

Zuari Cement Limited  
(Solapur Grinding Unit)

22nd National Award for Excellence in  
Energy Management 2021



# Zuari Cement Limited - (Solapur Grinding Unit)

## Hearty Welcome to All 22nd National Award for Excellence in Energy Management 2021



**Mr. Deepak Kakkar**  
Plant Head



**Mr. Ramachandra Raju**  
HOD Production



**Mr. Kamalakar**  
HOD E&I

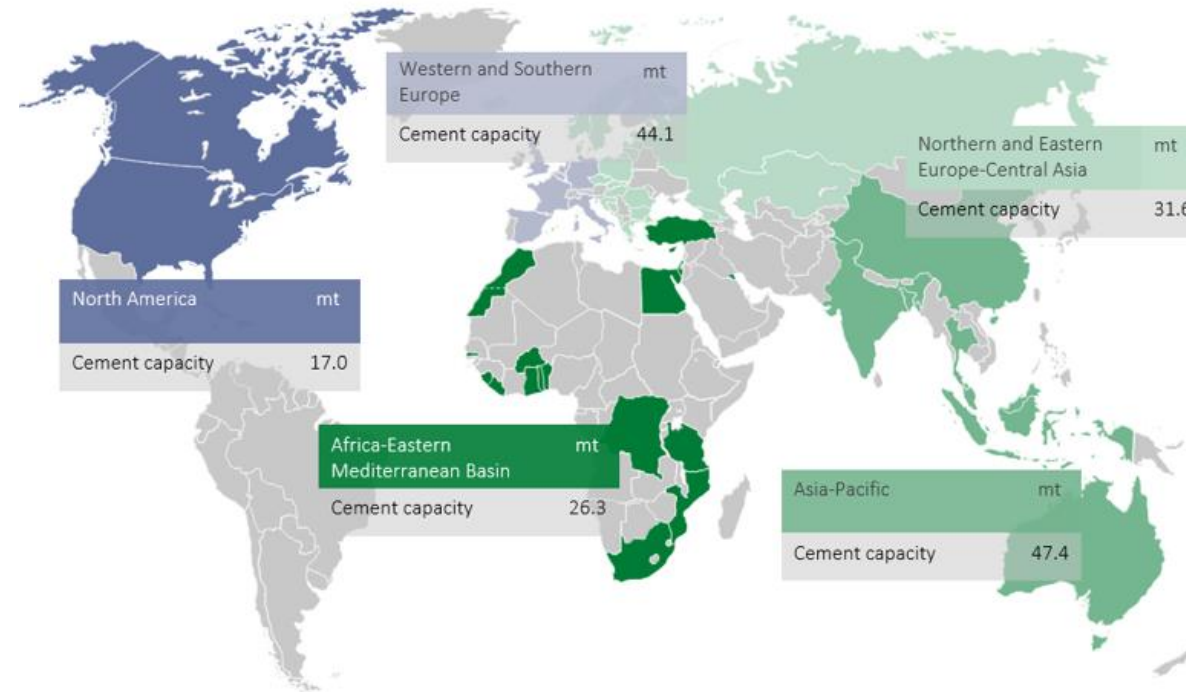


# Brief introduction - HeidelbergCement Group

<b>Employees</b>	58,000
<b>Core business</b>	Cement, aggregates, ready-mixed concrete, and asphalt
<b>Production sites*</b>	<ul style="list-style-type: none"> <li>3,100 in around 60 countries</li> <li>163 cement</li> <li>638 sand, gravel, and crushed rock</li> <li>1,786 ready-mixed concrete</li> <li>111 asphalt</li> </ul>
<b>Cement capacity*</b>	196 million tonnes
<b>Aggregates reserves + resources*</b>	20 billion tonnes



Cement capacity of 184 mt (incl. joint ventures)

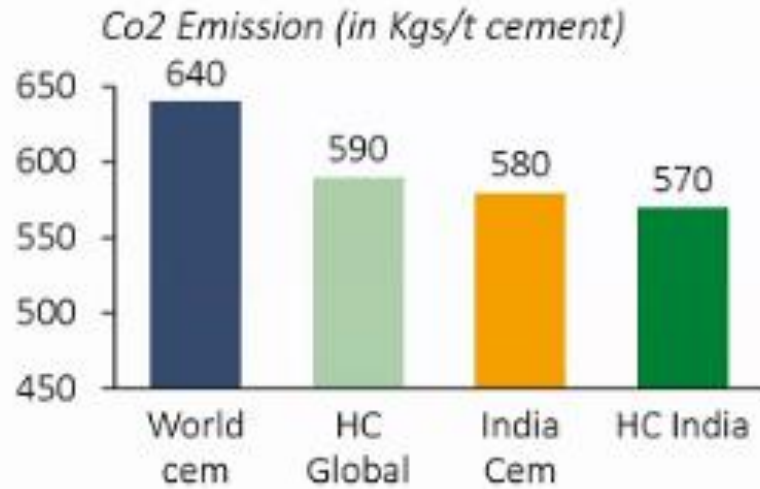


**Largest vertically integrated Building material producer in the world**

# Brief introduction – HeidelbergCement India

HC INDIA BEING ENVIRONMENTALLY RESPONSIBLE

## Environment Footprint




1500+ trees  
Geo-tagged



6.5 MW - Green  
23 MW WHRS in construction



40% - WHRS (Max.)  
5.5 MW – Solar (Upcoming)



Green Power  
70% - Amsa  
85% - CGU




Alternate Fuels -  
Increase in TSR to  
6.2%



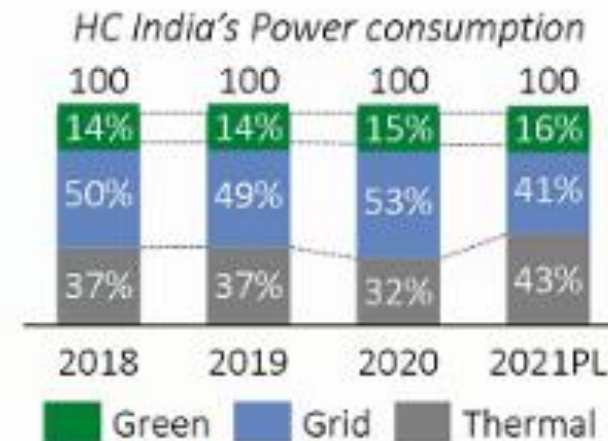
1.2 °C – Plants  
cooler than 1 Km  
away



5.2x Water Positive



HC mines – a home  
to 117 bird species



# Zuari Cement Limited – Unit Solapur

## Solapur Plant

Vil. Auj (Aherwadi), PO. Shingadgaon, Tal. South Solapur Dist. Solapur, Maharashtra



**Solapur Plant commenced operating in 2015**



# Zuari Cement Limited – Unit Solapur

- Solapur Plant having Cement Grinding and Packing facility with installed capacity of 0.95 MTPA was set up in the vicinity of NTPC super Thermal Power Project with a view to manufacture PPC by using the waste Fly Ash from NTPC, at Village: Auj, District: Solapur, Maharashtra, which came in production during 2015.
- Solapur Grinding Unit is having art of technology like High Efficiency motors, compressors, MV drives, VFD,. And adopting/implementing new technology like Internet of things, Equipment health checking, Procurement through E-auctions paper less.
- We are going to upgrade of packers & we will be Installing wagon loading system for fast Cement loading and Over head electrification for avoiding Railway diesel engine.



Major Equipment	Installed Capacity	Make
Cement Mill (Ball Mill)	110 TPH	FLSmidth
Packer – 2 Nos.	2 * 180 TPH	FLSmidth
Wagon Tippler	1200 TPH	Elecon
Truck Loading Machine	3 * 120 TPH	EEL/ FLS





# IMPACT OF COVID-19

## ❖ Impact on Annual Production:

We achieved 495.3KT of Production against Plan 601.422KT due to Covid-19.  
Production Reduced by 17.64%.

## ❖ Impact on Annual Specific power:

Auxiliary power increased due to low production.  
Increase of annual power consumption by 6.43%.

## To mitigate the above problem, following measures has been taken:

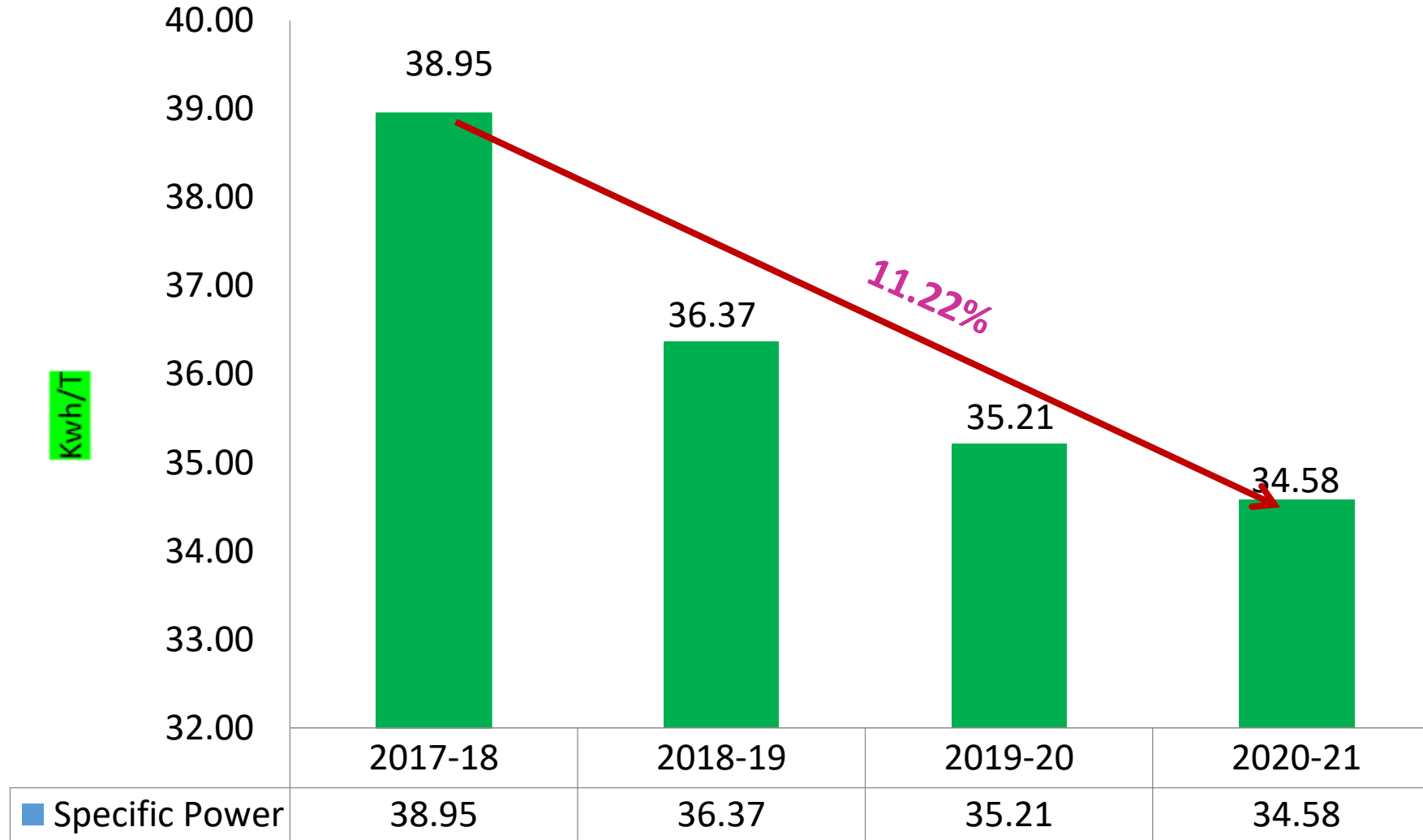
Rescheduled the production plan to improve the Productivity as well as energy.  
Steps taken to stop idle running of equipment and reduction in power consumption.



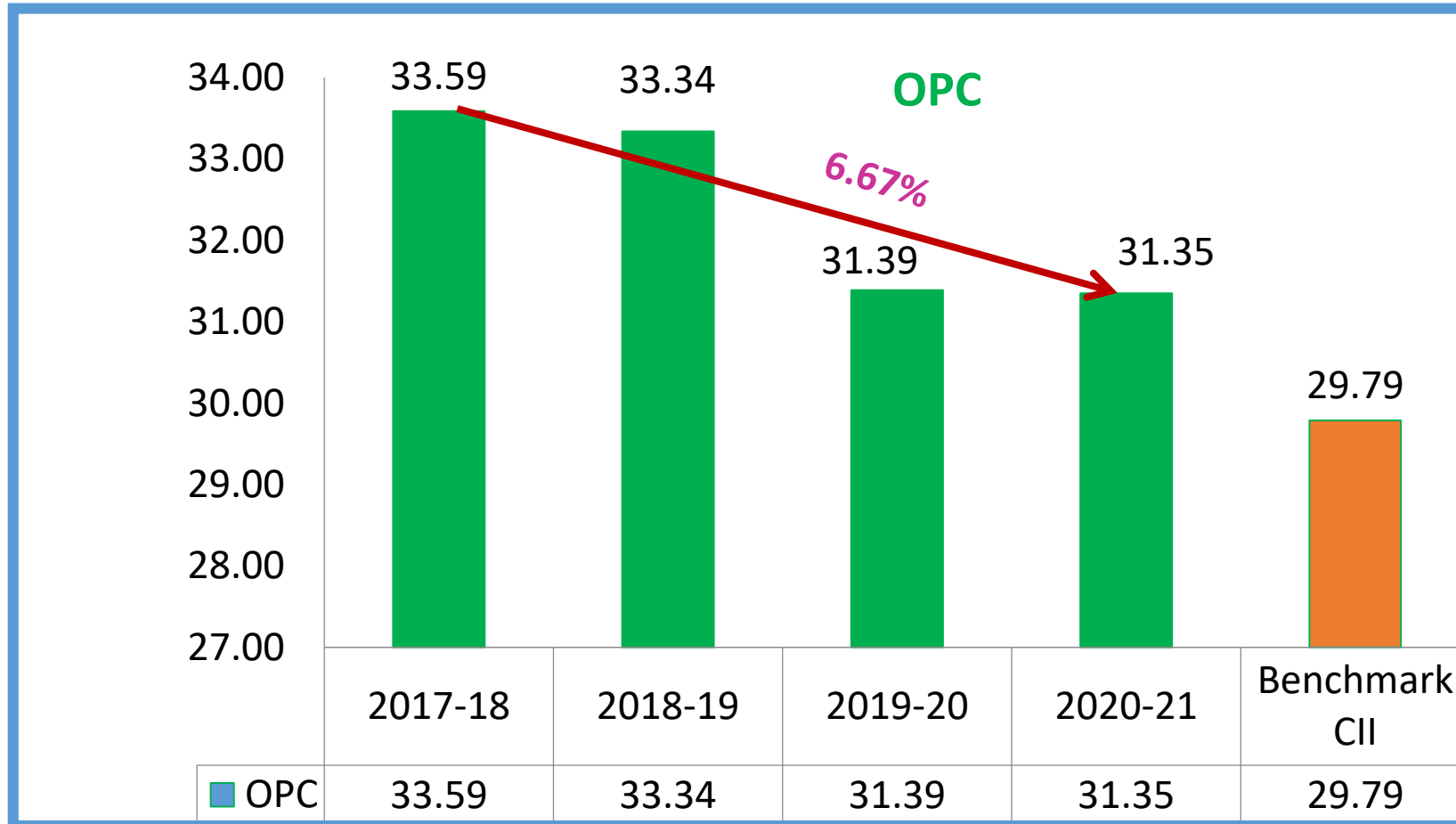


# Overall Specific Power Consumption Kwh/T

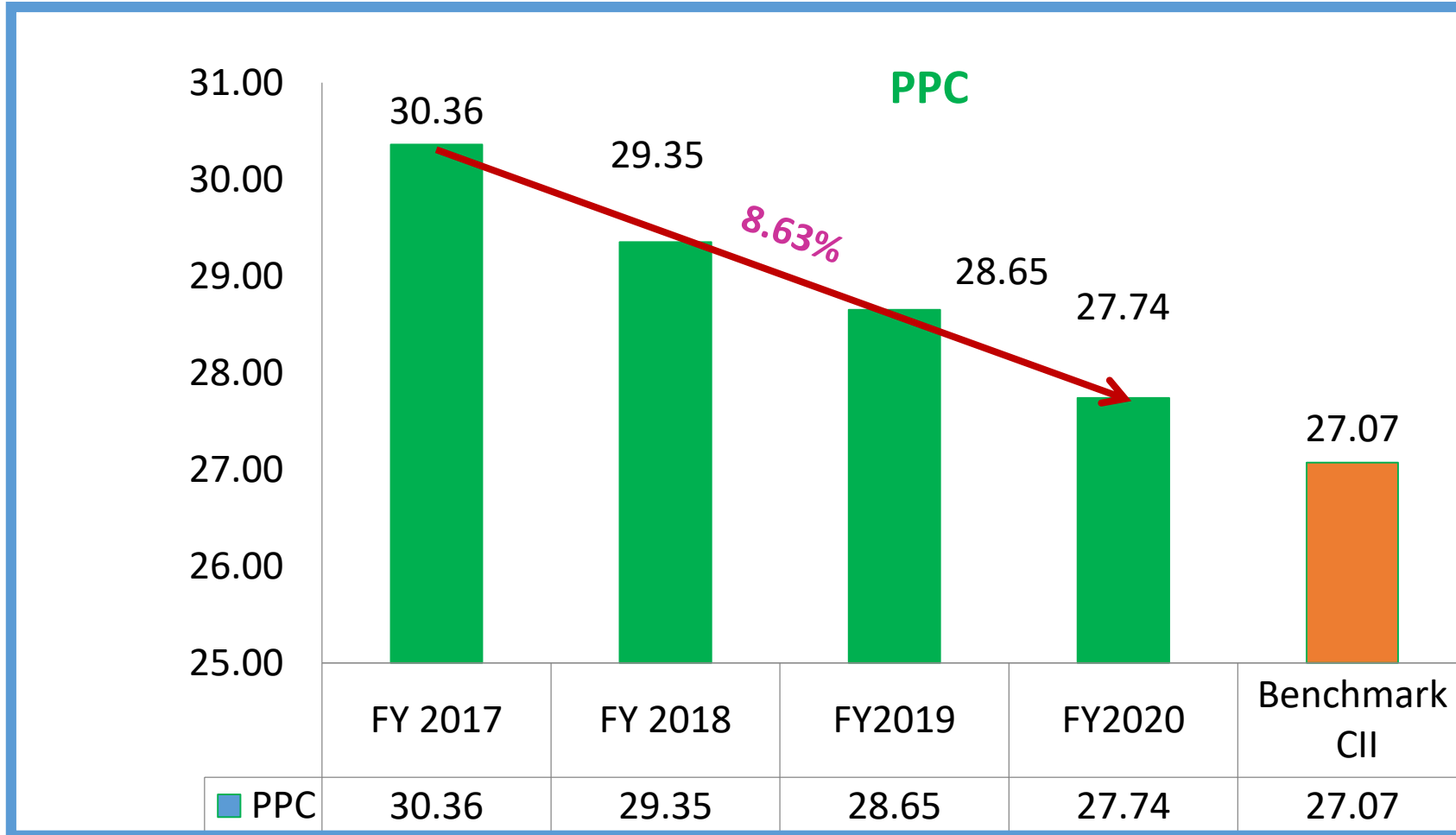
## Specific Power



# Specific Energy Consumption ( OPC)



# Specific Energy Consumption ( PPC)



# Reason for Specific Energy reduction over last three years

- ❖ Process Optimization
- ❖ Timely grinding media regradation /Sorting
- ❖ Two spillage conveyors removed by modified the vent lines & discharge chutes.
- ❖ Two screw conveyors stopped in Wagon tippler BH based on the Baghouse hopper level by providing interlock.
- ❖ Most of the bag filters purging operation changed from timer mode to DP mode.
- ❖ One Airslide blower permanently stopped by modification of airslide airline ducts.
- ❖ Mill Water spray system stopped by process optimization
- ❖ System pressure drop reduced by providing air blaster in horizontal duct from Separator fan to Cyclones where the material is accumulated.
- ❖ Flyash conveying blower &FK pump stopped permanently by providing airslide from Flyash silo bin to Mill outlet.
- ❖ 9numbers auto drain system provided for compressed air receiver tanks
- ❖ Compressor leakage reduced to 28%
- ❖ System false air reduced
- ❖ Replacement of conventional lights by LEDs.
- ❖ Motion sensors provided for plant & offices



# Road map to achieve the Benchmark

Target - 27.07  
U/T of PPC

OHE (Over head Electrification) installation

6

5

Installation of Cement Wagon loading

4

Increase the Blended Cement sales

3

Packers upgradation from single discharge to double discharge

2

5MW Solapr Plant in  
13 acres land

1

Flyash compressor replace from HP to LP

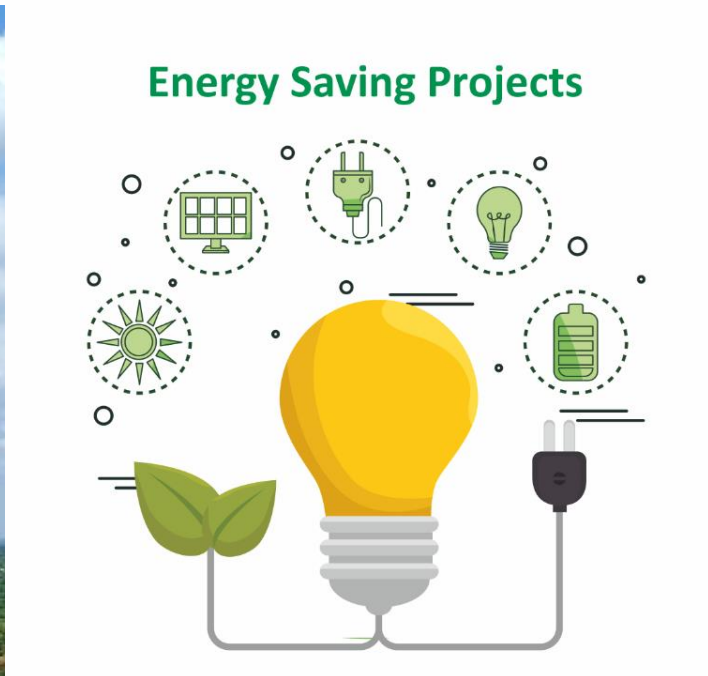
Present 27.74  
U/T of PPC



# List of Encon projects planned in FY2021-22

- ❖ Fly ash Unloading compressor replace from HP to LP.
- ❖ OHE (Over head Electrification) installation.
- ❖ FLSmidth Packers upgradation from single discharge to double discharge
- ❖ Installation of Cement Wagon loading
- ❖ Installation of 5MW Solar power park in 13 acres of land
- ❖ Installation of 4VFDs in Packing Plant for avoiding damper losses.





# List of Energy Saving Projects last 3 years

YEAR	No of Energy Saving Projects	Investment ( INR Million)	Electrical Saving ( Million Kwh)	Saving (INR Million)	Impact on SEC (Kwh/T of Cement)
FY 2018-19	6	0.112	0.035	0.281	0.07Kwh/T
FY2019-20	11	0.514	0.147	1.176	0.27Kwh/T
FY2020-21	6	0.51	0.614	4.91	1.50Kwh/T
<b>Total</b>	<b>23</b>	<b>1.132</b>	<b>0.796</b>	<b>6.367</b>	<b>1.84Kwh/T</b>





# Innovative Project – Replacement of FK pump by air slide

## ❖ Specific Power consumption reduction in PPC grinding:

### Observation :

- ❖ Flyash had been conveying/pumping into the system through FK pump and blower which were taking high power consumption. Appox: 200 KWH
- ❖ Dedusting load also increasing

### Optimisation:

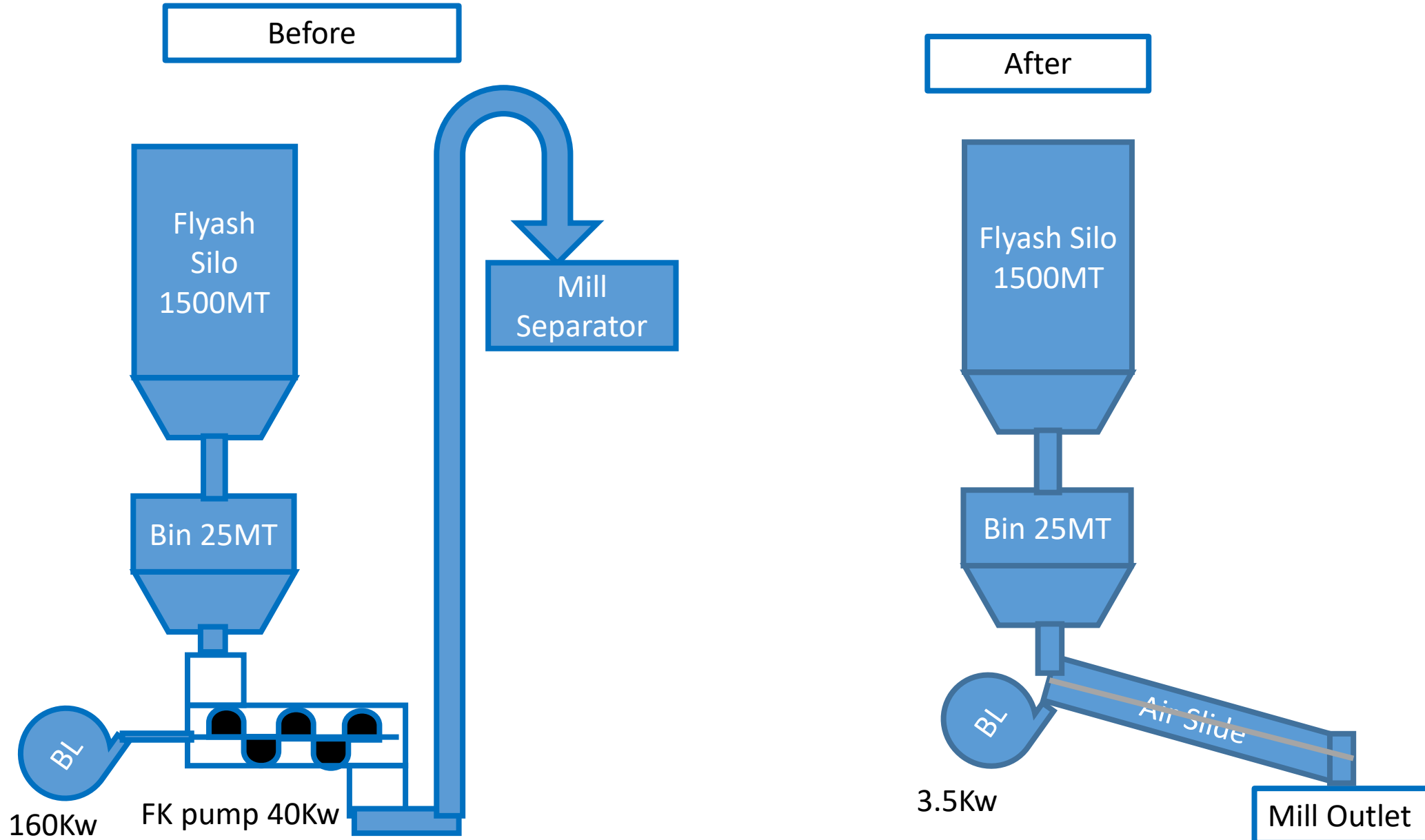
- ❖ Plant team worked out and taken from experts' suggestions because of space and angle constrain.
- ❖ Finally, We have successfully installed one airslide from Flyash silo bottom bin to Mill outlet.

### Tangible & Intangible Benefits:

- ❖ We have saved approx.: 200 KWH which is equal to 1.3 KWH/T
- ❖ Dedusting load reduced
- ❖ Bag filter compressed air consumption reduced



# Innovative Project – Replacement of FK pump by air slide



# Renewable energy

We have taken initiative of 5MW Solar park in 13 acres of land which will implement in FY 2021-22. with the investment of 150KINR.



At Present, We have been implemented in near by schools and street lights in villages through CSR activity



# GHG Inventorisation



# Focus and Target

## Sustainability Commitments 2030

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



**Driving Economic  
Strength and  
Innovation**



**Achieving  
Excellence in  
Occupational Health  
and Safety**



**Reducing our  
Environmental  
Footprint**



**Enabling the  
Circular Economy**



**Being a Good  
Neighbour**

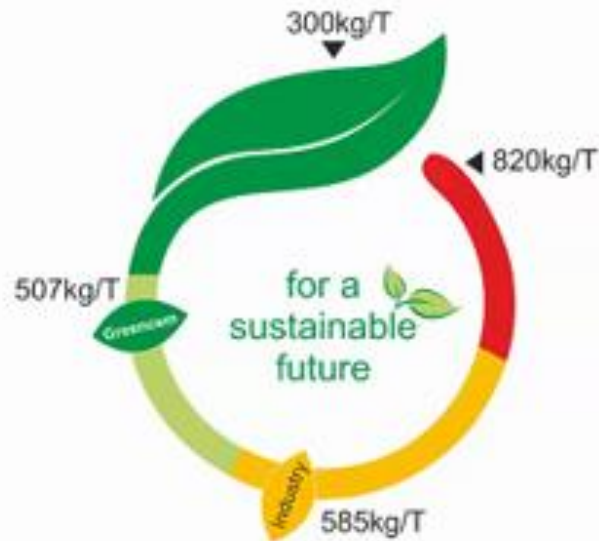


**Ensuring  
Compliance and  
Creating  
Transparency**



# Carbon Footprint Reduction –

## SUSTAINABILITY CO<sub>2</sub> Label on Cement Bags



Carbon footprint scale  
(Data Source: GCCA)

Rear side of the bag



Green Product  
Certified by CII



Green Company  
Certified by CII



Water Positive 5.2x Certified by  
Technical Inspection Association



Member of  
Indian Green Building Council



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



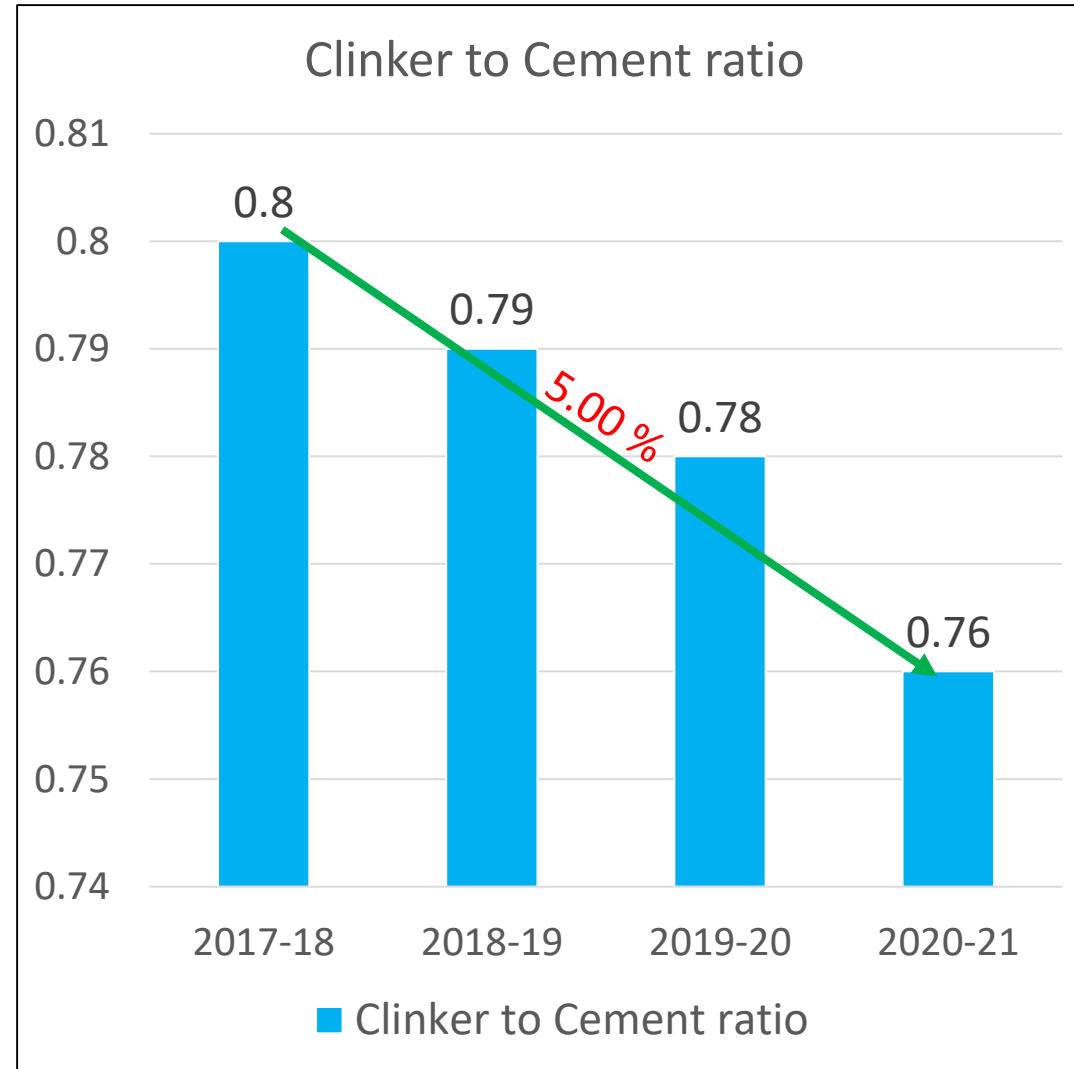
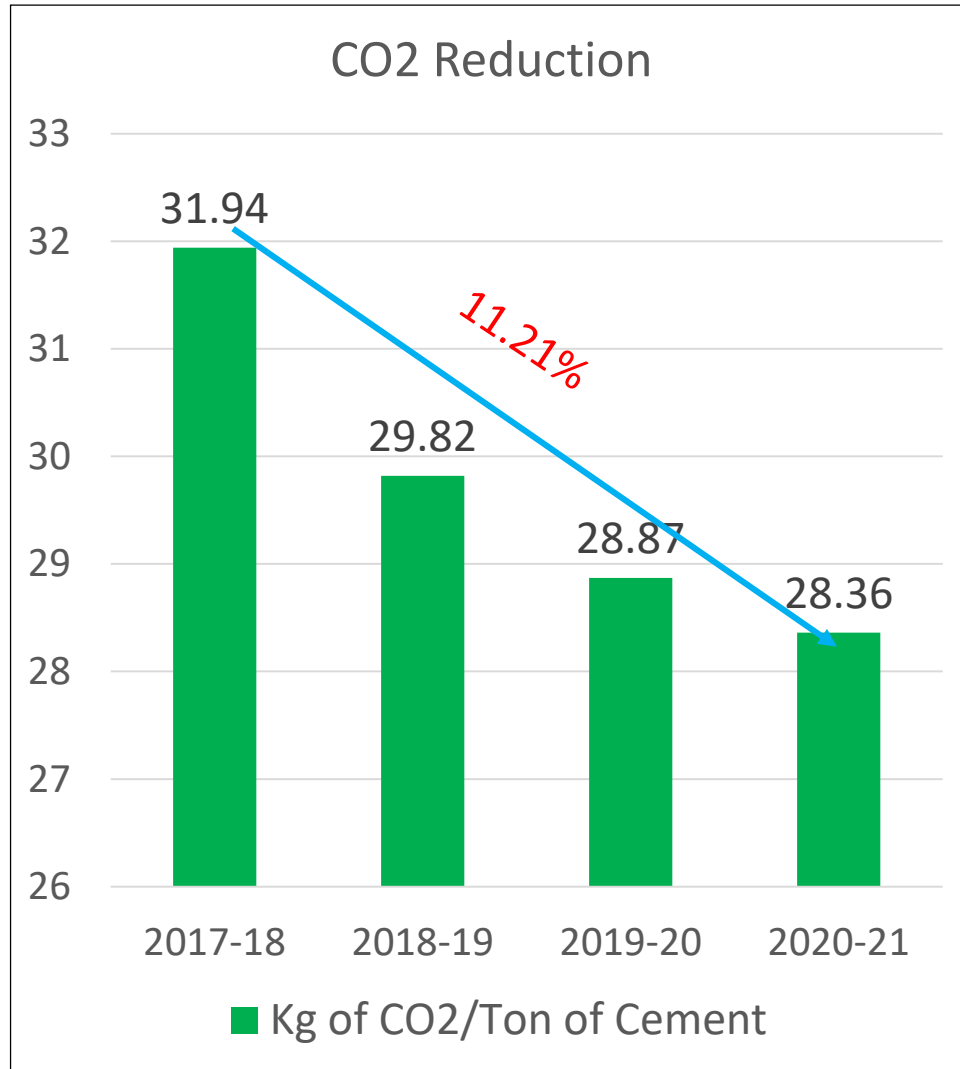
- ❖ Global responsibility to keep temperature rise < 2°C
- ❖ Reduction on our impacts on air, land and water

# Last 3-year expenses for Environment and fugitive

Sr. No	Year	Capital Investment	In Rupees	Operating Expenses	In Rupees	Total
1	2018	Two AAQMS installed at Solapur grinding unit as per Consent to operate condition...	4,809,239	AAQMS maintenance and Calibration, Environment Monitoring report Tree purchased for plantation, Water tanker for tree plantation etc..	2,184,189	6,993,428
2	2018	Cement Concrete Road made at Solapur grinding unit as per Consent to operate condition...	16,156,383			16,156,383
3	2019	Cement Concrete Road made at Solapur grinding unit as per Consent to operate condition...	19,983,025	AAQMS maintenance and Calibration, Environment Monitoring report Opacity meter upgradation, DG report, Water tanker for tree plantation etc.	1,081,984	21,065,009
4	2020	Cement Concrete Road made at Solapur grinding unit as per Consent to operate condition...	11,210,000	AAQMS maintenance and Calibration, AMC , data uploading, Environment Monitoring report Water tanker for tree plantation, Consent renewal fees, Difference fees increasing CI etc.	5,006,661	16,216,661
5	<b>GRAND TOTAL</b>					<b>60,431,481</b>



# GHG Emission Intensity reduction 2017 -21





# GHG Emission Intensity reduction 2017 -21

- ❖ Installation of 5Mw Solar park in 13acres land which will reduce the 14965T of CO2 eq/Year  
(5000Kwh\*10Hrs/Day operation\*365days =14965T of CO2 eq/Year Saving)
- ❖ Packer upgradation , which will reduce the 148MT of CO2  
(0.3Kwh/T\*6Lakh T disp \*0.820Kg of CO2/Kwh=148T of CO2 saving)
- ❖ Flyash compressor replacement from HP to LP, We will reduce the 85.3MT ofCO2 eq  
(0.8Kwh/t of Flyash\*1.3Lakh T of Flyash unload/Year\*0.820= 85.3T of CO2)
- ❖ Grinding media degradation which will reduce 148MT of CO2  
(0.3Kwh/T\*6Lakh T prod \*0.820Kg of CO2/Kwh=148T of CO2 saving)
- ❖ Plantation of 6000No. of trees as per plan

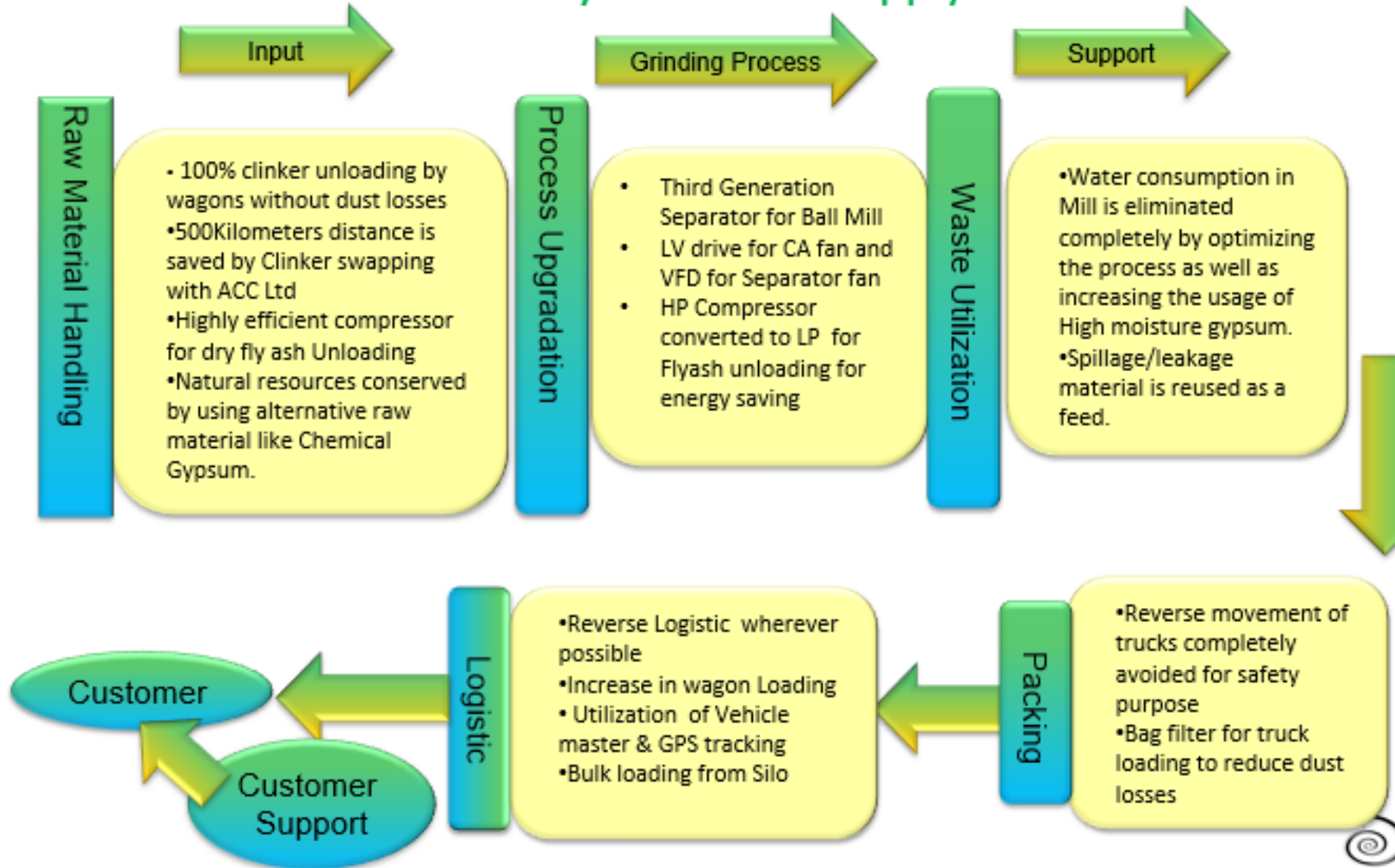


## Green Supply Chain



# Green Supply Chain

## Product Cycle - Green Supply Chain



# Green supply chain Projects

Sr No.	Title of Project	Investment made in Million INR	Benefits description
1	Cement Bulk loading	2	20% of Cement dispatches through bulk loading which was saving 0.4Kw/T of electrical energy consumption & Minimizing the PP bags usages for environmental degradation/Waste minimization
2	Procuring Chemical gypsum 40000 MT/Year	Same cost	Substitution of Alternative raw materials with Natural resources
3	Installation of Cement Wagon loading Machines	150	It has been substituting 30% of cement dispatches through rail.
4	OHE(Over Head Electrification) of railway yard	15	Diesel engine avoided which is used for 7Kilometers of distance from railway station to Plant wagon tippler area.
5	Clinker quantity swapping with ACC Ltd Approx: 4lakh/Year	0	Clinker rake transportation reduced by 500Kms ( from destination to destination) after swapping with nearby plants. Each Clinker rake 500Kms transportation saving. Minimum 100number of Clinker rakes received from ACC Ltd through swapping per Year.



# Green Supply Chain - Purchase

## Fly ash utilisation

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

## Machinery & spare procurement

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

## Scrap Disposal

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

## Inbound Logistic

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



# Innovative IOT Technology

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

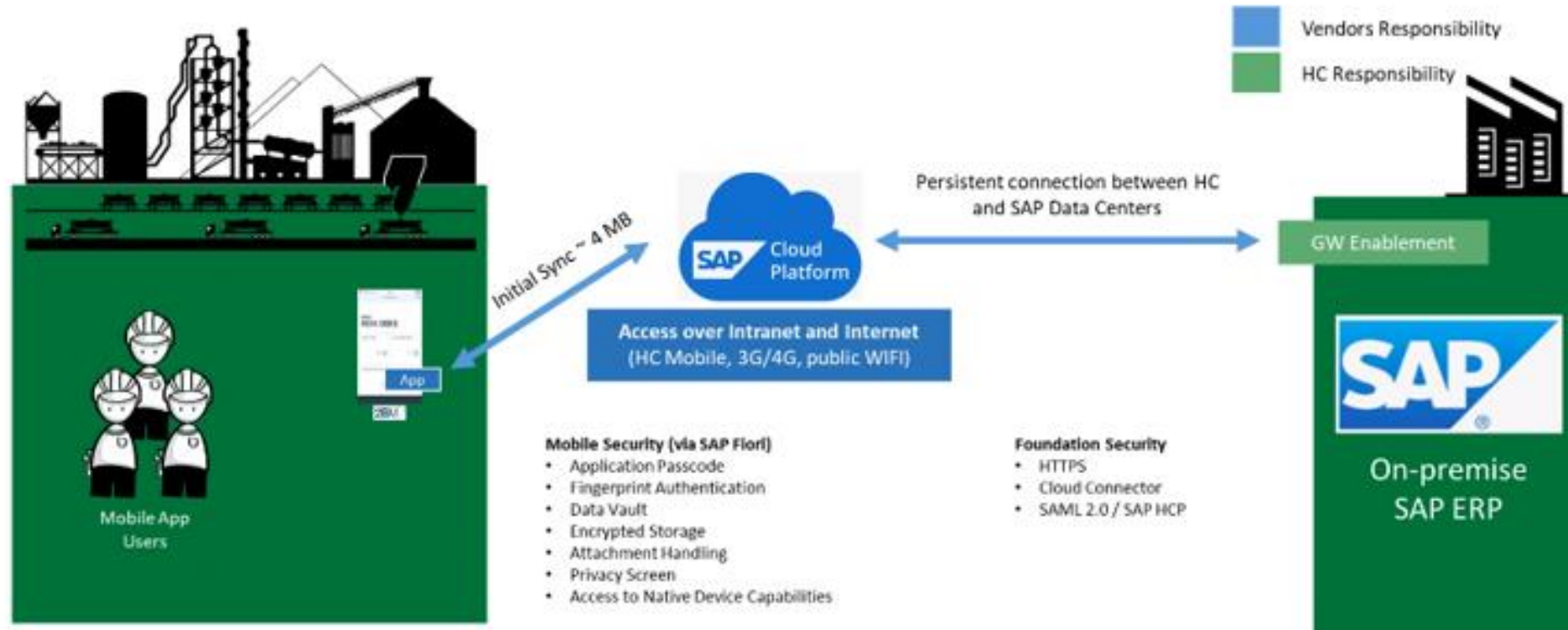


# Innovative IOT Technology - iMTN

## Maintain

MAINTENANCE DIGITALIZATION - IMTN MOBILE APP

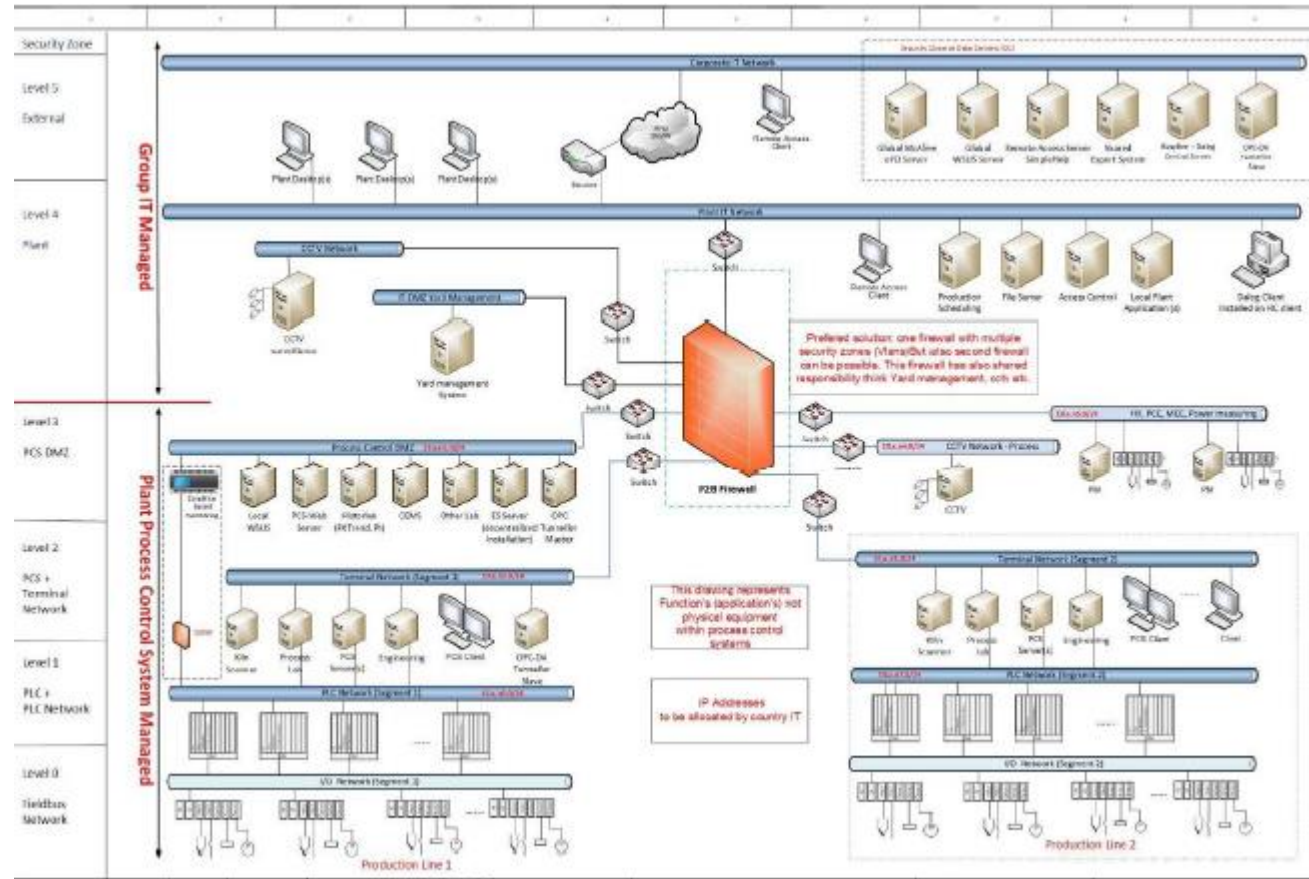
### The Technology



# Innovative IOT Technology – Simple Help

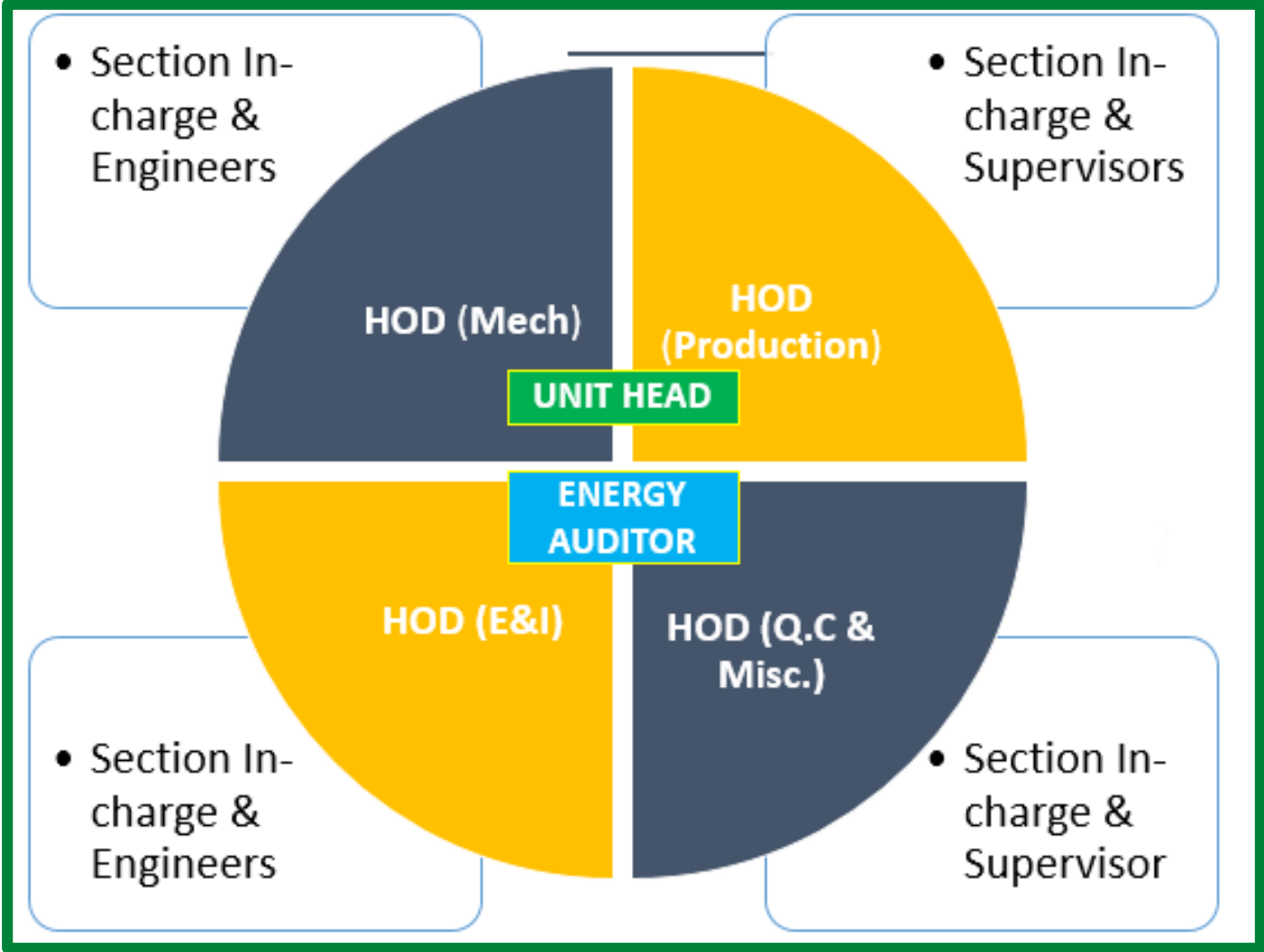
## SimpleHelp Overview:

SH is a Software that allows remote access to remote computers  
 Implementation in India on process control network  
 SH Use for,  
 Plant remote control and monitoring, but mainly for monitoring purpose  
 Remote assistance from external vendors  
 Central solution maintained and operated by IT and decentral solution that can be local to the plant.





# Energy Committee

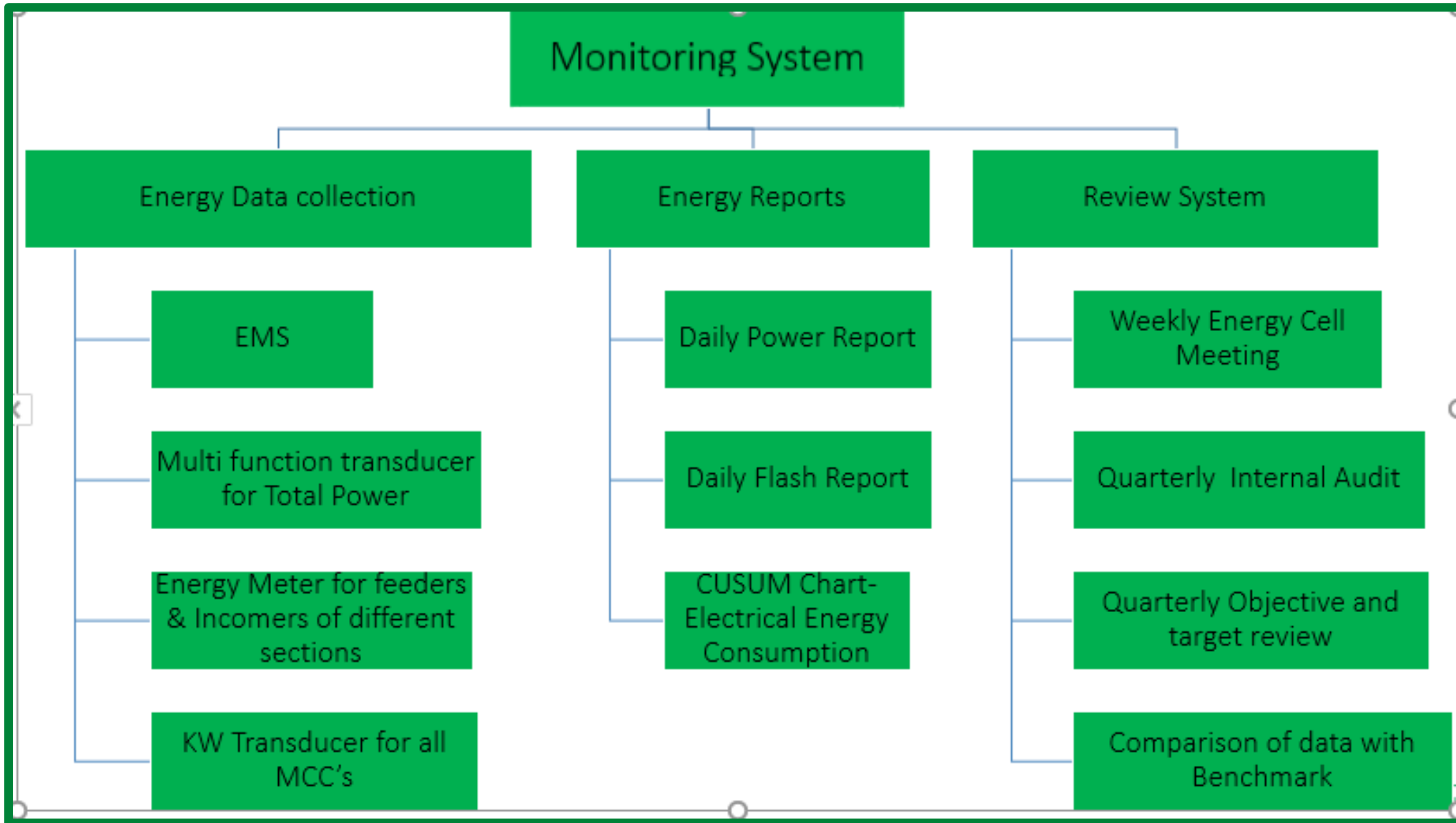


# Energy Circle



- ❖ Daily Energy Observation Tour(EOT) to observation any abnormality
- ❖ Ensure timely compliance of points identified
- ❖ Analyse idle running of equipment operation

# Energy Monitoring System



# Total Employee Involvement

## ❖ Projects Implemented through Kaizens:

**12 Number of Kaizens from workers &**

**27 Numbers from staff**

**Total : 39.**

Total 10% of budget allocated for Energy conservation projects. If the ROI is less than 1Year, then fast approval of CAPEX Projects.



# Employees Involvement Training – Summary (FY 2020-21)

Sl.No	Training Program	Internal / External	No.of participants	Duration (Hrs)
1	Ball Mill inspection & optimization	Virtual	6	2
2	Grinding Media tracking & Quality inspection	Virtual	7	2
3	Power consumption evaluation & its trend analysis	Virtual	6	2
4	BAG FILTER (Overview ,operation & Maintenance)	Virtual	8	2
5	Energy saving opportunities in Fans, Blowers & compressors	Virtual	11	2
6	Electrical Safety Regulations and Statutory Compliance	Virtual	10	2
7	Plant lighting & Auxiliaries system - Wastage Elimination	Virtual	11	2
8	Motor Basics & Energy Saving	Virtual	9	2



# ISO Certifications

ISO 9001:2015

ISO 14001:2015

ISO 45001:2018

ISO 50001:2018

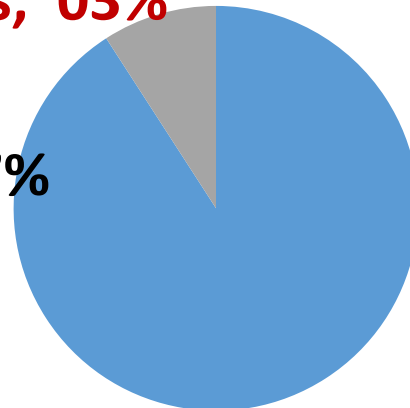


## Turn Over & Investment

FY 2020-21

**Rs. 178 Crores, 03%**

**Rs. 1772 Crores, 97%**



- Turn Over
- Encon Investment



# Greenery Overview



# Greenery Overview



● CREDM NOTE 8.PRO  
○ QUAD CAMERA





## Greenery Overview



# Greenery Overview

## “annam” – Serving the Society

HEIDELBERGCEMENT INDIA



**mycem Annam**  
serving the society



Every bag of mycem cement you buy, company will contribute ₹.1 towards feeding the under privileged

**mycem cement**



HEIDELBERGCEMENT INDIA



**Zuari Cement Annam**  
serving the society



Every bag of Zuari Cement you buy, company will contribute ₹.1 towards feeding the under privileged

**Zuari Cement**






**MATERIAL**  
TO BUILD OUR FUTURE

**Safety is our foremost priority**

