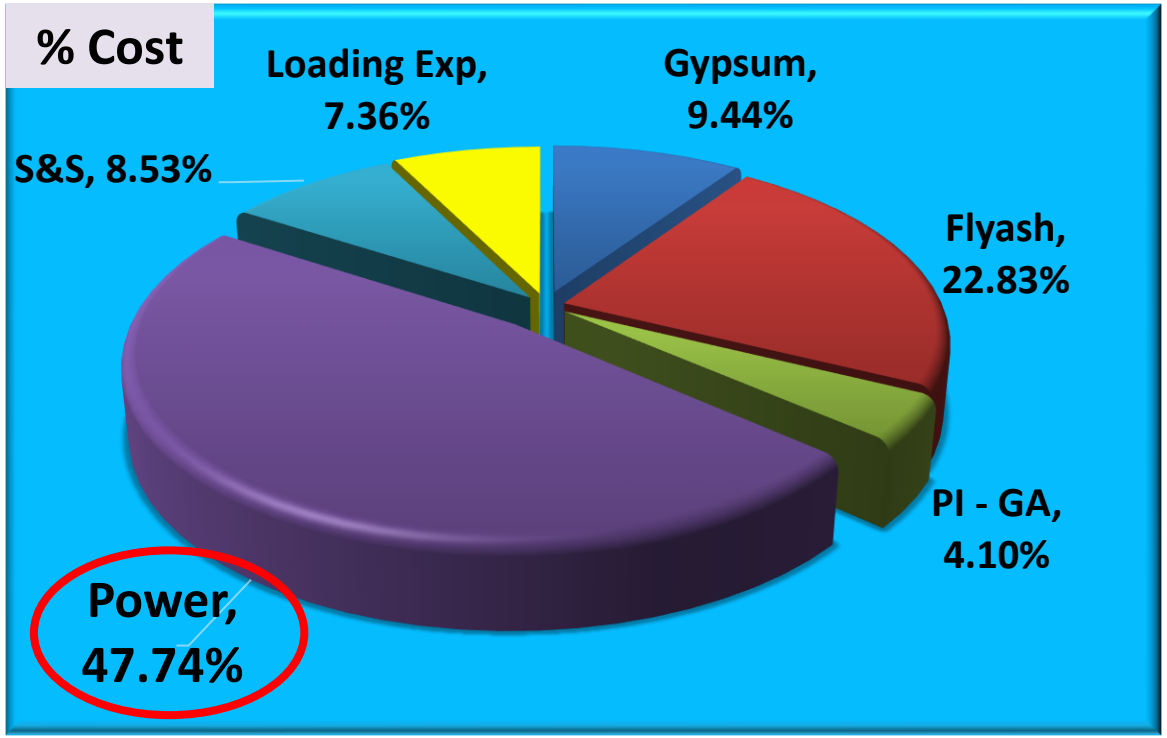
List of Major Encon project planned in FY 2023-24

Sl No	Project Details	Investments (Rs.Lacs)	Savings (Rs.Lacs)	Payback (Yrs)
1	Optimization of Grinding media charge based on dispatch plan	0.00	5.80	Immediate
2	Reduction in compressed air consumption	0.00	2.34	Immediate
3	Provide transparent sheets to utilize day lights	1.15	0.90	1.28
4	Increase usage of pond ash to 5%	1.50	8.00	0.19
5	LED lights in place of conventional lighting	1.75	1.19	1.90
6	Reduction in VSI Crusher Power by replacing with Energy efficient motors IE3.	7.50	5.16	1.45
7	8026 Clinker bin capacity increases from 100 MT to 150 MT.	3.50	3.40	1.00
8	False air ingress in to the system to be identified and arrested.	0.10	0.52	4.00
9	Air Driers Remote Start Stops along with Compressors	0.10	0.50	4.00
10	Saving through bulk dispatch 20 % of total dispatch instead of bags.	0.40	0.45	1.00

Key Challenge

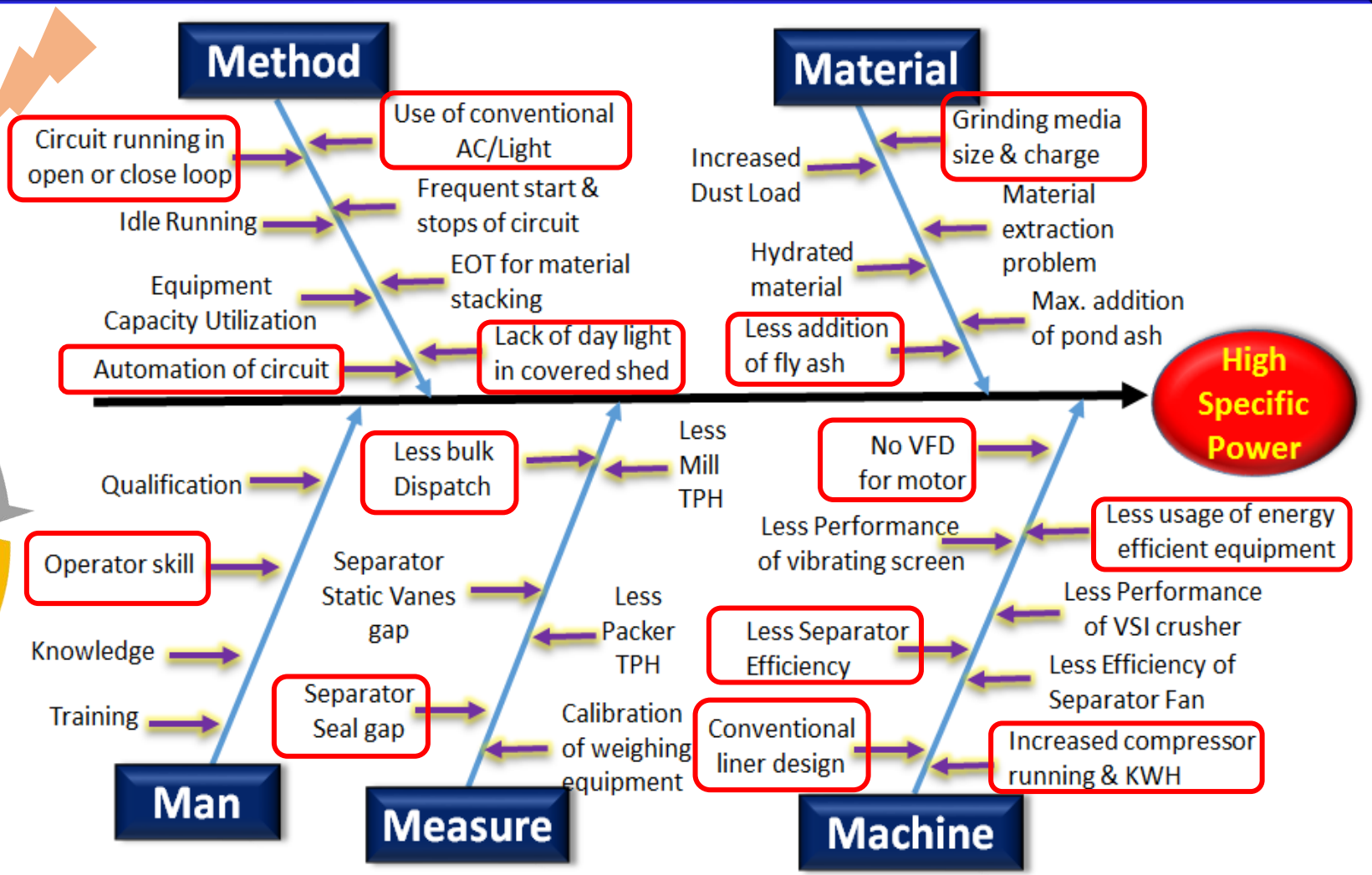
Key Challenge : High Specific Power – 30.32 KWH/MT in FY 19-20.

- 39 Yrs. old Plant & less energy efficient equipment.
- Unit has various CAPEX proposals: **Less ROI - Not feasible**
- To keep production cost lowest, unit **had only option** of executing **Smart innovative** improvements and modification in existing equipment.



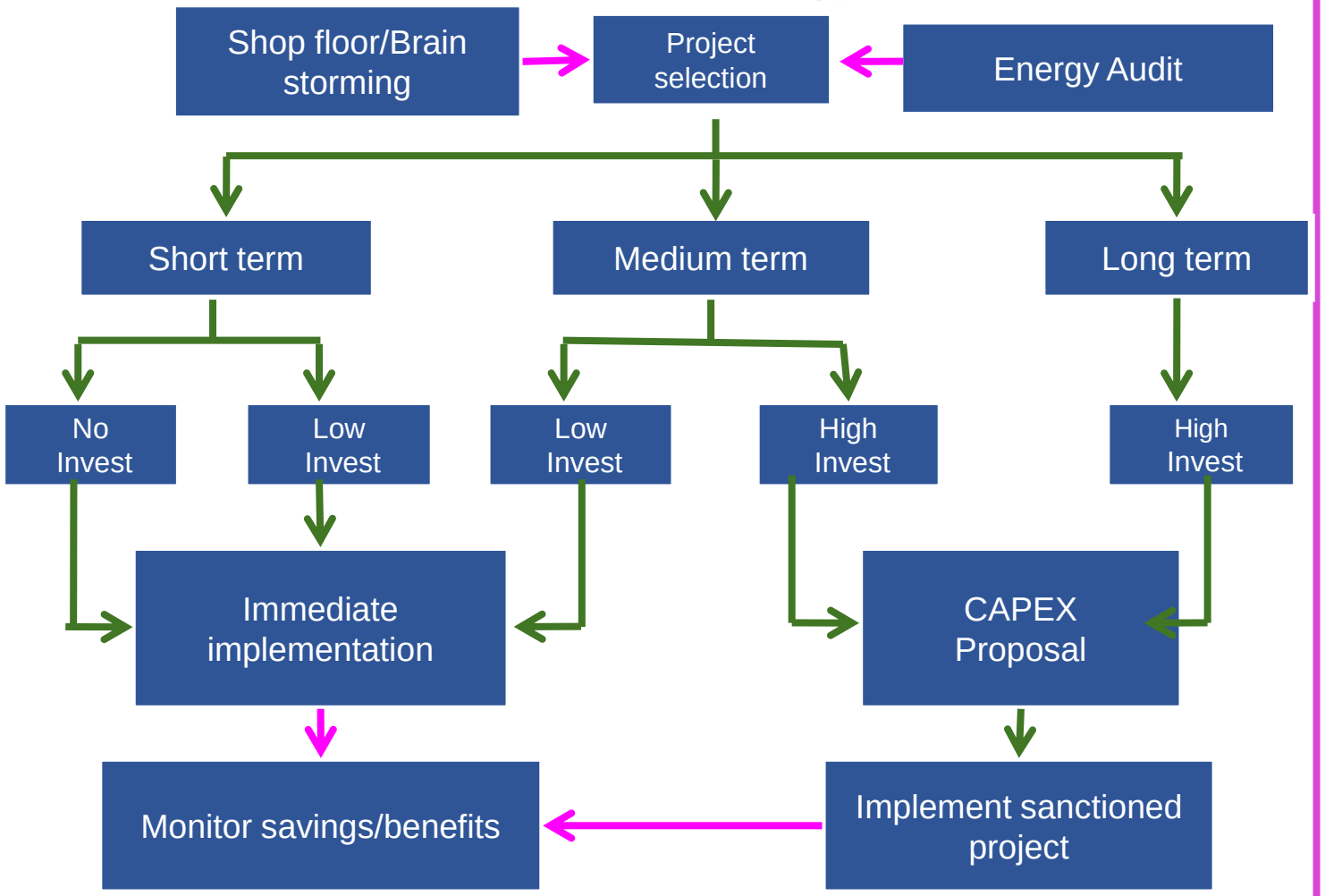
Explored Solution through Cause & Effect Diagram

Use of Analytical Tools & Techniques

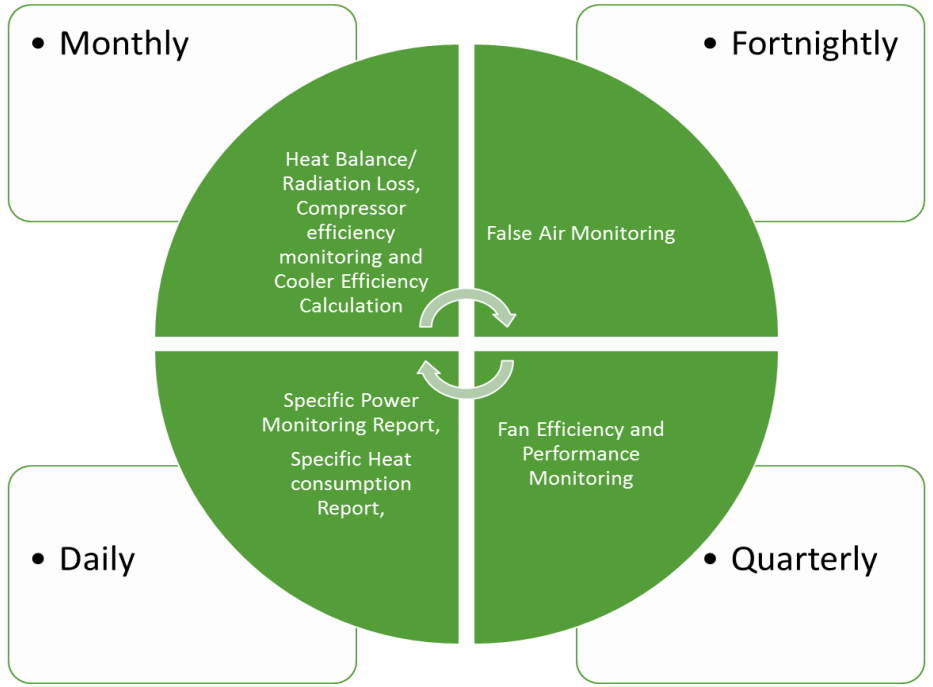


Energy Projects Implementation

Methodology



Equipment Efficiency Monitoring Schedule

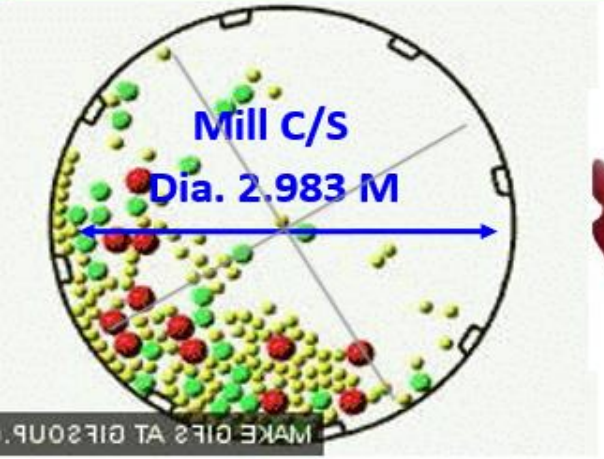


Integrity | Commitment | Passion | Seamlessness | Speed

Innovation : Ball Mill Area

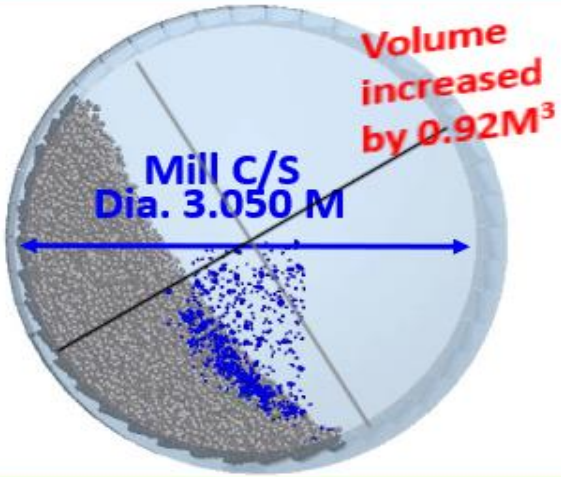
Adoption of Latest design Liner

BEFORE



- Existing liner less effective for -4mm clinker feed
- Blocked useful mill volume. (114mm thk. Liner)
- Bulky – Unwanted rotating mass & difficult to handle.

AFTER



- Latest Design Low lift (UVL – ABAB) liners highly effective for -4mm feed.
- Volume increased by 0.92 Cub. M.(101mm thk Liner)
- Light weight & easy to handle.

2. Grinding Media Optimization

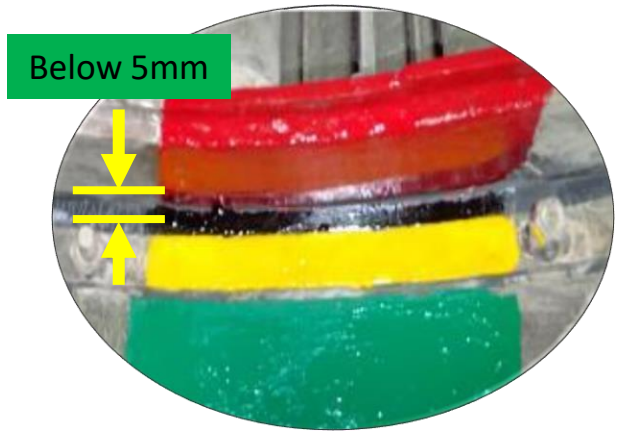
- Specific Surface increased from 23 to 28.50 M2/MT
- Mean piece weight decreased from 98 gms to 68 gms per piece.
- Charge decreased from 88 to 83%.

Benefit- Reduction in specific power consumption with above two actions - 1.05 KWH/MT .
Saving by Grinding media charge decreased & liner cost – Rs. 8.5 Lacs

Innovation : Separator Area

Increasing Separator Efficiency

Introduced Hard faced liner to retard wear rate & for optimum sealing.



Seal Gap Reduced to 3-5 mm, Residue on 45 mic from 22 to 18%

Newly Modified separator rotor installed.

Benefit- Efficiency increased from 67 to 76% & Power Saving – 0.11 KWH/MT.

Innovation : Exhaust Air Wind Turbine for Green Energy regeneration

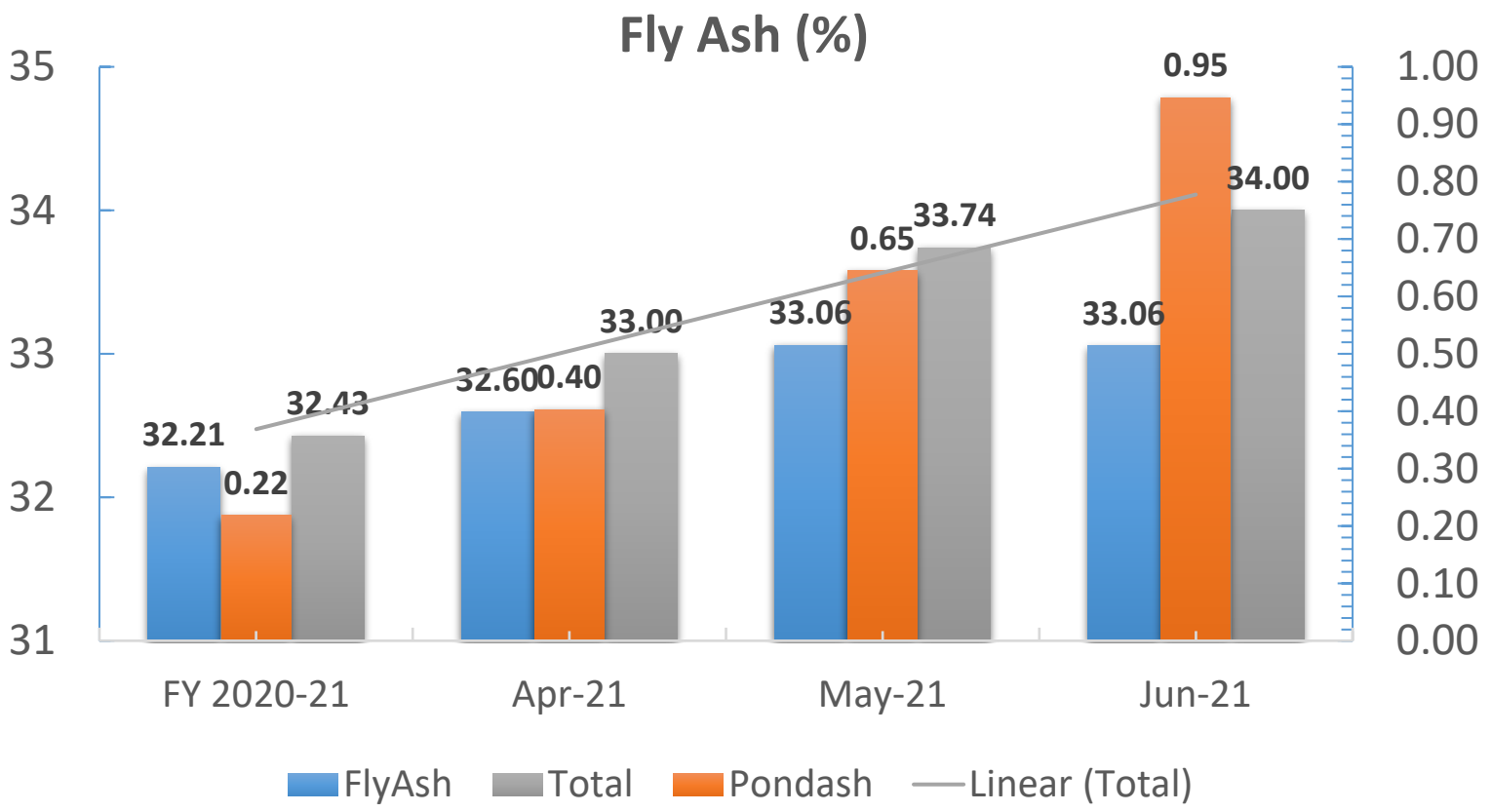
Exhaust fan at Bag house

During Installation - UE 22 9 blade spherodynamic 3 KW Wind turbine

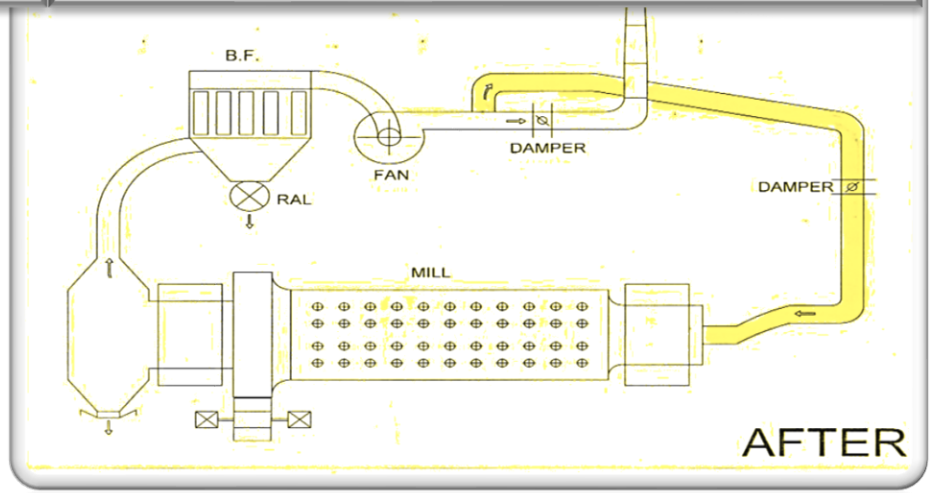
After commissioning. Power Saving 2.7 KWH

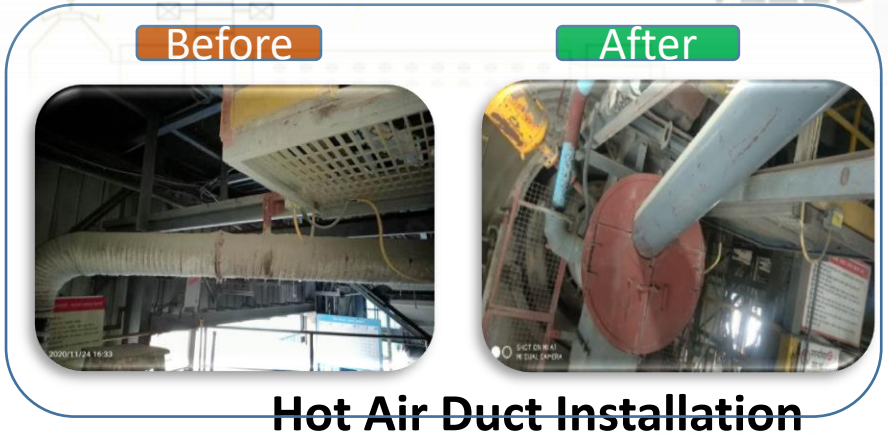
Hot air duct installed from Mill Vent fan outlet to Ball Mill inlet

Saving achieved due to productivity improvement-10.68 Lacs



Temperature rise from 76 to 82 DEG.





Hot Air Duct Installation

Use of Alternate Fuel for maintaining Mill Temperature

Use of alternate fuel : Innovative use of abundantly available free of cost coconut shell in Konkan region is utilised to heat the mill vent air to increase productivity.

Provision of VFD for Pneumatic blower

Innovation 1. VFD for Air Lift Blower.

Before	After
• Fixed speed blower drawing 75KW power. • Draws same higher power at different production level.	VFD : Reduced RPM for OPC production. 

Result: Reduction in specific power consumption by 0.12KWH/MT

Saving Data and details

Product	TPH	Load in kW	VFD RPM
OPC	52	55	85 to 90%
PPC	75	63	100%
Total kWH saving		7.6	
Mill Run Hrs/Annum	300	54720	
Total Saving in RS @8.50		4.65 Lacs	

Benefit : Reduction in specific power consumption - 0.12 KWH/MT.

Reduction in VSI Run Hrs

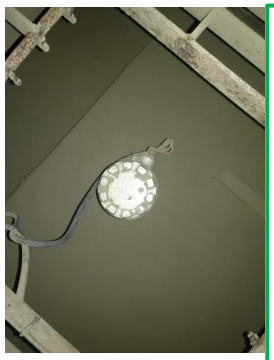
Productivity through Smart Move : Capacity enhancement of Load cell Bin

Increased the discharge capacity of Bin from 62 to 75 Ton

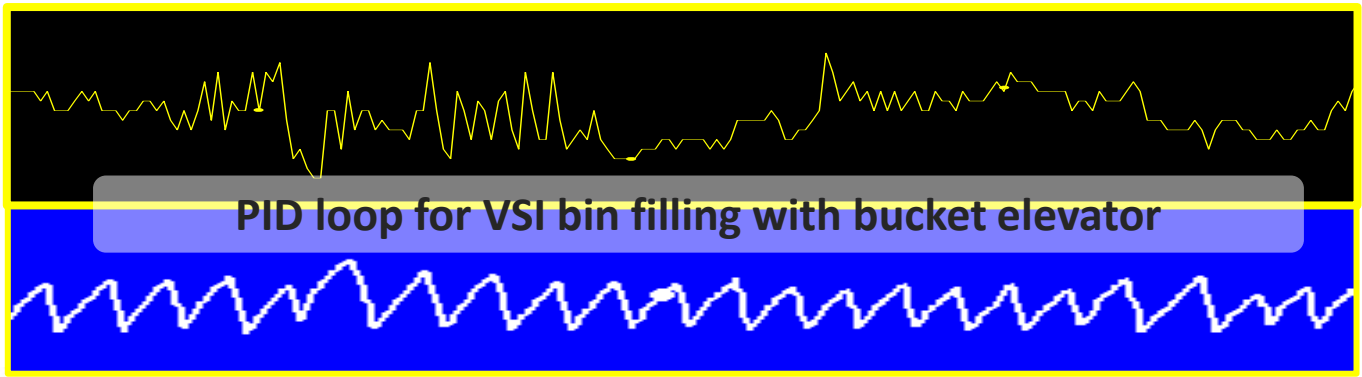
Removal of coating in VSI bin

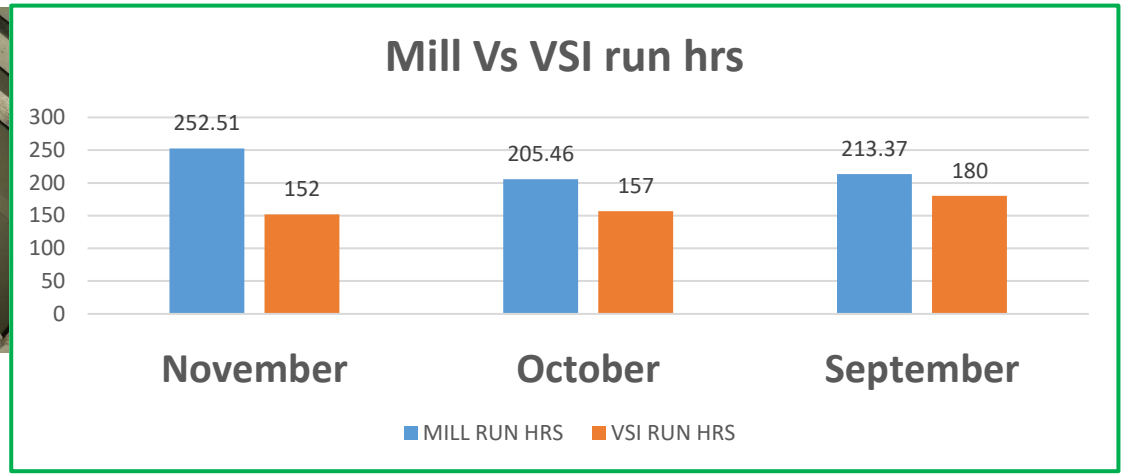
Calibration of Bin with standard weight

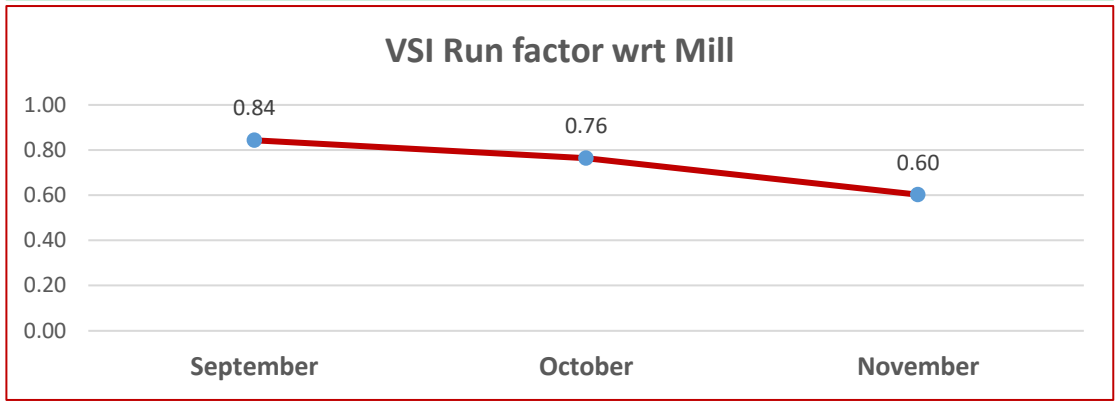
Material flow switch provided for Auto closing of Gate operation



Additional high level sensor provided for Bin high level







Benefit Reduction in VSI Run Hrs by 14 % & Reduction in specific power - 0.19 KWH/MT.

Integrity | Commitment | Passion | Seamlessness | Speed

Improvement in Utility Area

Innovation : Hyva Blower for fly ash Unloading.

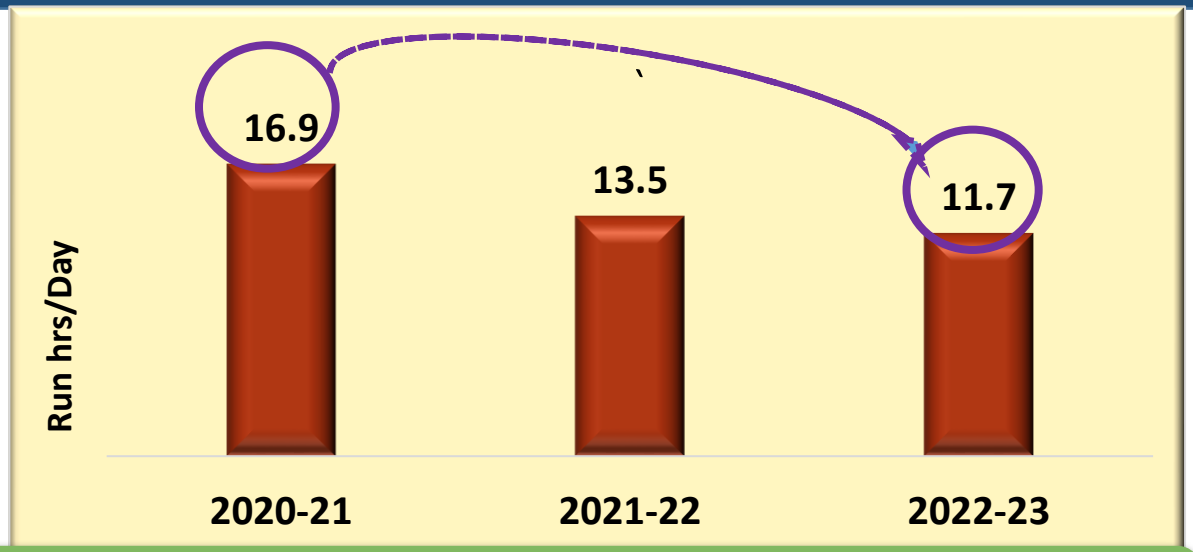
BEFORE	AFTER
	
Low pressure reciprocating compressor (80KW) for unloading of fly ash.	Innovative Low pressure compressor (45 Kw) from M/S Hyva.

Implementation of APFC in plant & Jetty, to avoid manual intervention and maintain PF to the unity

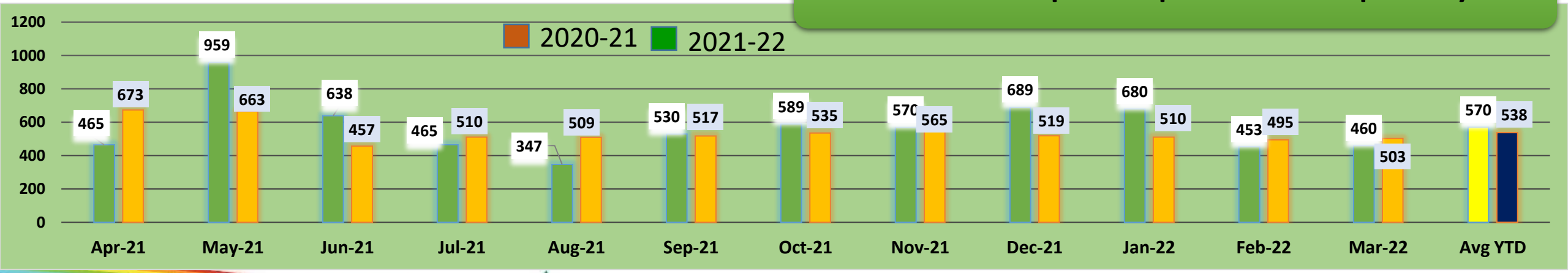
Benefit- Reduction in specific power consumption - 0.29 KWH/MT.

Utility consumption Optimisation

Location	CP-1 22 KW	CP-2 45 KW	CP-3 45 KW
Packing (A)	🟢	🔴	🔴
Grinding (B)	🔴	🟢	🔴
Clinker feeding (C)	🔴	🟢	🔴
A + B	🔴	🟢	🔴
A + C	🔴	🟢	🔴
B + C	🔴	🟢	🟢
A + B + C	🔴	🟢	🟢



Reduction in compressor power consumption by 31%



Benefit : Reduction in specific power consumption - 0.19 KWH/MT.

Cement Mill area

KAIZEN 1	KAIZEN 2	KAIZEN 3	KAIZEN 4	KAIZEN 5
Smart Operation philosophy: Different separator fan speed for OPC (<810 RPM) Material to air ratio has been increased from 1.2 to 1.5 kg/m3.	Reducing nos. of operational air slide blowers in dry season – Winter & Summer.	Conversion of Delta connected motor in Star. **Replacement of old motors with energy efficient motors** 	Logic for intermittent operation of mill HT motor space heater. 	Single command to start all groups mill. 
Saving – 0.08 KWH/MT	Saving – 0.02 KWH/MT	Saving – 0.05 KWH/MT	Saving – 0.03 KWH/MT	Saving – 0.02 KWH/MT

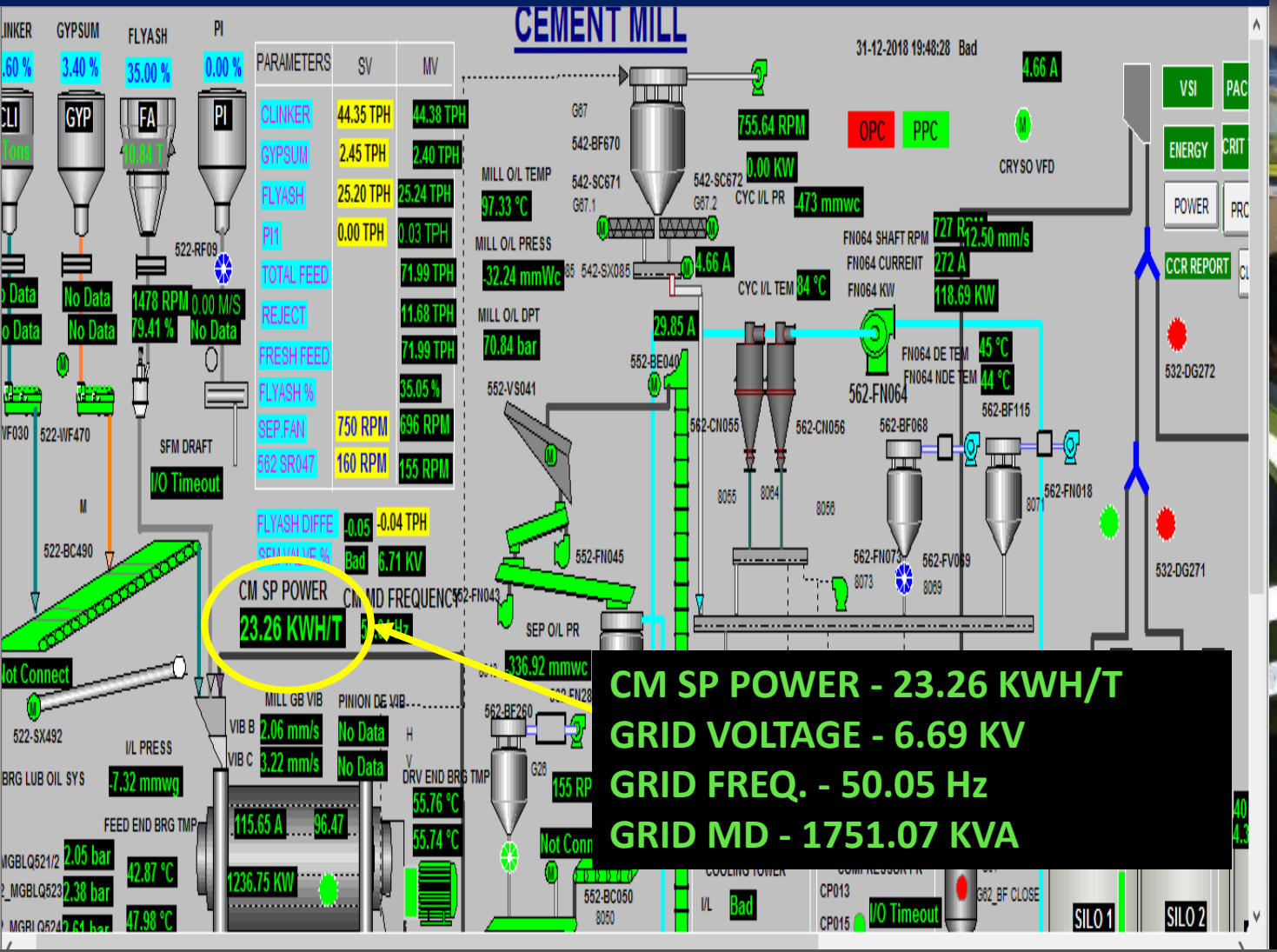
Packing Plant & Material Handling

KAIZEN 6	KAIZEN 7	KAIZEN 8	KAIZEN 9	KAIZEN 10
Smart control: Interlocking of fans and compressor with packer to minimize idle running. **Saving – 0.04 KWH/MT**	**Enhanced Productivity:** Clubbing of common MRP wise trucks. **Saving – 0.04 KWH/MT**	**Seamless Working:** Encourage bulk loading with Logistics & Marketing Support. **Saving – 0.02 KWH/MT**	**Optimization:** Better control on cycle time of dumpers for clinker transportation to reduce idle running of the circuit **Saving – 0.02 KWH/MT**	**Capacity utilization:** Online weighing system with redundant belt weigher to maximize capacity utilization of clinker silo extraction system. **Saving – 0.03 KWH/MT**

Benefit : Reduction in specific power consumption - 0.15 KWH/MT.

A Activity :Digitization & Guiding Operator

Digitization (IDC): Developed Real Time Dashboard for Specific Power through PI System & Displayed in CCR Screen



Guiding Operator: For Monitoring & Action

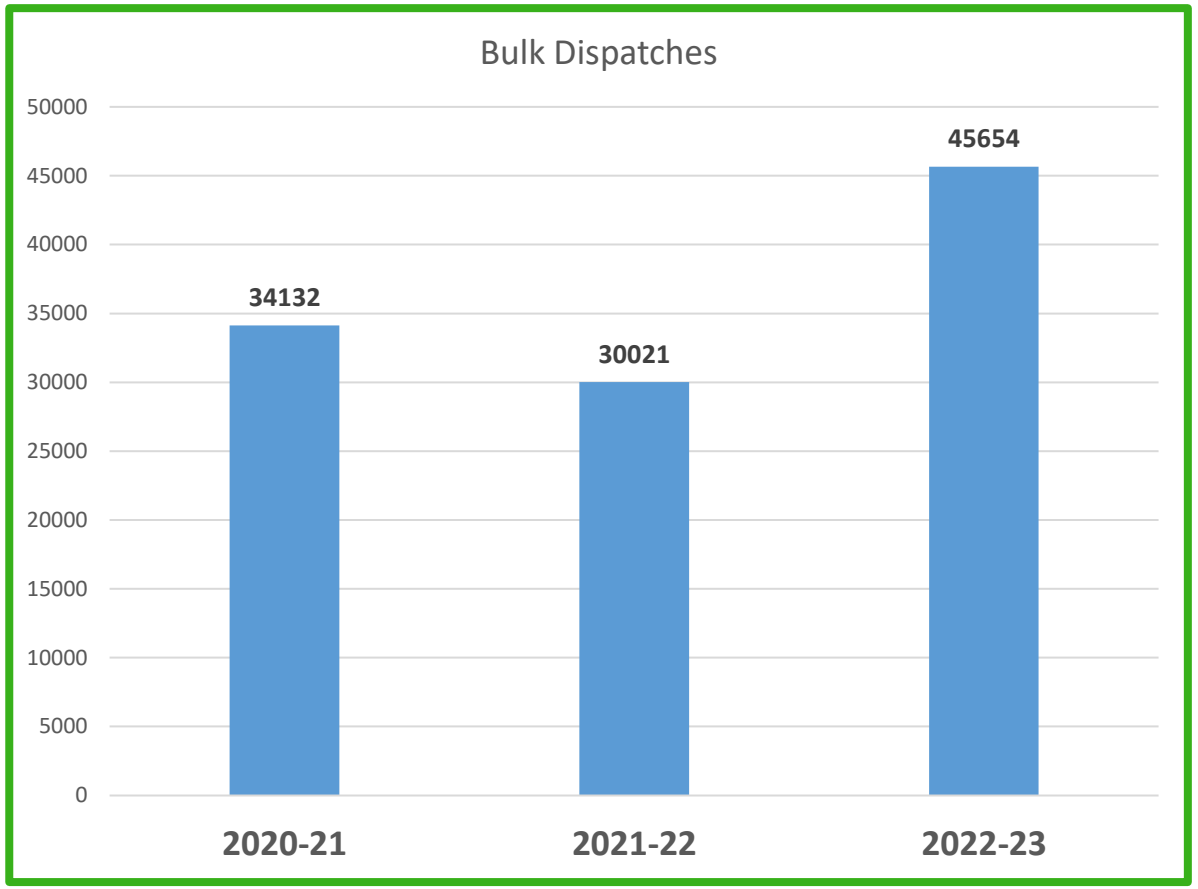
RHS and Green Energy Initiatives

Rain Water harvesting installed in Plant & Jetty to save power for water Re generation

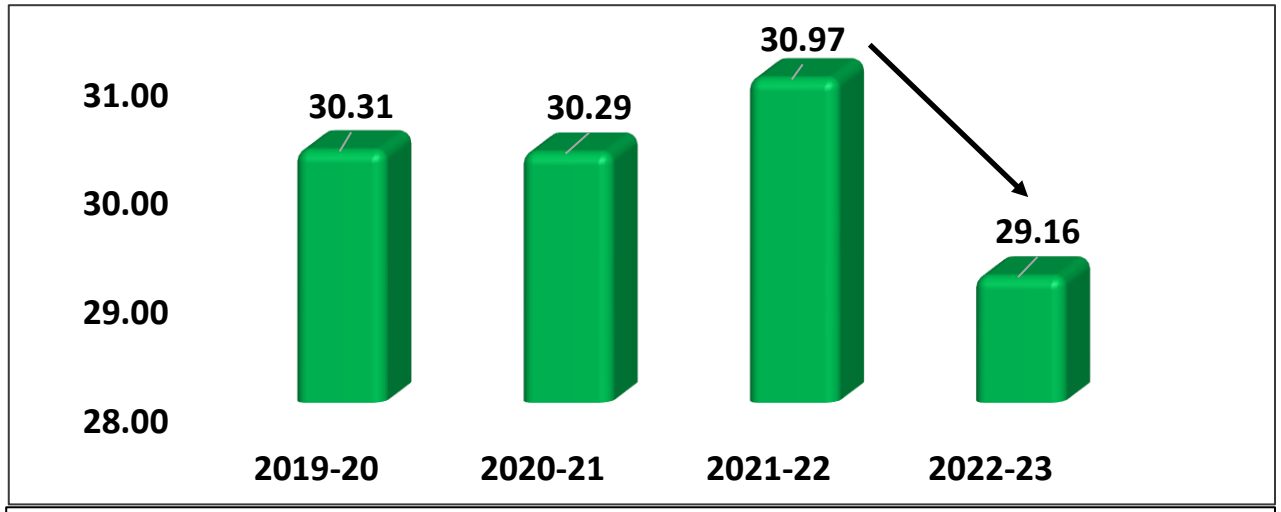
Entire Jetty is running on MSEDCL green power

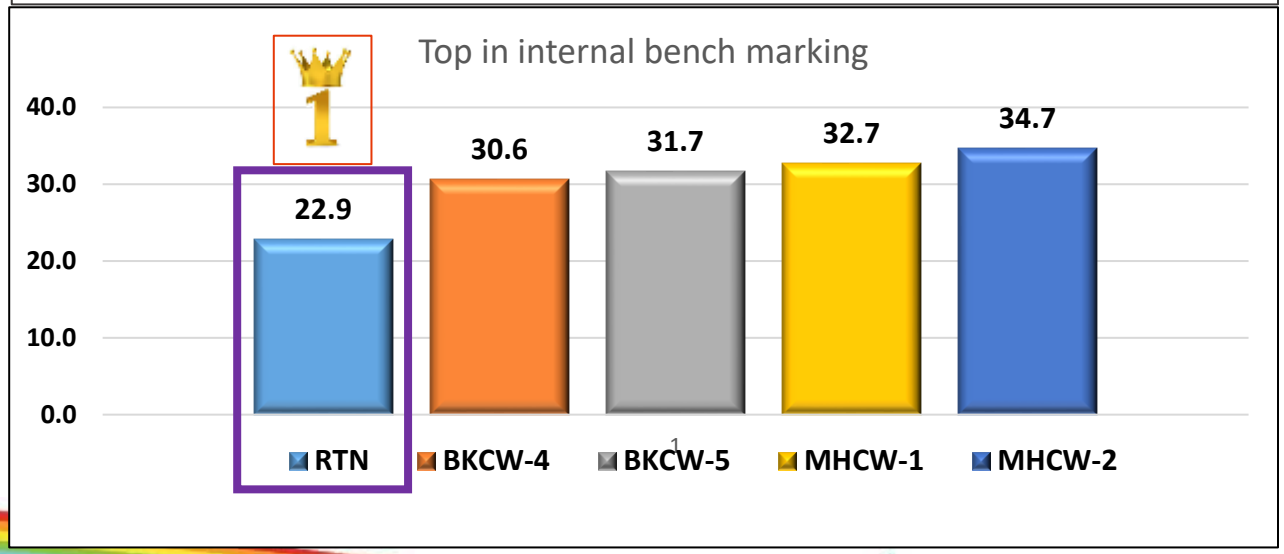
Best Practices in Green Supply Chain

- Reverse Logistic in Fly ash Bulker
- Encourages for Bulk dispatches
- Reduction in TAT



Impact : Cost & Productivity





Reduction in Specific power consumption 1.81 KWH/Ton

Saving : Power + Productivity

Rs. 104.19 Lacs

Total Saving

Rs. 197.19 Lacs

Saving due to initiatives in reduction in utility power consumption

Saving by In-house refurbishment of rotor

Rs. 93.00 Lacs

Strategies Adopted for Employee Involvement & Team Work

Brainstorming meeting on Energy Conservation

- Brain Storming Sessions
- KIP Visits / Participation in Seminars
- External / Internal trainings
- Team competition
- Energy conservation Week
- Awareness creating to all Employee Families
- Rewarding & Recognition

Best Encon Award

Energy saving award

Rewarding best EnCon Suggession

Integrity | Commitment | Passion | Seamlessness | Speed

Excellence Through Systems


CII
Confederation of Indian Industry
125 Years - Since 1895

21st National Award for
Excellence in Energy Management 2020

This is to certify that

UltraTech Cement Limited, Ratnagiri Cement Works

has been recognized as

"Energy Efficient Unit"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 25 - 28 August 2020.

K S Venkatagiri

Ravichandran Purushothaman

CII ENERGY EXCELLENCE AWARD

- CII AWARD 2020
- REPRISM 2019
- WCM Silver 2017
- WCM Bronze 2011
- ISO 27001 2010
- OHSAS18001 2004
- ISO 14001 2002
- ISO 9001 2000

Integrity | Commitment | Passion | Seamlessness | Speed

Sustainability

Sustainability is the ability to satisfy needs of the present without adversely affecting the ability to satisfy the needs of future.

Journey Continues.....

ADITYA BIRLA GROUP

Team Ratnagiri Committed to sustainable Future !

Thank You