

ULTRATECH CEMENT LIMITED (UNIT: REDDIPALAYAM CEMENT WORKS)

**“18th National Award for Excellence in Energy
Management- 2017”
30- Aug 2017 to 01-Sep 2017 , Hyderabad.**

Team Members:

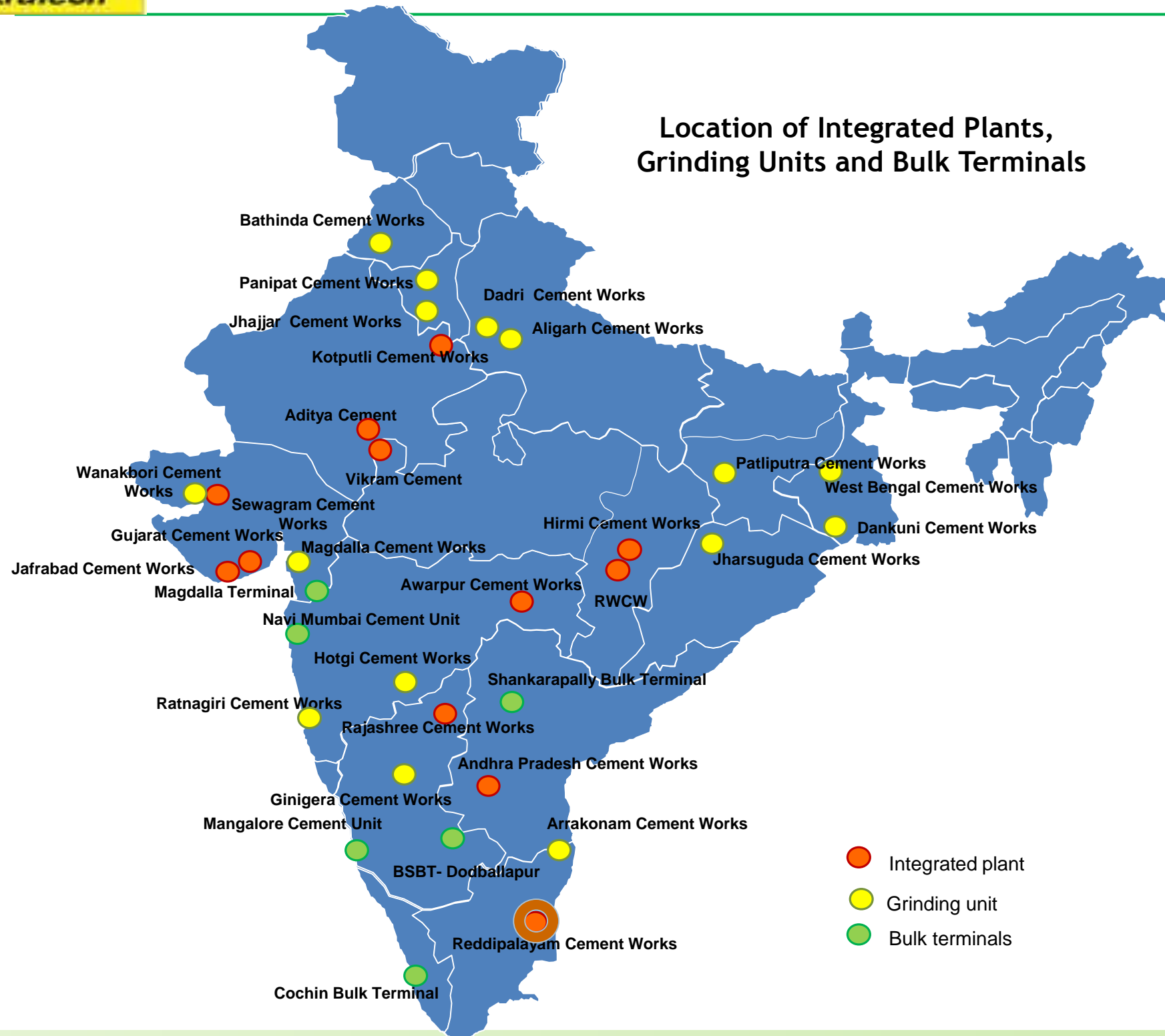
Mr. Praveen Kumar (HOD TS & WCM)

Mr. S.Saravanan (HOD Project)



UltraTech Cement Ltd Overview

Location of Integrated Plants, Grinding Units and Bulk Terminals

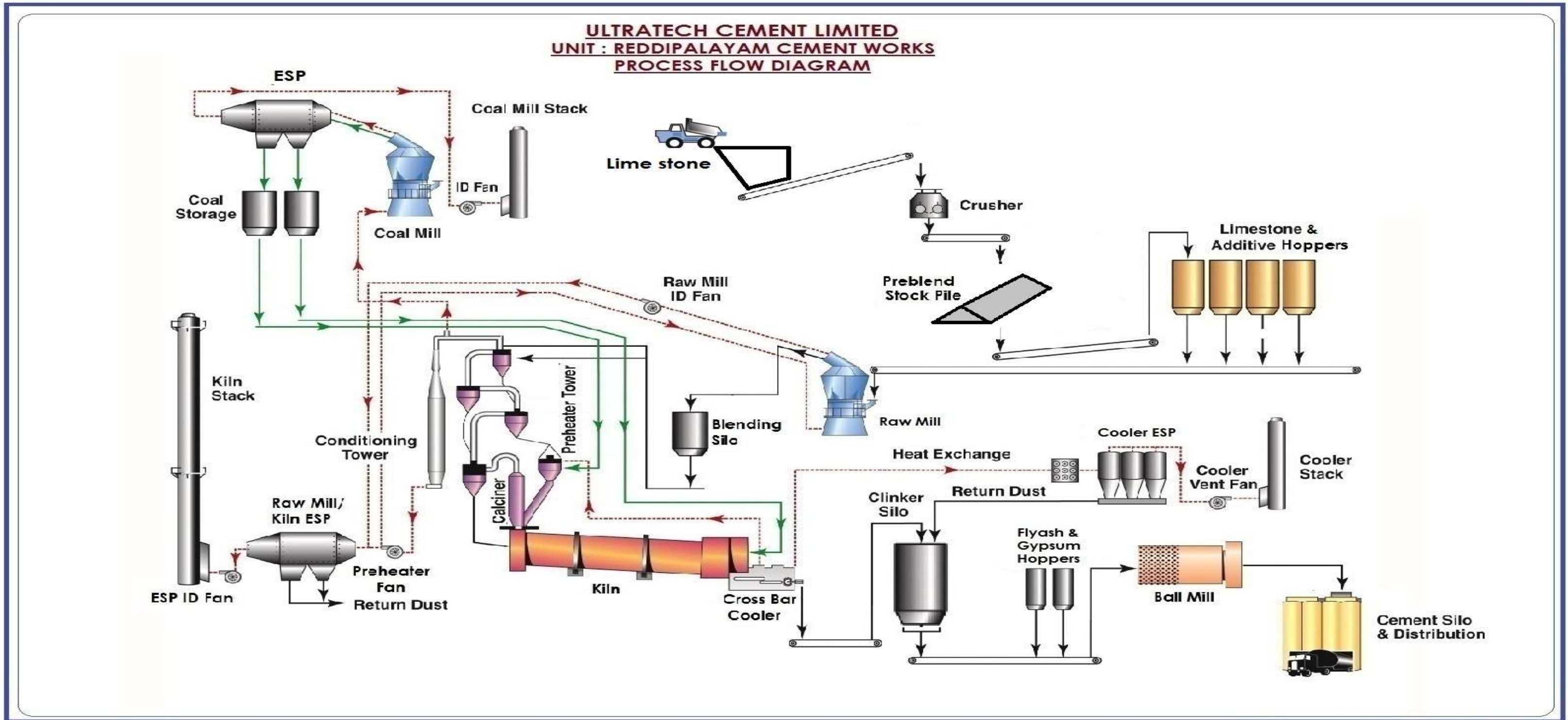


- Integrated plant
- Grinding unit
- Bulk terminals

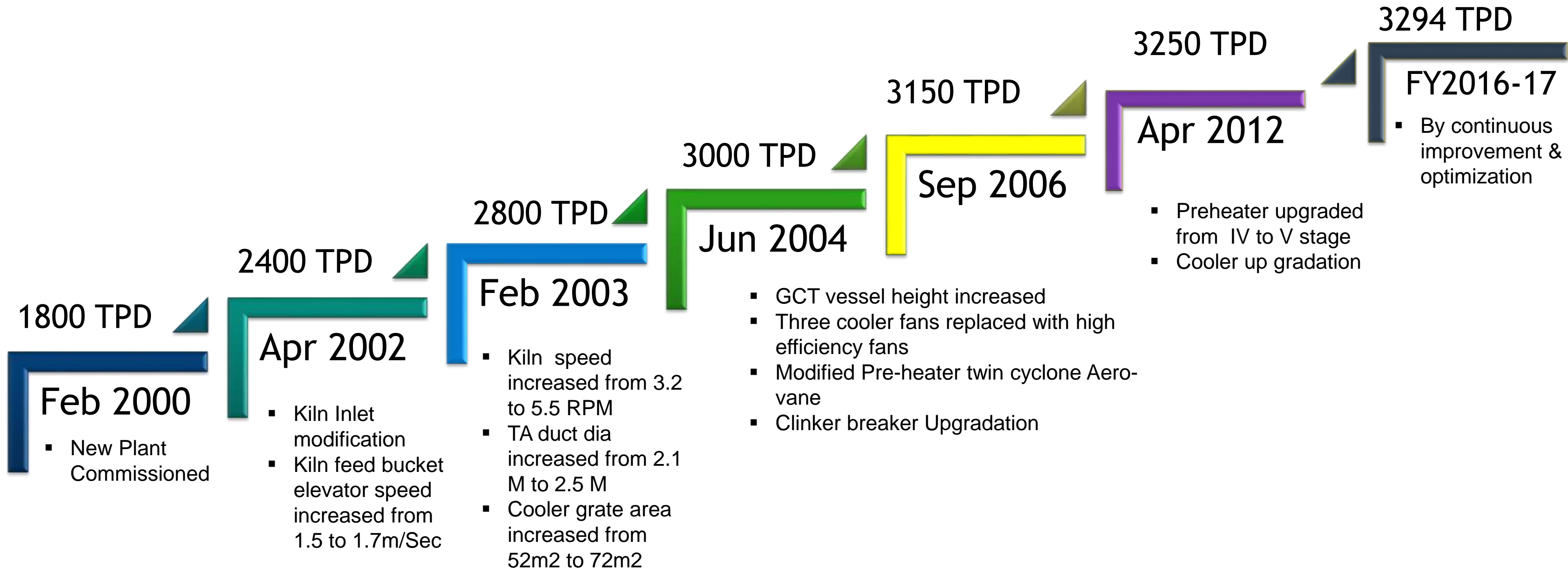
Units	Symbol	Number of Units
Integrated Plants	●	18
Grinding Units	●	25
Bulk Terminals	●	7

Area of spread (RDCW)	RDCW Unit
Plant capacity	1.6 MTPA
Area of mines	188.62 Ha
Area of plant	125 Ha
Nearest air port	Trichy (75 km)

CEMENT - MANUFACTURING PROCESS



MILESTONES



UNIQUE FEATURES

- State of the art Cement Plant commissioned in the millennium year
- 1st Unit in UTCL having Robo lab for total quality control from sampling to analysis
- State of art testing laboratory for Alternative fuels
- Designed for using multiple fuels
- Pioneer in using alternate fuel with pre-processing system
- Pioneer in Using alternate raw material (ETP Sludge)
- First Plant in the World to get CDM credit for use of Agro waste alternate fuel
- Packing facility with Centralized discharge from cement silo
- No fatal accident since last 15 years

MANAGEMENT SYSTEMS



ISO : 9001 - Quality

ISO :18001 -Safety

ISO :14001 Environment

ISO :27001 ISMS

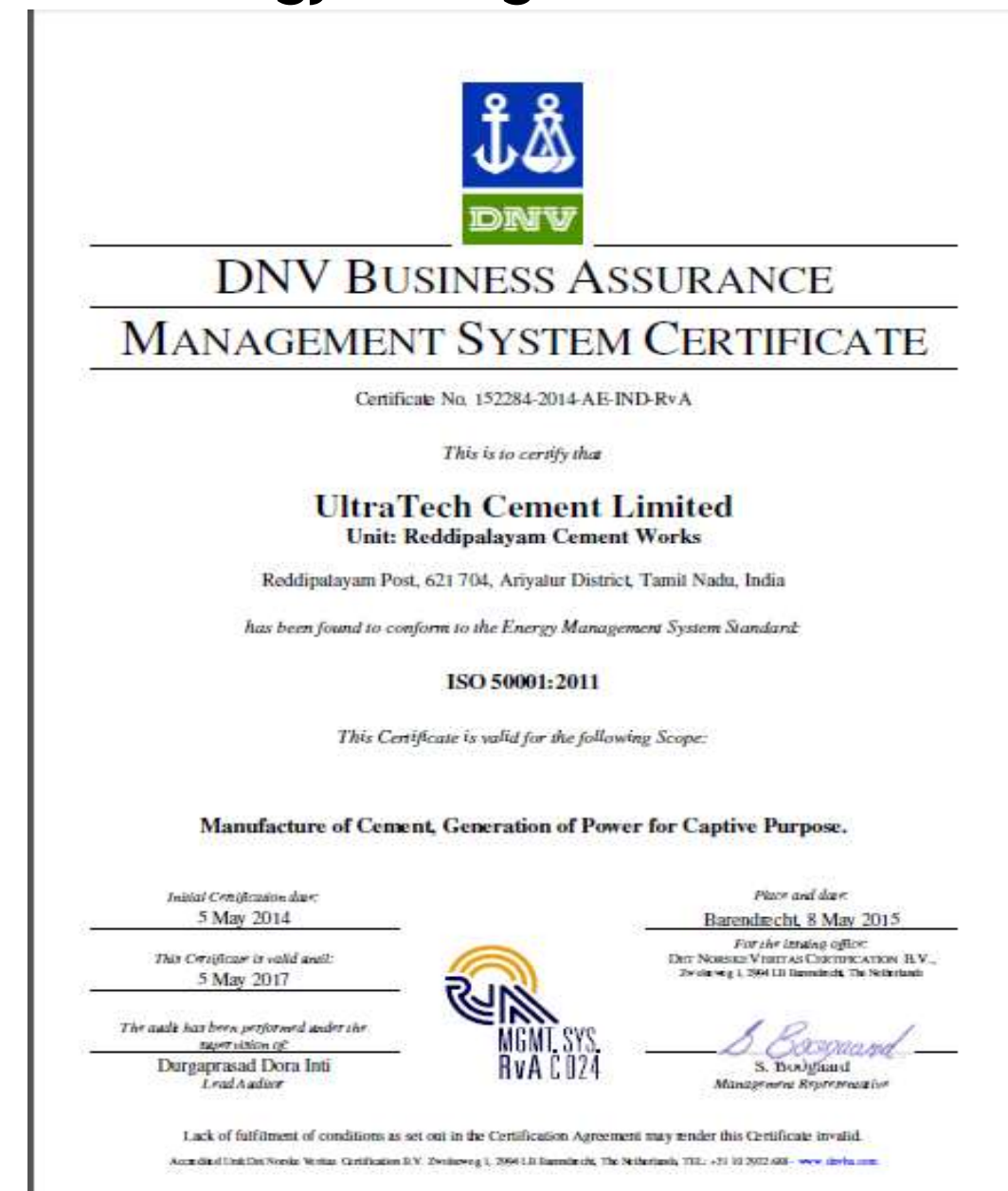
ISO :50001 EnMS

Management System - Certification

CII Green Co - Gold Certification



ISO 50001:2011 Energy Management





Energy Policy

Energy Management Policy

We, UltraTech Cement Limited (Unit: Reddipalayam Cement Works) shall be committed to improve our energy performance in all our operations, products and services on continual basis through:

- Process optimization and adoption of latest technologies and world class operating practices.
- Purchasing energy efficient products and services
- Maximizing use of waste energy
- Increased usage of alternative fuels

We shall be committed to comply with all applicable legislations related to Energy use, consumption and its continual improvement in performance while conducting our cement manufacturing and related operations.

We shall be committed to spread awareness among employees & their families and business associates on conservation of energy.

N. A. S.
Unit Head

- Energy Policy implemented in Dec – 2013
- Energy Policy states unit’s commitment to achieving energy performance improvement
- Energy policy is communicated at all levels.
- Energy policy is regularly reviewed.

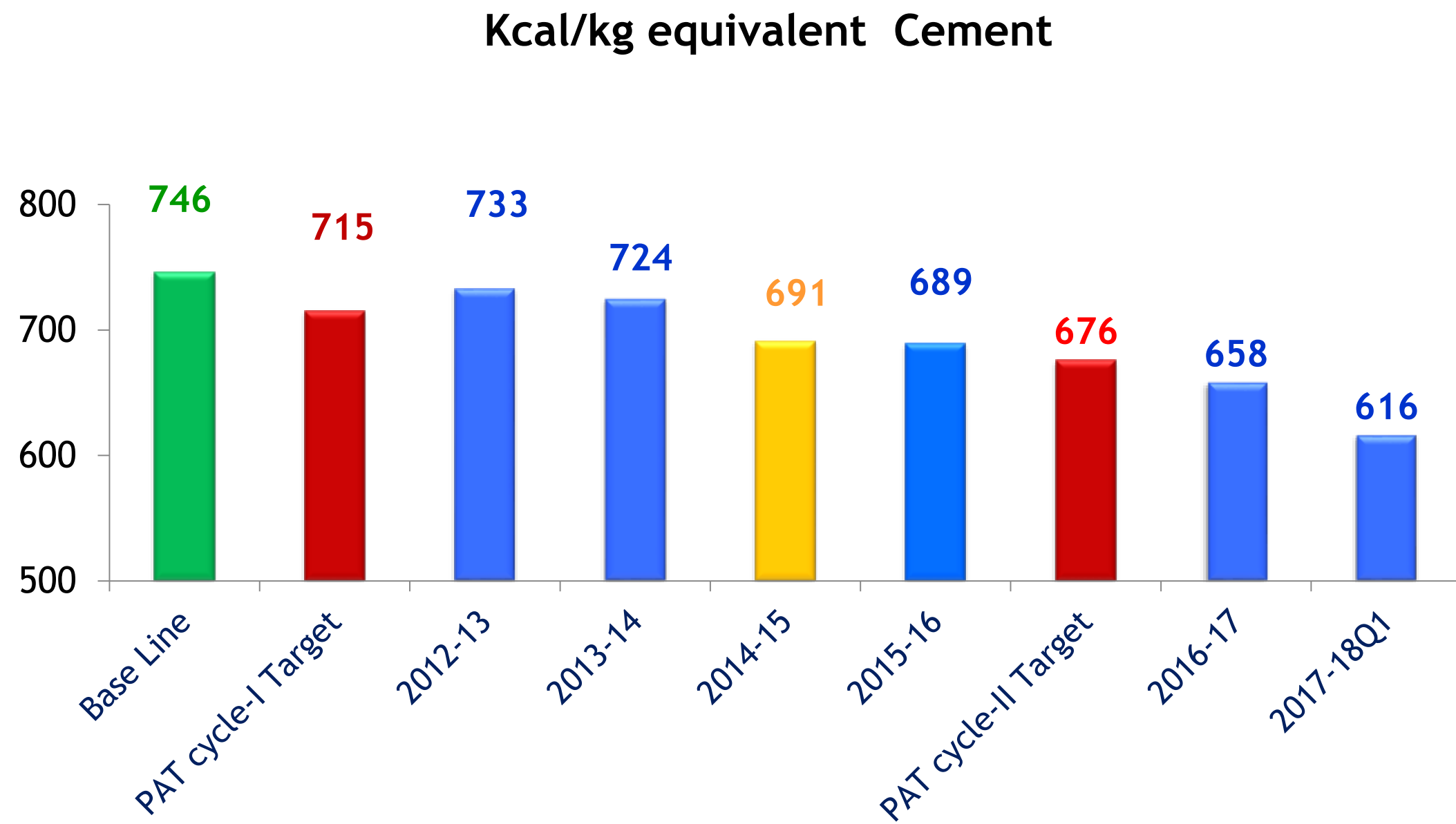
Next review of energy policy : Jan -2018



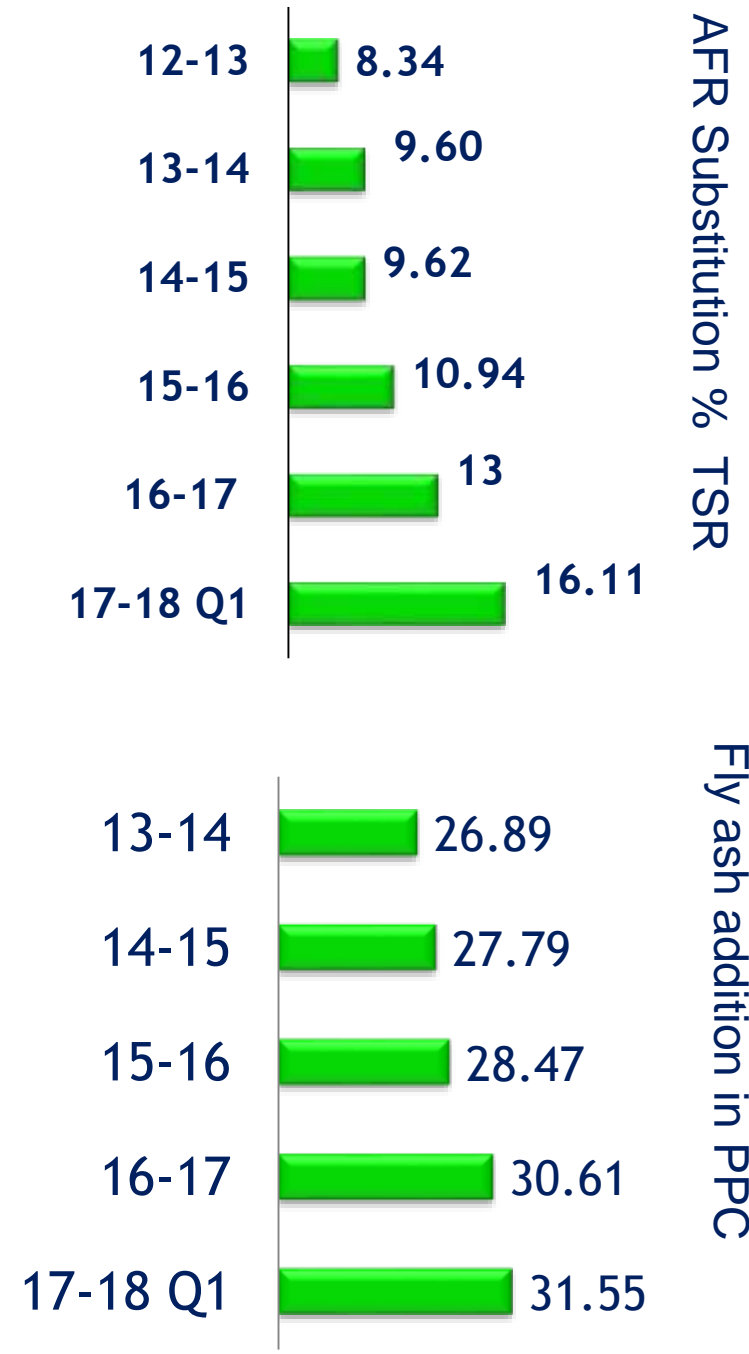
Energy consumption



Reduction in specific energy consumption

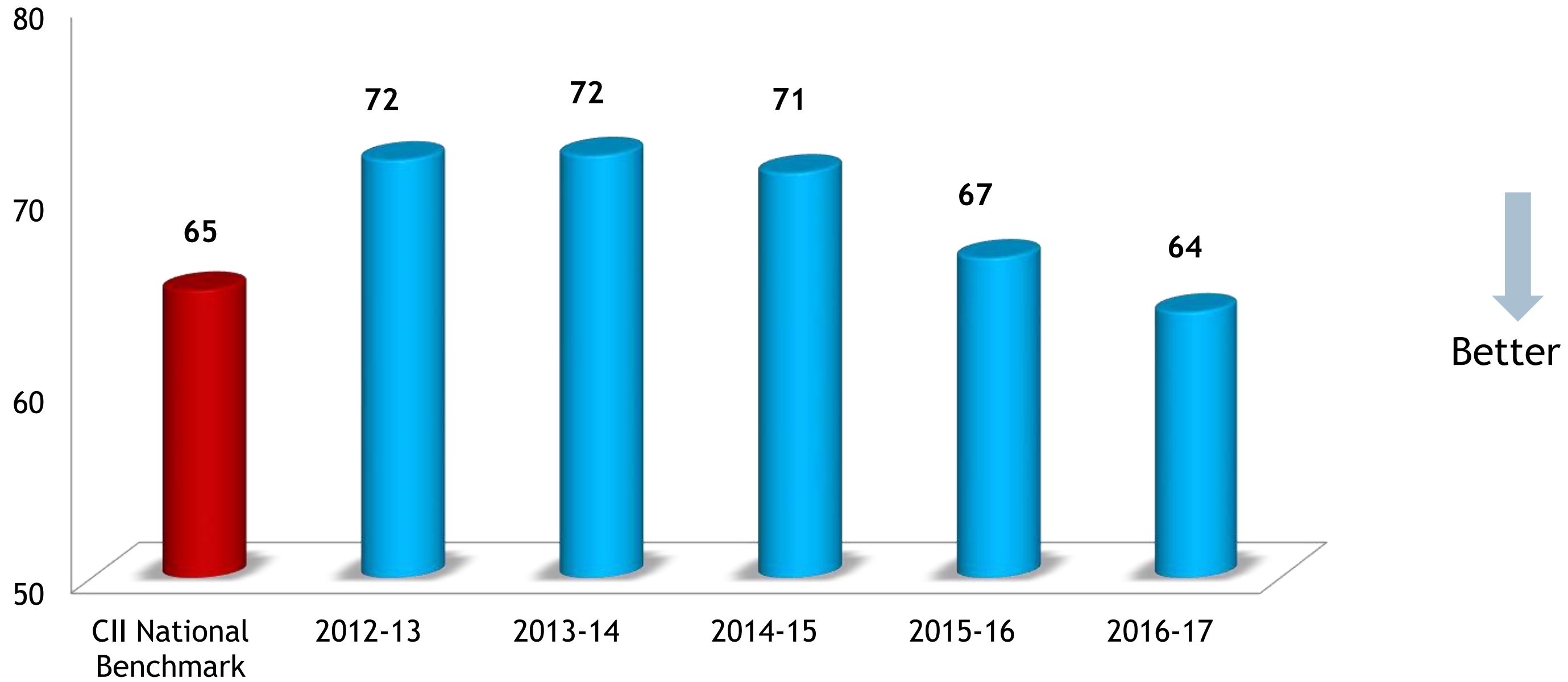


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Better

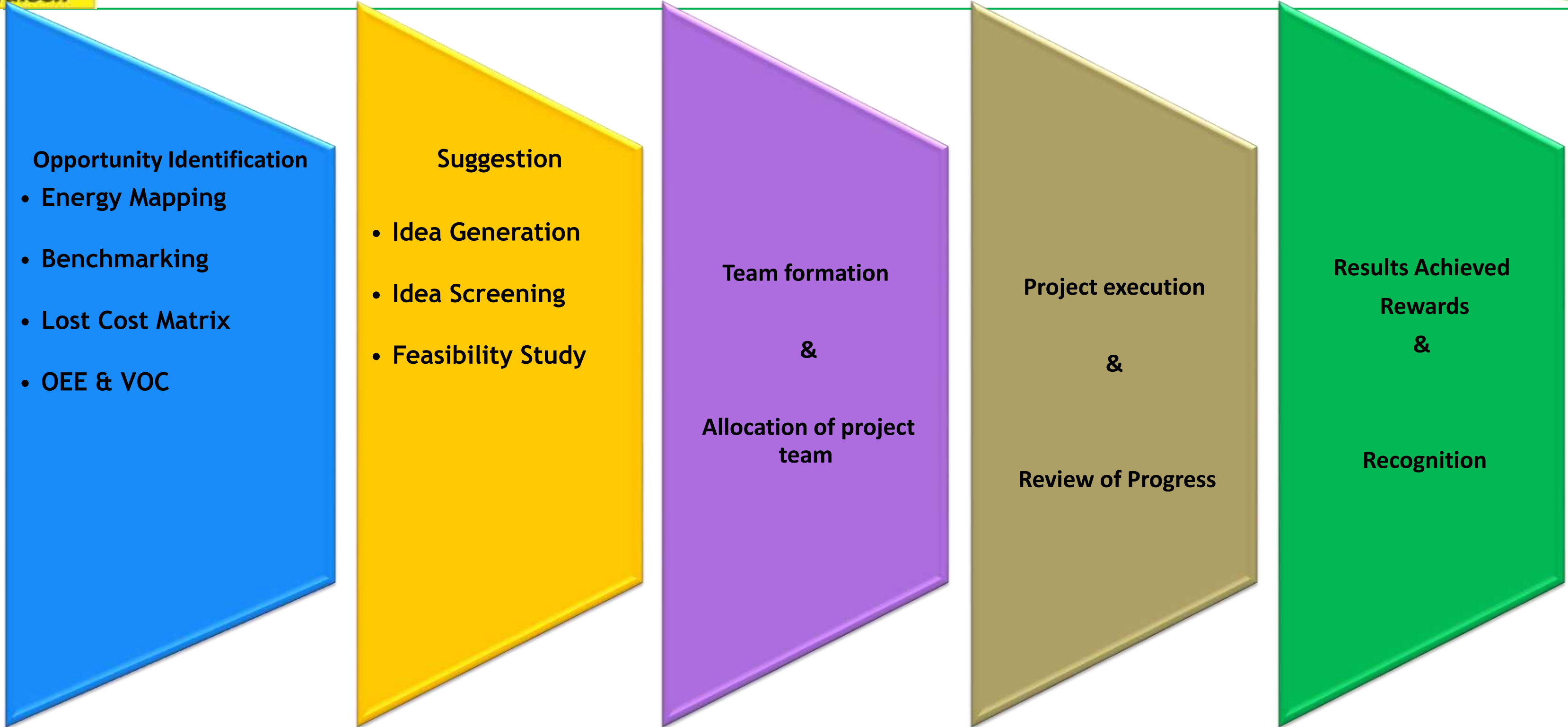


Total 3554 No's of EScerts credited for PAT cycle-1

Specific Power Consumption - kWh/MT Cement



Energy saving Projects



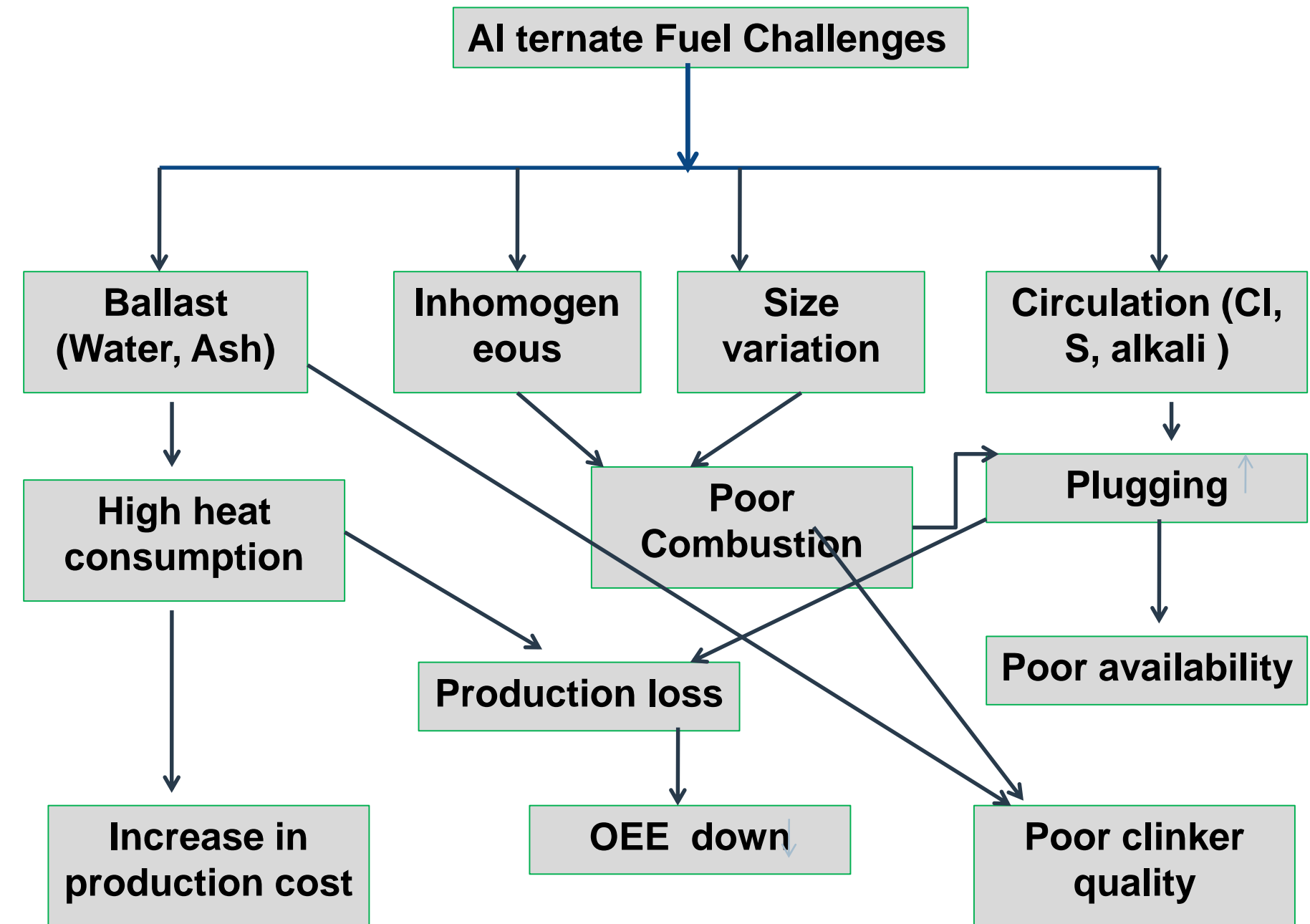
Action Plan to Achieve PAT cycle -II Target

Sr. No.	Energy efficiency improvement measures	Investment Rupees in Lacs	Date of completion of measure/ likely completion	Energy Consumption (TOE)		Annual Energy saving	
				Before Measures	After Measures	Electricity (kWh)	Coal (Tonne)
1	Pressure drop reduction in Preheater 4th stage cyclone	14	completed	1067	1016	583680	
2	Reduction of pressure drop through junction box & duct modification at RM ESP	32	Completed	176	166	109440	
3	Replace CFL lamps, HPSV lamps and Tube lights with LED lamps	10.6	Completed	8.39	4.94	40171	
4	Installation of Aerzen Turbo blower for Kiln coal firing in place of existing Twin lobe blower	34.89	Mar-18	32	21	124032	
5	Substitution of alternate fuel from 11 % to 15%	45	Completed	48621	48370		321
6	To enhance fly ash addition up to 30%	124	Completed	60639	60342	151614	364
7	Replacement of HVMP lamps with LED in TPP	3	Completed	138	119	224400	
8	VFD for BF pump in TPP	25	Mar-18	175	161	163200	
9	Overhauling of TG in TPP	70	Mar-18	25851	25753		196
10	Heat recovery from rotary kiln	100	Mar-18	33978	33880		196
	Total			242186	241239		

Increasing Alternate Fuel Consumption

Purpose: To increase the thermal substitution rate from 10 % to 25%

Types of Industrial waste used in RDCW	Moisture (%)	Size (mm)	% of Usage
Carbon Powder	0.91		16
FMCG	33		4
Foot ware	0.82		4
Paint Sludge	32	400	7.8
Plastics	53		68
Spent Carbon	40		0.18



Technical Approach:

- Granulometry of AF improved after double shredding
- Spike rollers installed in hopper discharge chute to improve the flowability
- Optimizing AF feed bucket elevator speed to improve output.

Installation of Multi purpose Shredder

Purpose:

Capacity enhancement of Alternate fuel feeding system through size reduction.

Technical Approach:

- Installed Multi-purpose shredding machine
- Double shredding of Alternate fuels

Investment: Rs.77.05 Lac

Savings : Rs. 158.37 Lac

Benefits :

Size reduction from 500 MM to 50 MM (Plastic, HDPE bags, Tarpaulin, Foot wear waste, Agro waste, wood and other miscellaneous waste.



Shredder Machine



Shredded HDPE bags & Tarpaulin

Increasing Alternate Fuel Consumption



Rice Husk



Wood chips



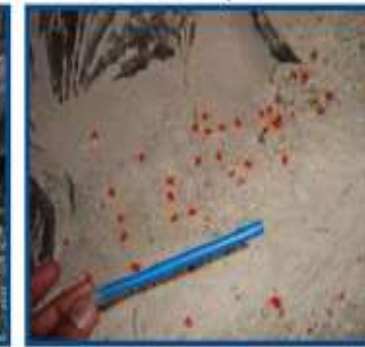
Shredded Tires



Cut Tires



RDF



Expired Tablets



Hazardous Sludge - Pharma Rejects



Saw dust



Paint Sludge



Plastic chips



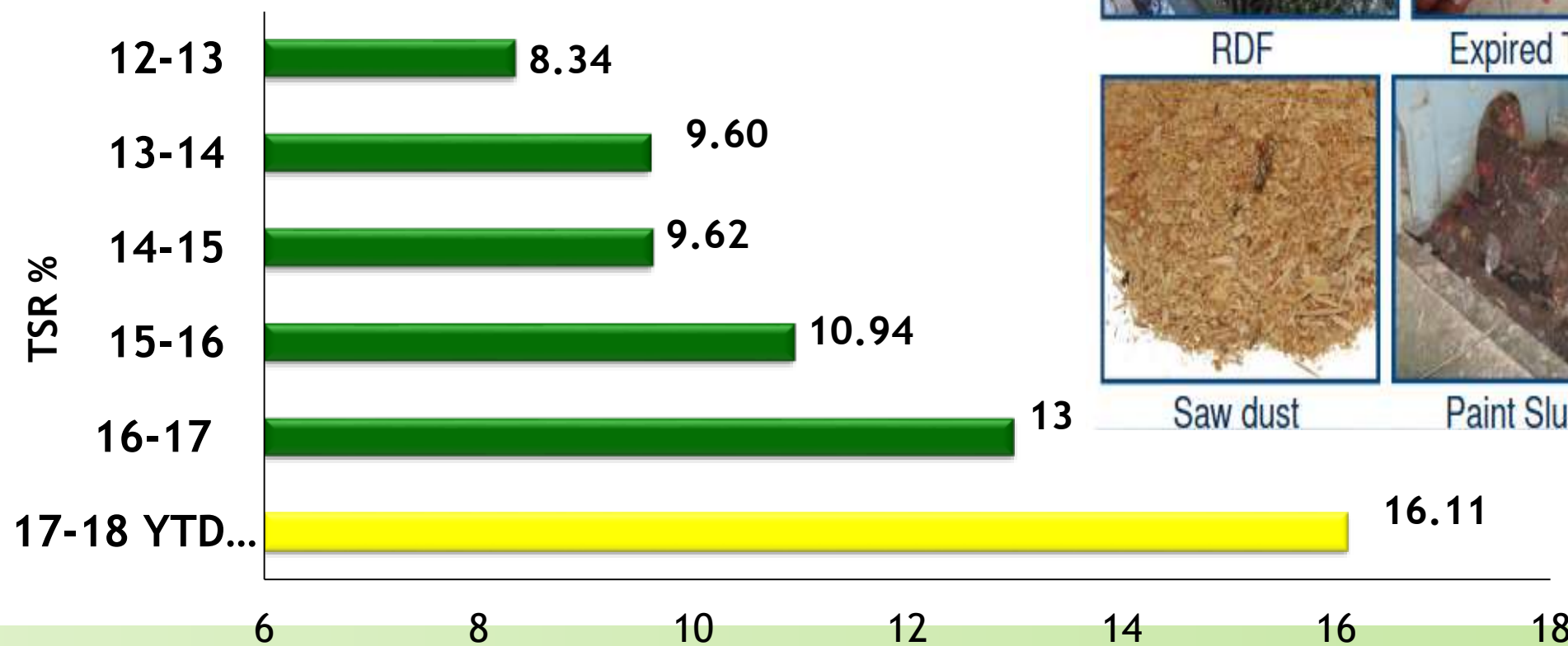
Rubber Cuts

Alternate Fuel - Samples

Shredder Machine



Carbon powder feeding system



Year Wise Energy Saving Projects Implemented

Summary of Energy saving Initiatives (FY 2013 to 2017)

Sl No	Year of Implementation	Number of projects	Savings In Rs Million	Total Annual Energy Savings TOE
1	2013-14	14	4.61	81.42
2	2014-15	5	2.15	41.17
3	2015-16	6	3.25	66.62
4	2016-17	10	9.51	1306.96
Total		35	19.52	1496.17

Energy saving Initiatives

Year	Title of Energy Saving project	Annual Savings Rs (Million)	Energy saving (MTOE)
2013-14	❖ Optimization of the instrument air compressor operation (Captive Power Plant)	0.11	2.37
	❖ Installation of transparent sheet in workshop	0.03	0.60
	❖ Optimization of suction of raw meal silo top bag filter fan	0.12	2.47
	❖ Optimization of ESP Transport group running operation	0.15	3.20
	❖ Optimization of GCT Transport group running operation	0.32	6.58
	❖ No water flow through idle equipment (stoppage of the cooling water pump with Interlock)	0.05	1.05
	❖ Reduction in pressure drop across cement mill vent fan inlet damper(by removal of suction Damper)	0.11	2.32
	❖ Optimization for the operation of cement silo top air slide fans	0.10	2.03
	❖ Upgradation of CCR building centralized air conditioning system	0.86	17.83

Energy saving Initiatives

Year	Title of Energy Saving project	Annual Savings Rs (Million)	Energy saving (MTOE)
2013-14	❖ Replacement of aluminum blades with FRP blades for cooling tower fan	0.003	0.07
	❖ Minimization of compressed air leakage in ash conveying area	0.003	0.07
	❖ Optimization of the operating frequency of generators	2.44	36.31
	❖ Optimization of the operation of DG distribution transformer	0.02	0.39
	❖ Optimization of the Voltage distribution in transformer TR3 & 5	0.30	6.14

Energy saving Initiatives

Year	Title of Energy Saving project	Annual Savings Rs (Million)	Energy saving (MTOE)
2014-15	❖ Replacement of HPMV lamps with CFL lamps in Packing plant section	0.03	0.48
	❖ Unloading of Fly ash through blower air instead of compressed air	1.15	21.93
	❖ Replacement of HPMV lamps with CFL lamps in CPP section	0.02	0.44
	❖ Upgradation of ESP control panel for Coal mill ESP	0.22	4.16
	❖ Upgradation of ESP control panel for Raw mill ESP	0.74	14.17
	❖ Installation of VFD in 1st RO HP pump	0.16	3.19
	❖ Installation of VFD in TPP Drag Chain Feeder	0.02	0.41
2015-16	❖ Optimization in coal unloading & operation of crushing	0.30	6.17
	❖ Installation of Turbo Blower for PC firing	1.00	20.50
	❖ Kiln Auxiliary power reduction	1.76	36.06

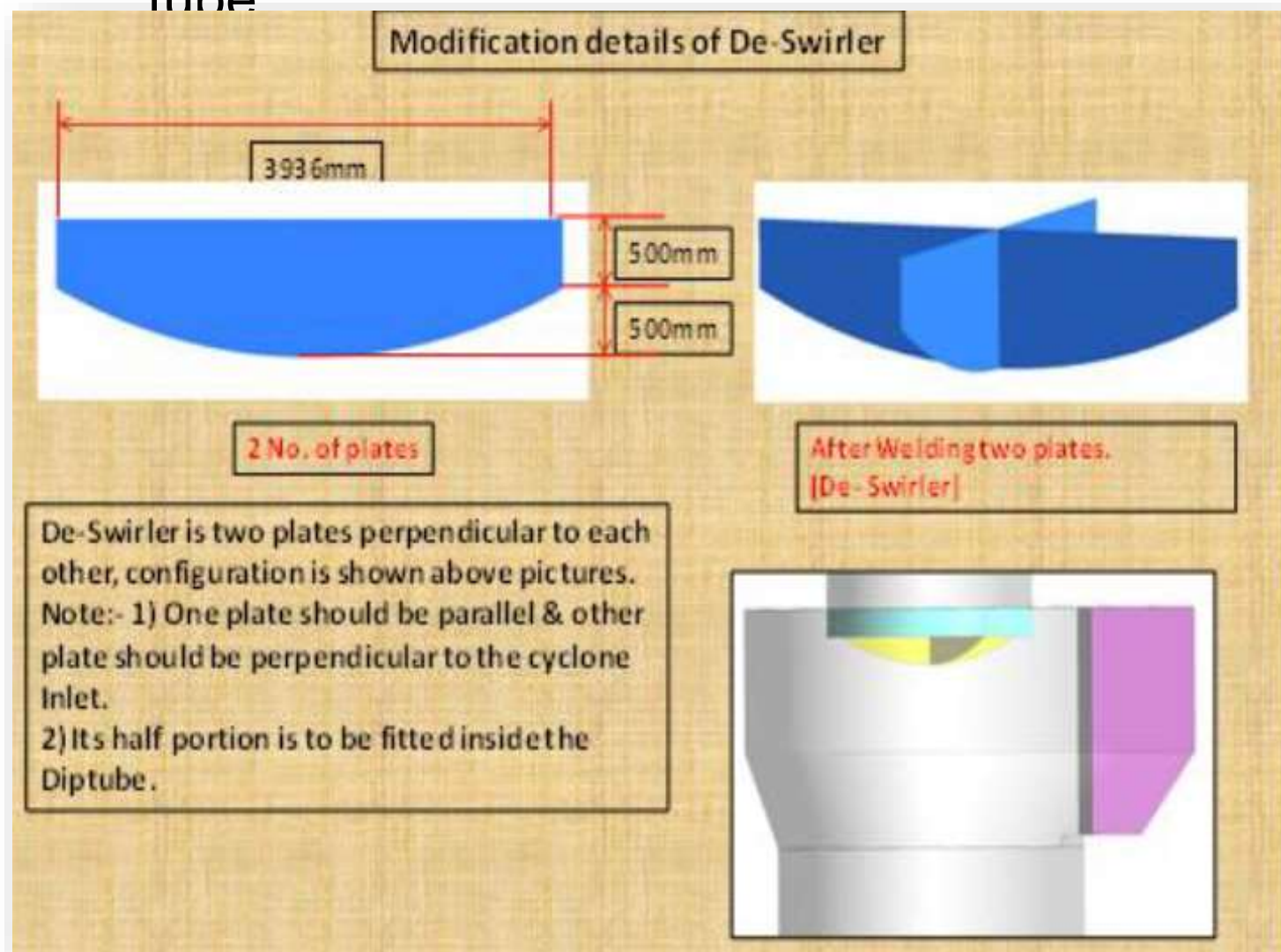
Energy saving Initiatives

Year	Title of Energy Saving project	Annual Savings Rs (Million)	Energy saving (MTOE)
2016-17	❖ Use of TPP fly ash in the pre-calciner having high Calorific value	7.98	1275.50
	❖ Removal of Pre collector Cyclone in the Coal Mill Circuit during Bag house conversion	0.14	3.39
	❖ Coal mill nozzle ring modification	0.09	2.30
	❖ Installation of Raw Mill Reject Handing System	0.17	1.01
	❖ Installation of Cement Mill Reject Handing System	0.13	0.44
	❖ Power optimization of RM BH rotary air lock	0.01	0.33
	❖ <i>pressure drop reduction in Pyro circuit by modifying PH cyclone-04 & PH fan inlet box modification</i>	0.17	4.22
	❖ <i>Raw mill fan inlet box modification to reduce pressure drop reduction</i>	0.13	3.14
	❖ <i>Reduction of pressure drop through Junction box & duct modification</i>	0.18	4.29
❖ HPMH & HPMV lamps replaced with LED lamps provided in plant areas, truckyard, coal tippler, CCR building and Colony areas.	0.51	12.34	

Pressure drop reduction across Cyclone-04

Problem statement : High pressure drop in Preheater Cyclone No :04

Action Taken : CFD analysis did with the help of TIKC results are validated pressure drop reduced by breaking the reverse flow to reduce cyclone inlet velocity with the new modified dip tube

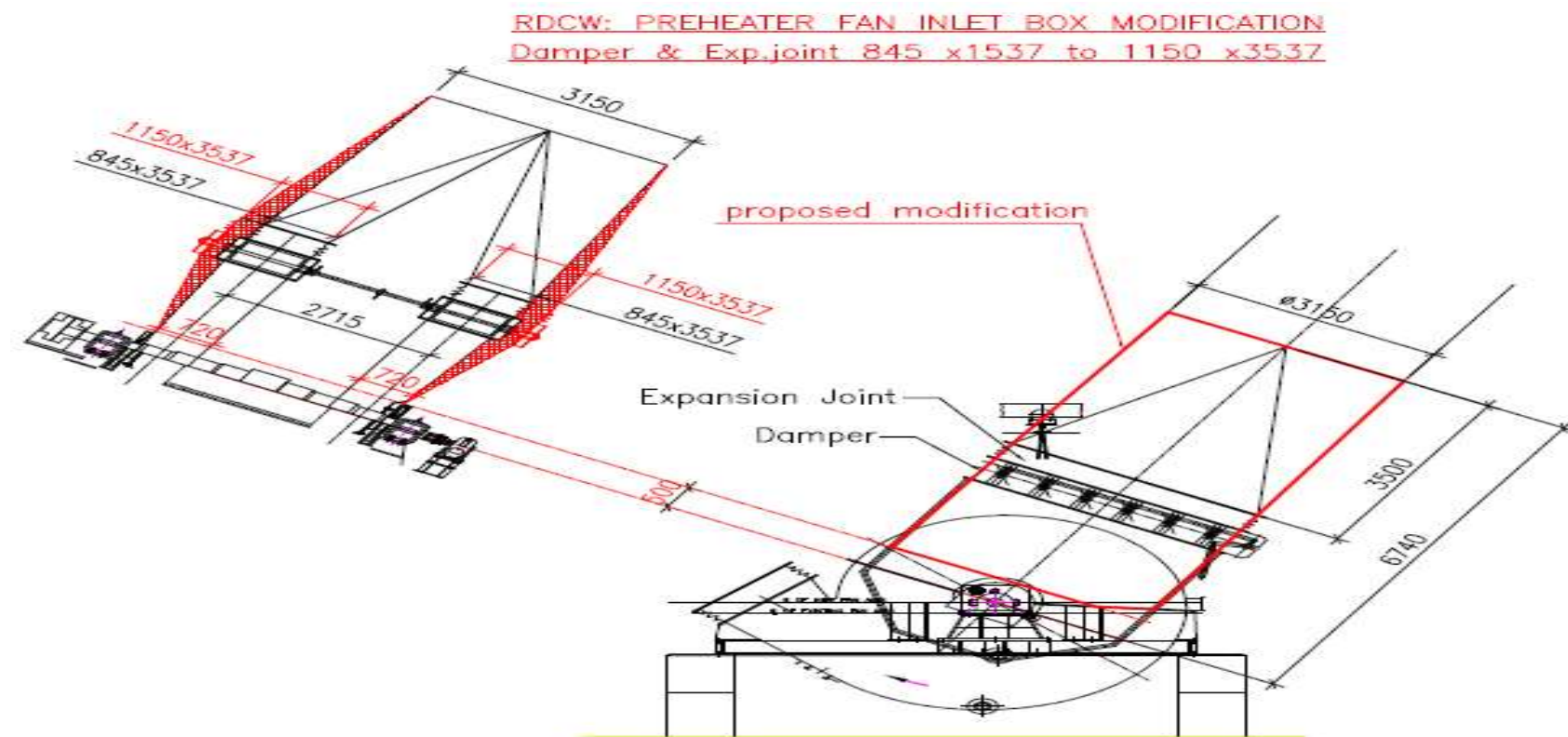


Result			
Particulars	Pressure drop (mmwc)	Flow M3/Sec at 909 Deg C	Saving (KWH)
Base case Before modification	183	290.11	-
Forecasted through CFD	135	290.11	127
After modification	121	291	41
Pressure drop reduction	60 mmwc		

Pressure drop reduction across PH fan inlet box.

Problem statement : At Preheater Fan, the Inlet Velocity is 28.7 m/sec which is very high. The inlet geometry of the fan can be modified in such a way that it will have more scope for energy conservation. In view of the increased inlet velocity by effectively implementing the inlet area correction, the acceleration and deceleration phenomenon at suction box, fan inlet area can be coarse corrected to achieve a desirable Energy saving.

Action taken : CFD analysis completed, with the help of TIKC. Results are validated pressure drop reduced by modifying the fan inlet box Area increased from 5.5 m² to 7.5 m² and the velocity decreased from 26.5 m/sec to 19.5 m/sec



DT:19.12.16

Result :

Particular	UOM	Before	After
Velocity at Fan in let box	m/s	26.5	19.15
Pressure drop Across inlet chute	mmwc	16	12

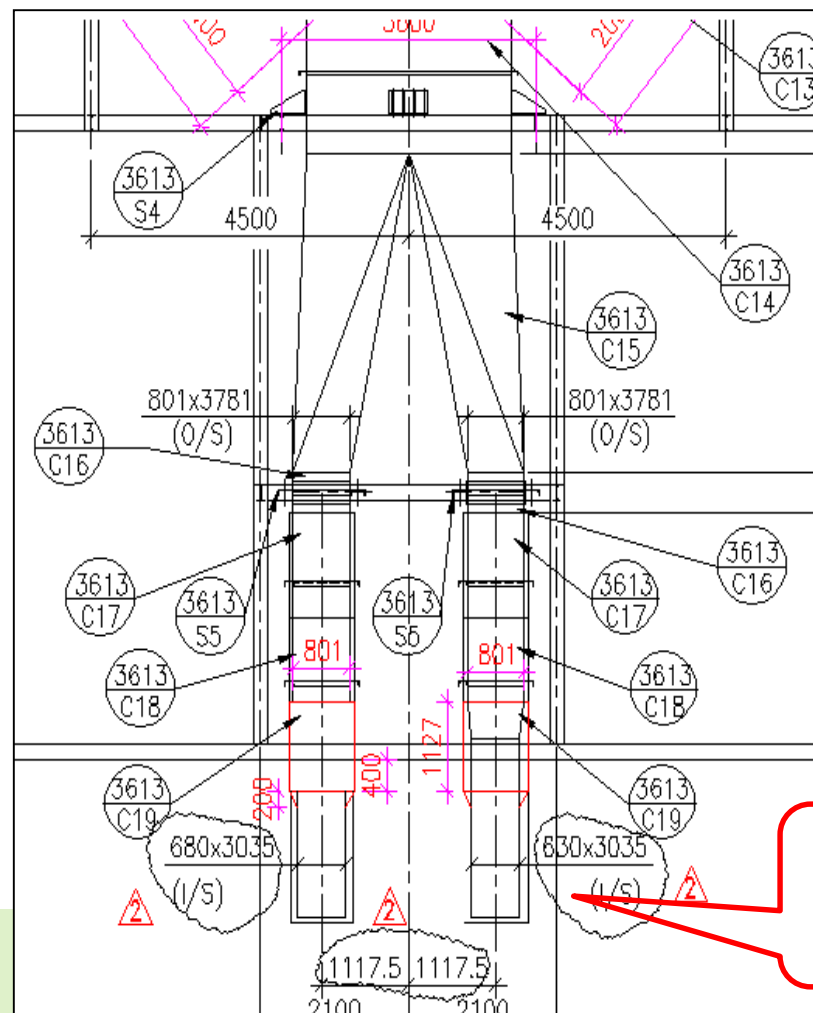
Raw mill fan inlet box modification

Problem statement :

In Raw mill fan, the inlet velocity is in the order of 26.3m/sec, which is very high. By doing the inlet geometry change, there is a possibility of pressure drop reduction of atleast 50-60 mmWg.

Action taken :

CFD analysis completed, with the help of TIKC. Results are validated pressure velocity reduced by modifying the fan inlet box. Area increased from 3.8 m² to 5.1 m² and the velocity decreased from 28.4 m/sec to 20.8 m/sec



Earlier

Size = 3035x630 m
Area = 3.8 m²
Velocity = 28.4 m/s

Modified

Size = 3035x830 m
Area = 5.1 m²
Velocity = 20.8 m/s

Result

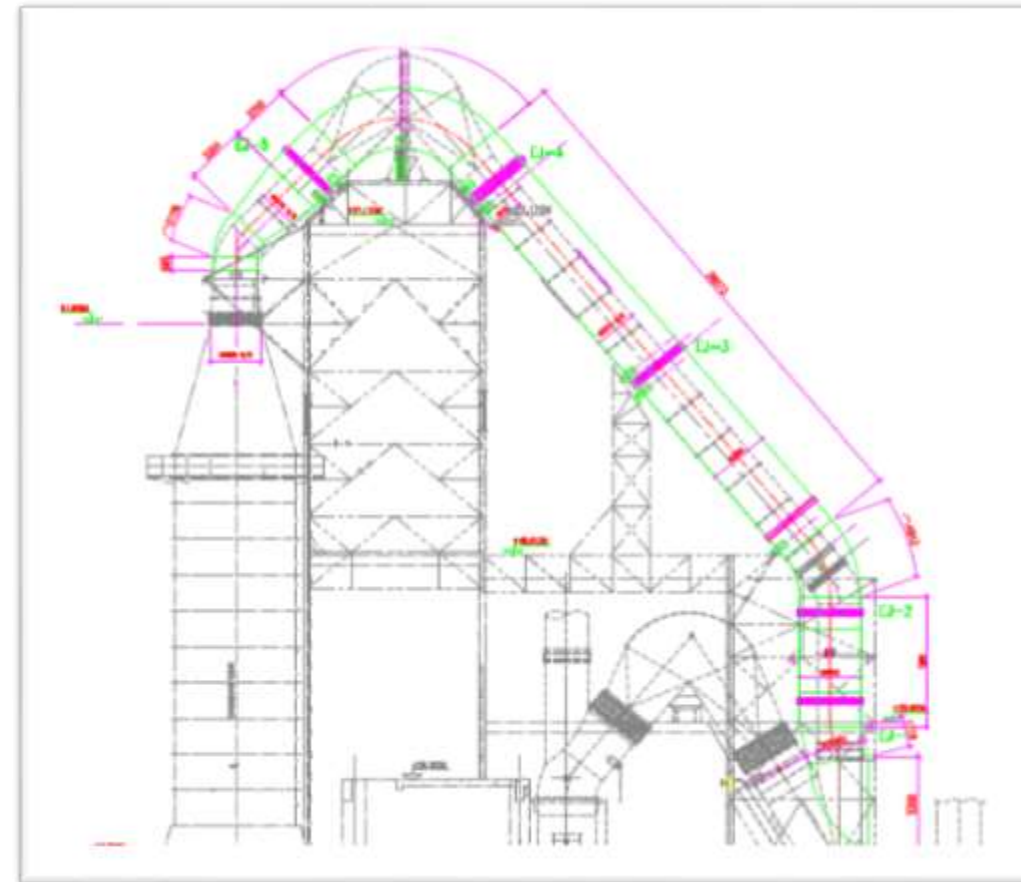
Particular	UOM	Before	After
Raw mill Fan efficiency	%	71	74
Velocity at Raw mill in let box	m/s	28	21
Power saving	KWH	33 KWH	

Pressure reduction in BH inlet & GCT circuit

We did Pressure profile comparison with our group units and identified the scope for improvement & Study conducted through M/s Holtech to explore the possibility of pressure reduction in the circuit

Description	UOM	RDCW	KCW	APCW Unit-2	GCW
RM fan outlet to BH inlet duct Dia.	m	2.73	4.9	3.6	4
RM fan outlet to BH inlet duct Velocity	m/sec	18.49	11.44	15.24	14
Bag house inlet draught in comp mode	mm wc	-90 to -100	-55	-70 to -90	-45
By pass duct dia.	m	2.3	5.3	5.3	4.25
By pass duct velocity	m/sec	38	14.9	16.7	17
Bag house/ESP draught in direct mode	mm wc	-177	-35	-50 to -70	-40 to -50

PH fan outlet to GCT inlet duct



➤ Preheater fan to GCT inlet duct can be replaced with **3300 mm** diameter duct to **reduce the velocity 34 m/sec to 17 m/sec** during direct mode operation, (However direct mode operation only 5% only.)

GCT to BH duct modification

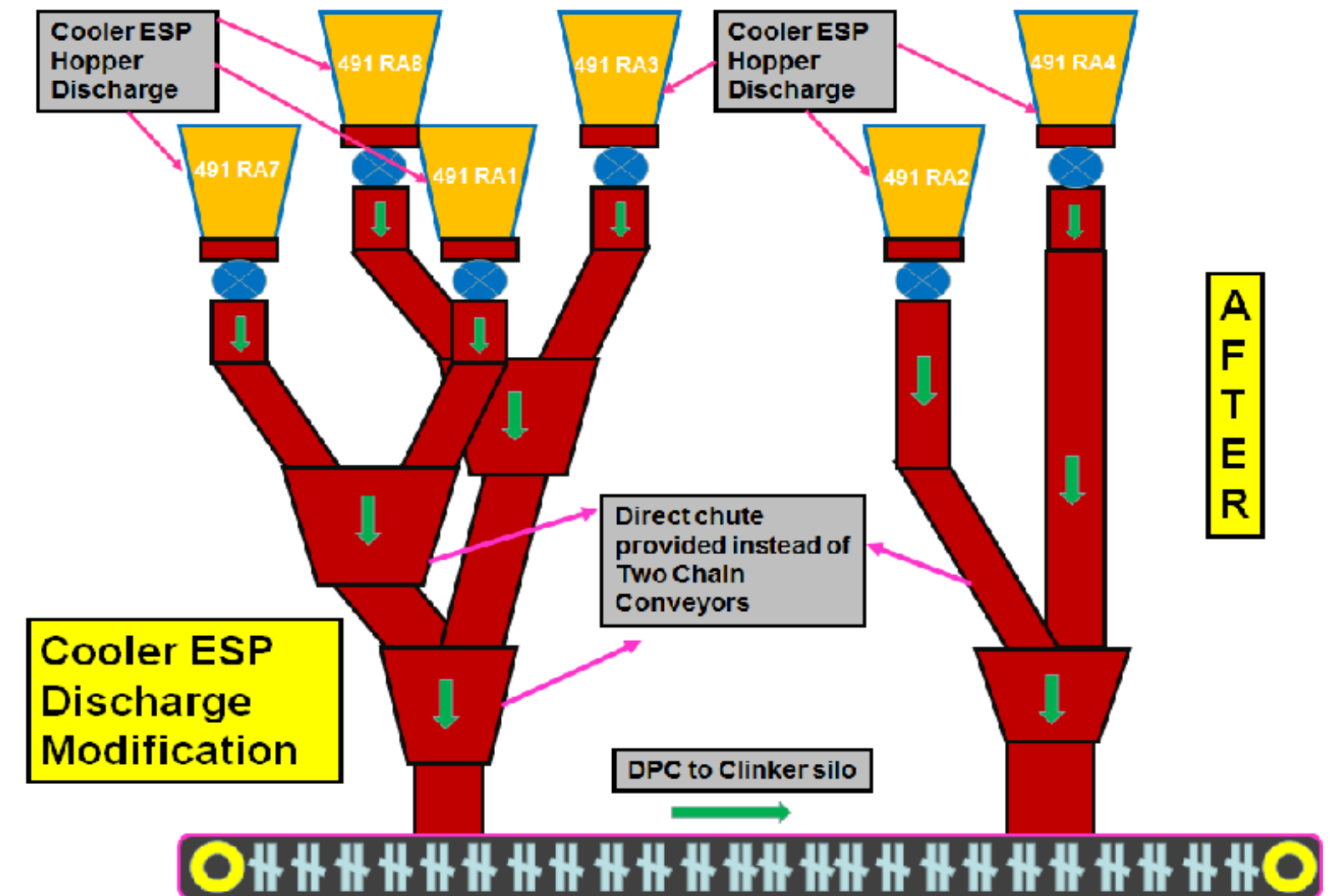
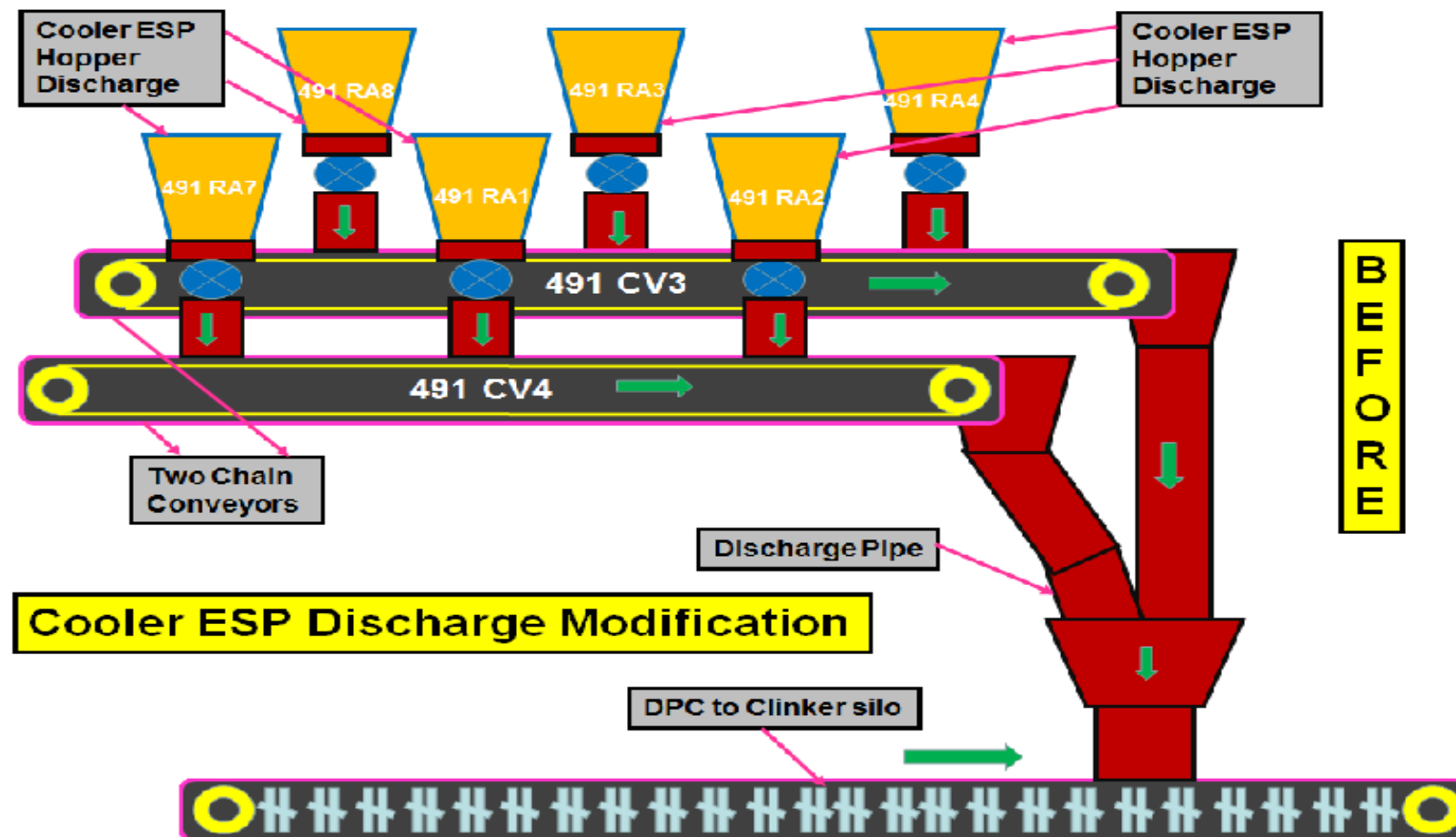


➤ GCT to ESP duct have higher velocity (21-22 m/sec)
 ➤ Ducts size may not be increase (layout constraints)
 ➤ 2578 x 2224 mm duct kink to be modify as shown in Sketch 1& 2.

Power saving in direct mode with reduction of 60-70 mm is estimated to be about 150 KW and in case of Compound mode saving is estimated to be about 45 KW.

Improvement Projects

Circuit modification (1) Cooler Transport circuit modification



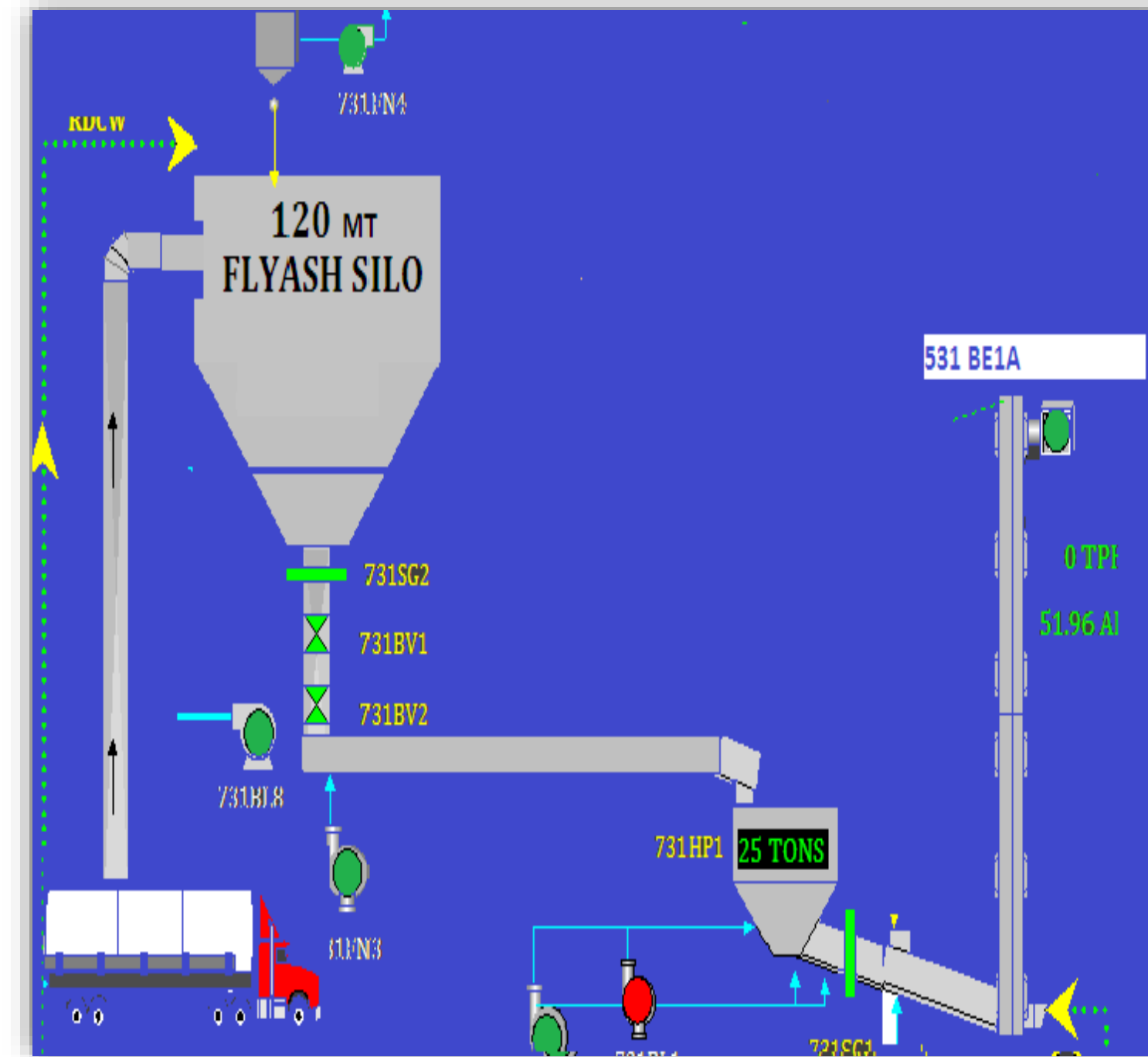
Two chain conveyor removed thereby power and maintenance cost saving : 2.00 Lakh /annum

Improvement Projects

Circuit modification :

Provision for Fly ash addition during RP finish mode operation.

- ❖ Fly ash pipeline was modified from 120T bin to 531BE1A RP recirculation BE directly. Avoiding 721BE1A bucket elevator and air slide fans
- ❖ Power reduction 30KW/Hr.



Improvement Projects

In-House fabricated secondary shredder m/c :To optimize the performance of secondary shredder

Problem statement:

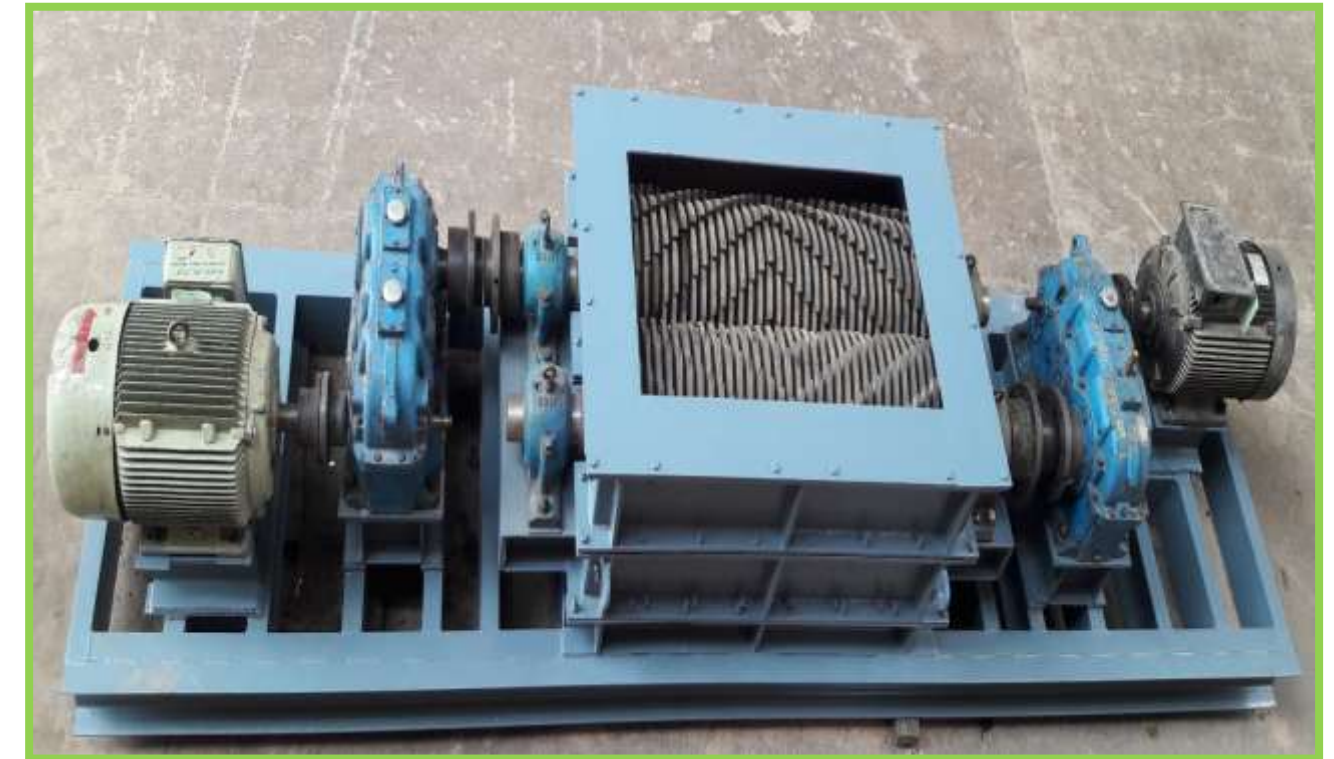
1. Vibration of old alternate shredder machine was inconsistent
2. Has Key locking type b/w shaft and mulcher and it was getting damage during running
3. Taking more time for cleaning scrapper replacement since it is not in removable type.

Investment for fabrication of new shredder machine Rs-11.3 Lacks

Benefits-

1. No vibration and smooth operation
2. Slippery of mulcher avoided by shaft modified as hexagonal
3. Replaceable casing rip.
4. Procurement cost of new shredder-42.84 Lacks
5. Actual investment cost of fabrication-11.3 Lacks
6. Savings-(42.83-11.3)-31.53 Lacks (old gear boxes of cooler, old bearings)

In-House fabricated secondary shredder



Energy saving proposals under implementation

SI.No	Description of energy efficiency improvement measure	Category	Investment estimated Lacs Rs./annum	Expected/Verified savings estimated Lacs Rs./ annum	Estimated ROI (Month)	Electrical Energy Saving Lacs KWh/annum	Thermal Energy Saving Mkcal /annum
1	Installation of Aerzen turbo blower for kiln coal firing in place of existing Twin lobe blower	Electrical	34.89	4.4	95.36	1.24	
2	VFD for BFW pump in TPP	Electrical	25.00	7.9	37.77	2.24	
3	Heat recovery from Rotary kiln & Cooler vent hot air	Thermal	100.00	8.5	141.79		980.66
4	VFD Panel for Rawmill Reject bag filter fan (361FN3)	Electrical	4.70	1.2	45.85	0.39	

Future Energy Saving Projects

Pre heater Pressure drop Study

Sl no	Location & Equip	Existing Pressure drop mmwg	Proposed Pressure drop mmwg	Modification Suggested	Expected Saving (as per report) kW
1	Stage I Cyclone	84	80		7
2	Stage II Cyclone	130	121		14
3	Stage III Cyclone	149	84	Existing cyclone cap of 6300 mm size is to be replaced with 6900 mm size without changing the original roof height. Minor modification will be done at the outlet duct to match with the existing arrangement.	119
4	Stage IV Cyclone	105	56	i) Existing cyclone cap of 6300 mm size is to be replaced with 6900 mm size without changing the original roof height. Modification will be done at the outlet duct to match with the existing arrangement. ii)The Existing immersion tube is to be repalced with completely new one.	85
5	Stage V Cyclone	137	100	i) Existing cyclone roof will be lifted by 500 mm along with the similar modification to the connecting duct. Inlet duct dimension will change from 4477 x 2545 to 4977 x 2545 ii) Existing immersion tube length is to be increased.	64

Total Power saving Identified 289 kW & energy savings of 8 Kcal/kg Clk
Total Estimated investment - 375 Lacs

Energy conservation Week at RDCW



Inauguration by Unit Head



Employee participation



Energy quiz competition



Awareness to school children



Energy awareness program for families



Poster Competition

Involvement of Employees in Encon

- Creating awareness by celebrating Energy conservation Week
- External training programme being conducted regularly
- In-house training conducting to all employees
- Awareness creating to all Colony residents
- Awareness creating to workmen's through pep talks
- Awareness through various competitions to Staff, Workmen, School children and Colony residents



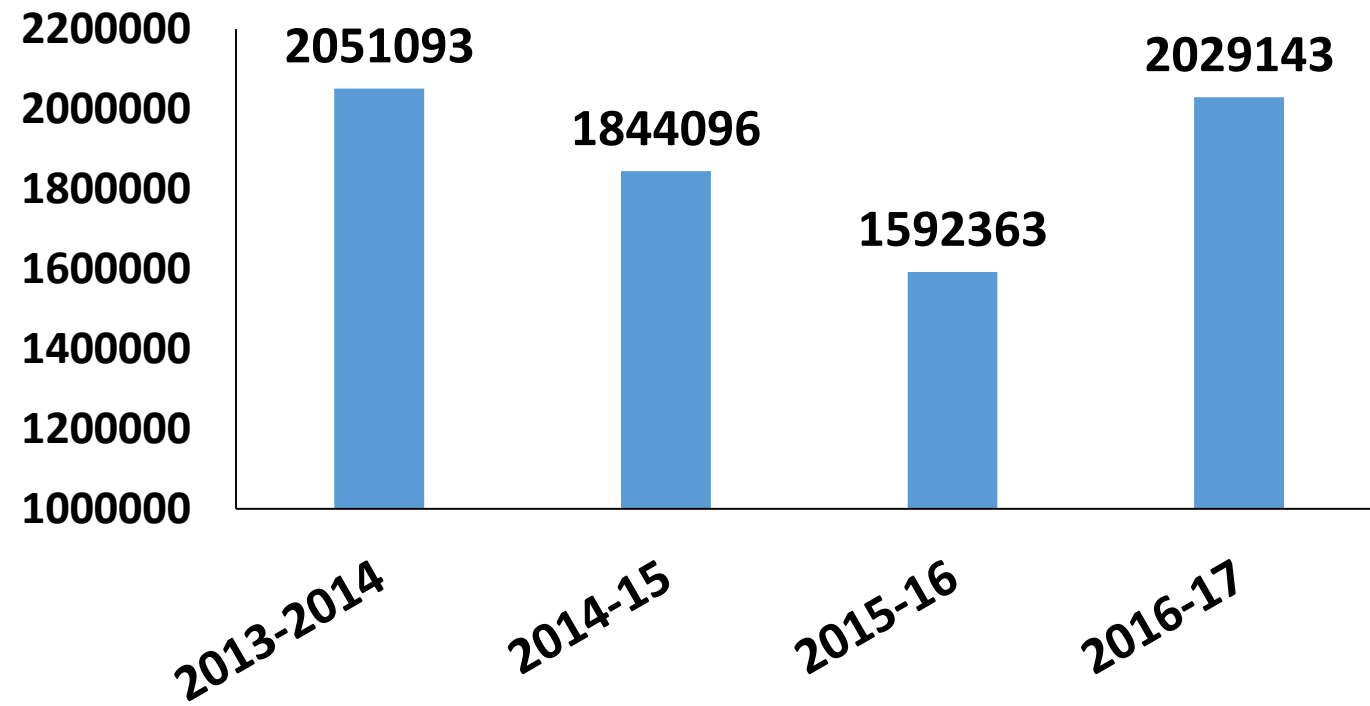
Employee recognition



In-house training conducted to all employees

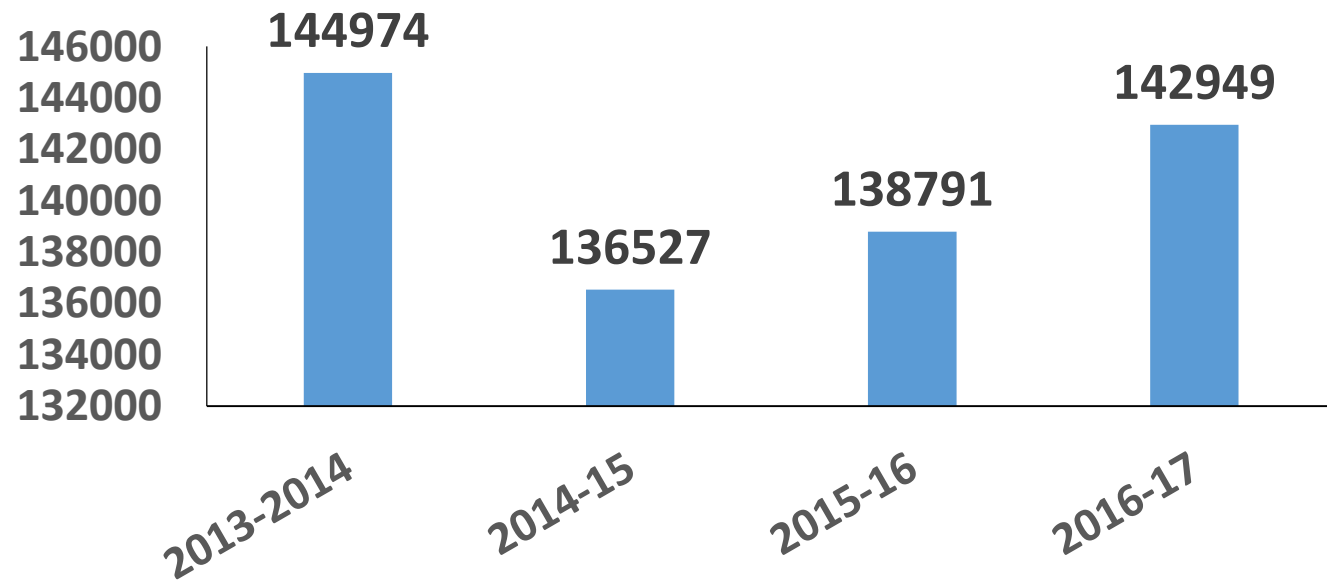
Utilization of Renewable Energy

Wind Power (Units)



Installed Capacity (5*225) KW

Solar Power (Units)



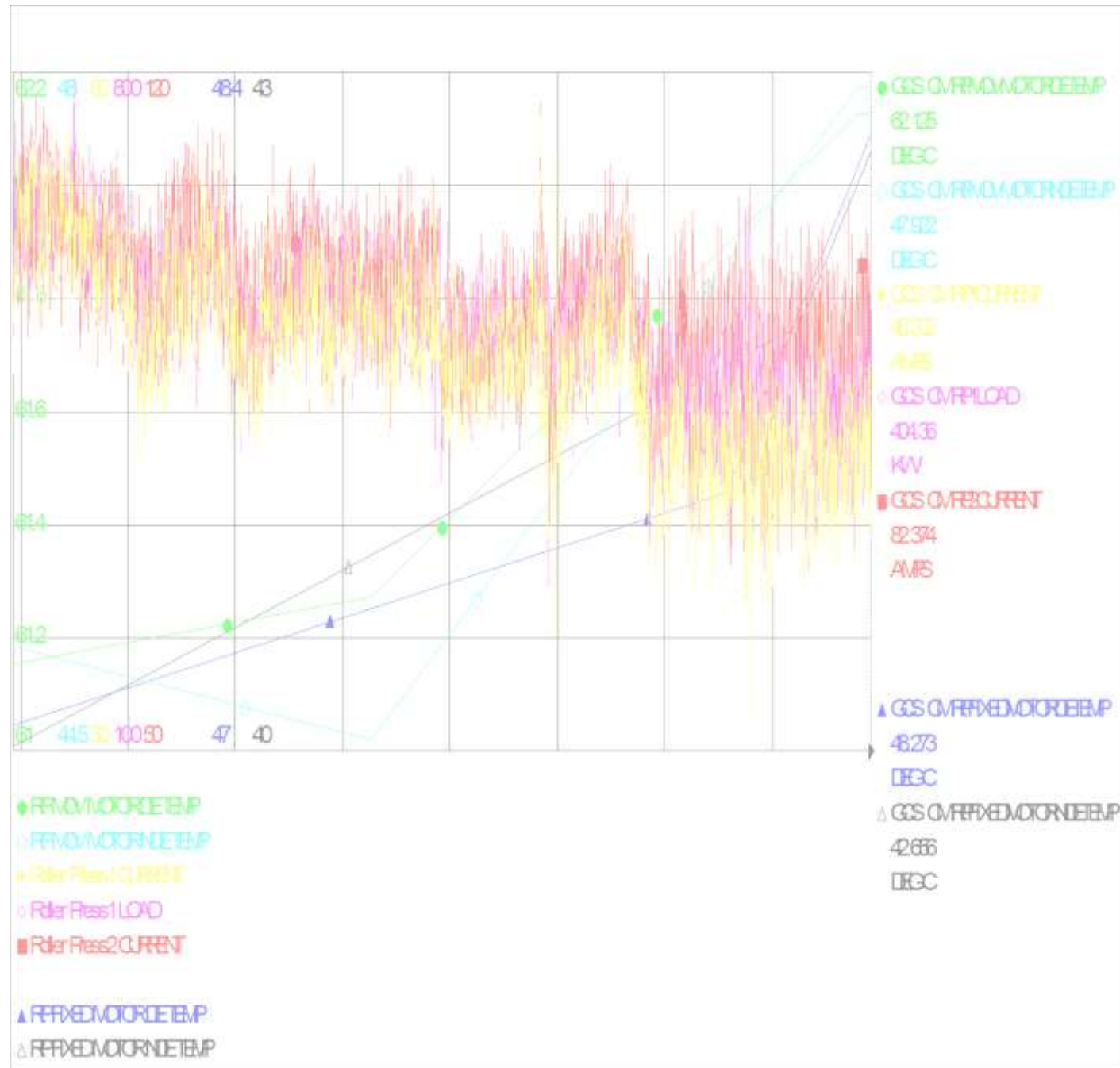
100 KW Solar Plant

EXPERT OPTIMISER

- Expert optimiser is an expert software package used for optimisation of the plant operation.
- Used in Rawmill , Coalmill , Kiln , Calciner , Cooler & Cement mill sections for optimisation.
- EO system results in optimised and smooth operation of the plant and very minimal operator intervention is required in plant operation.
- After implementing EO system, all major plant operation parameters are more stabilised and consistent.
- Quality parameters like clinker free lime , rawmill residue , cement mill blaine are more consistent.



ENERGY MONITORING & REPORTING SYSTEMS

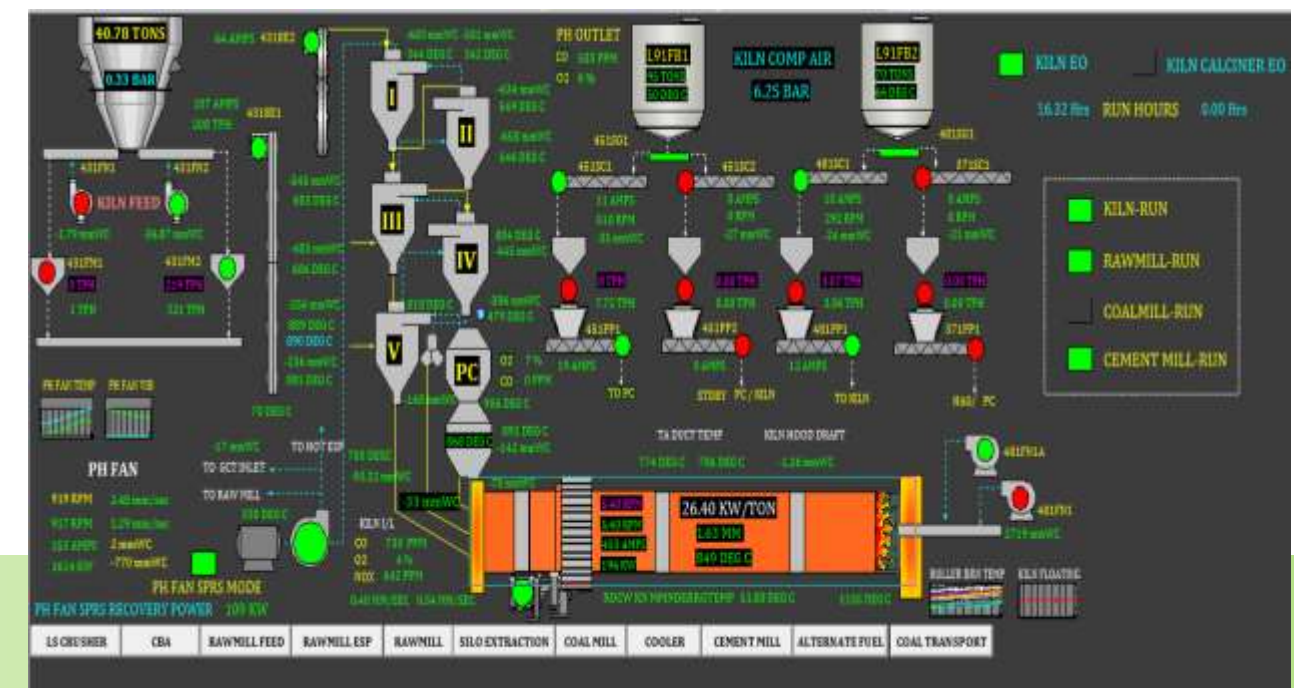
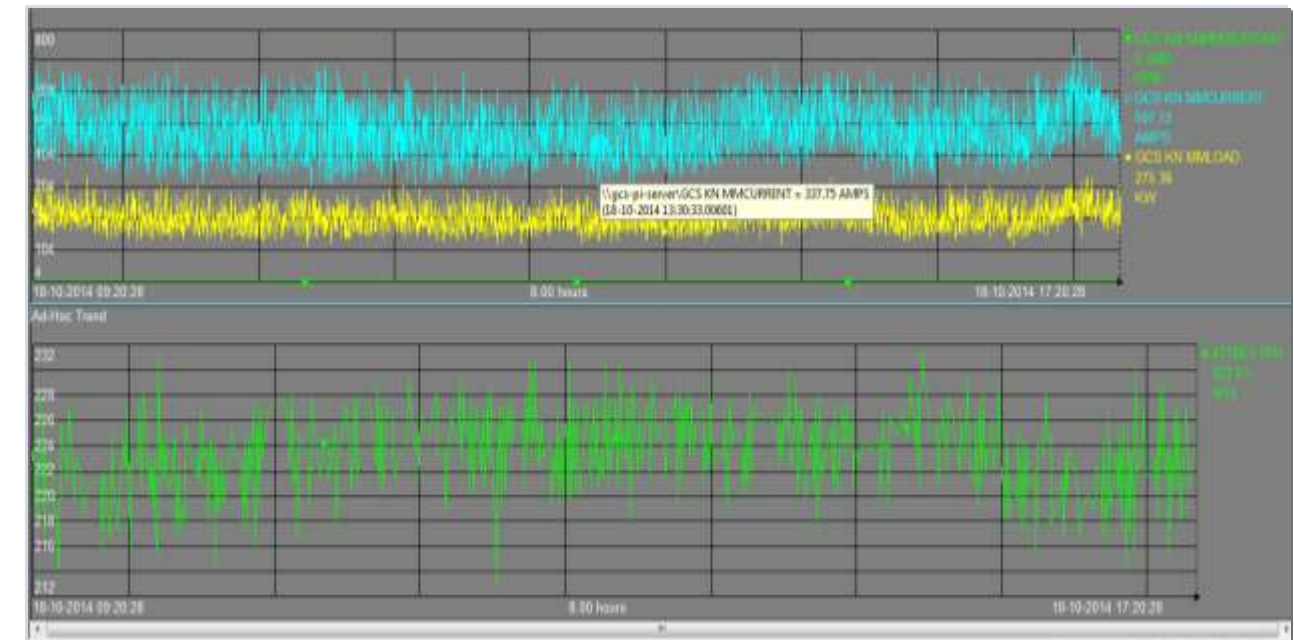


KNOWLEDGE MANAGER SOFTWARE

- ❖ Individual MCC's wise and section wise power details.
- ❖ Speed, load, current and running hours of all critical equipment's.
- ❖ Compressors, water pumps and bore wells running hours.
- ❖ Start/stop power for all equipments
- ❖ Online monitoring of parameters in DCS.
- ❖ HT motors power and temperature details
- ❖ Plant stoppages are automatically booked in SAP through PI system

To measure, monitor, trend & compare power consumption of all major systems/ sub systems/ auxiliaries for improving Sp. Energy Consumption

- ❖ Online monitoring
- ❖ Elimination of human error
- ❖ Measurable outputs
- ❖ Report generation and archiving is possible
- ❖ PI system available in all PC and every engineer can monitor all parameters.
- ❖ Daily Report on Utilization of Various Fuels.
- ❖ Useful for analysis of operational deviation





Environment

Increase in Fly ash addition in PPC %

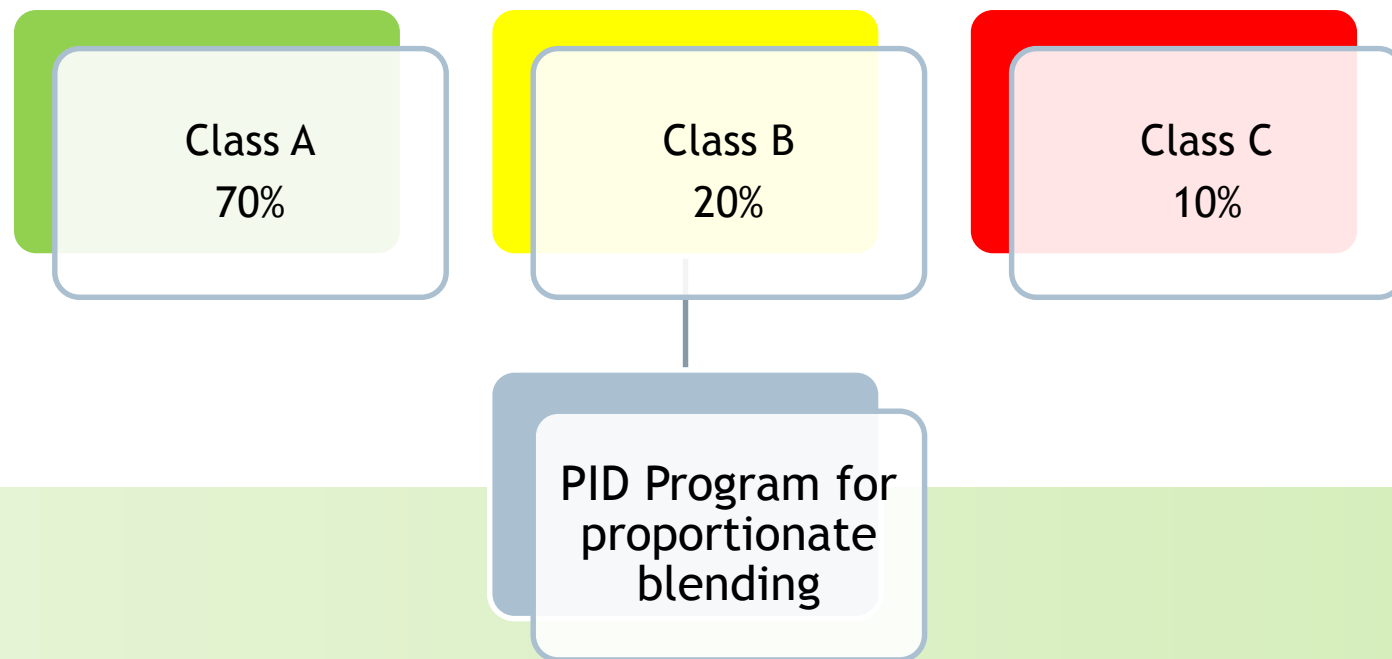
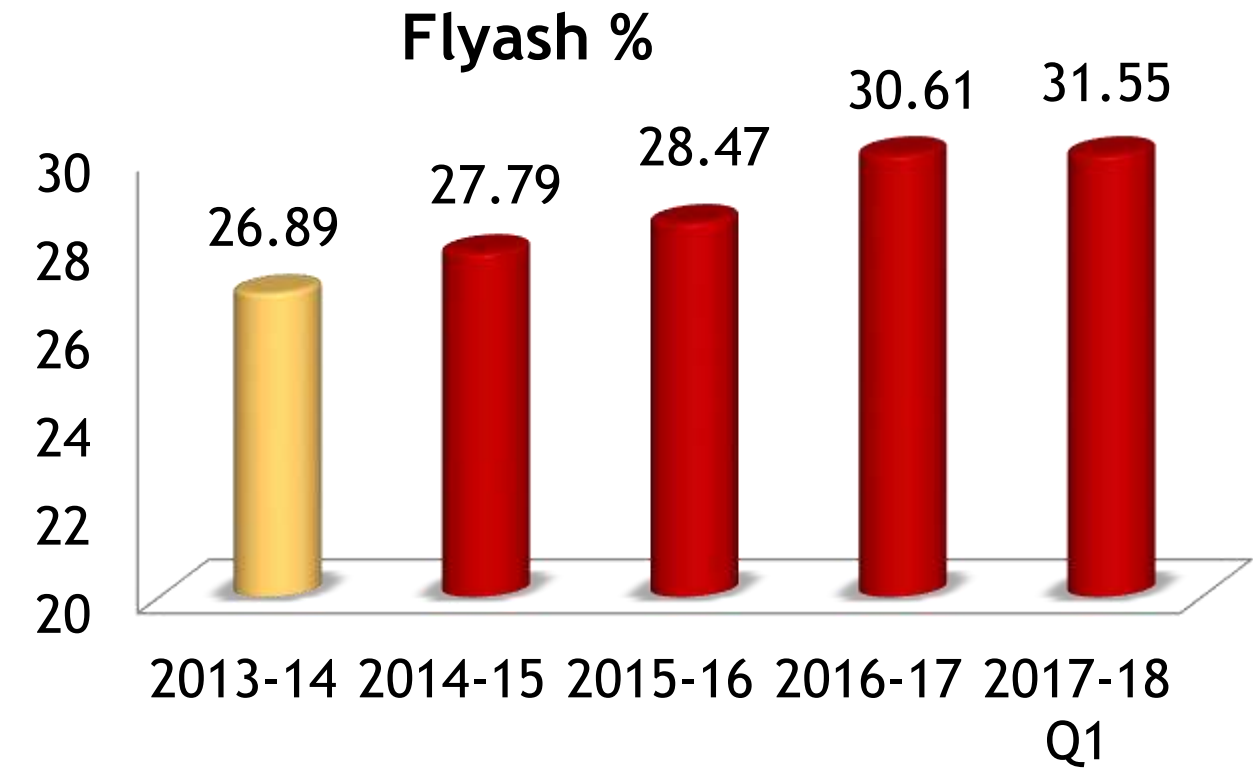
The Project activity entails reduction of clinker content in PPC produced by increasing fly ash percentage, thereby replacing equivalent amount of clinker and conserve natural resources like limestone and fuel.

Limiting factors/Challenges for utilization of fly ash:

- Availability of Fly ash
- Poor quality and large variation in term of Fineness,
- Substantial increase in the landed cost.
- storage facilities

Areas addressed to enhance fly ash addition

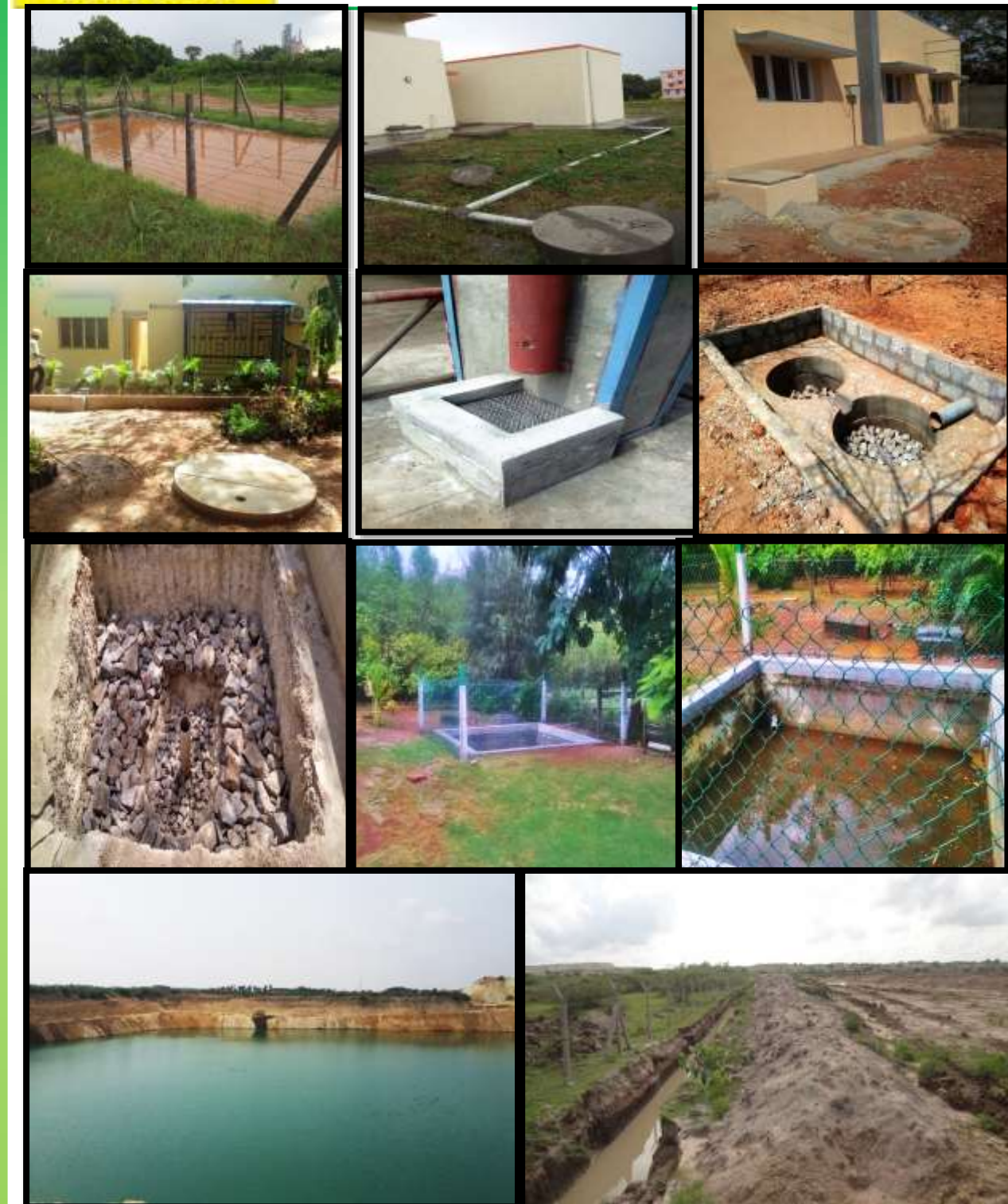
- Classification of fly ash (A, B & C) based on their quality and storing of fly ash in the pre defined silos/bins.
- Trial with different grinding aids to maintain required strength parameters



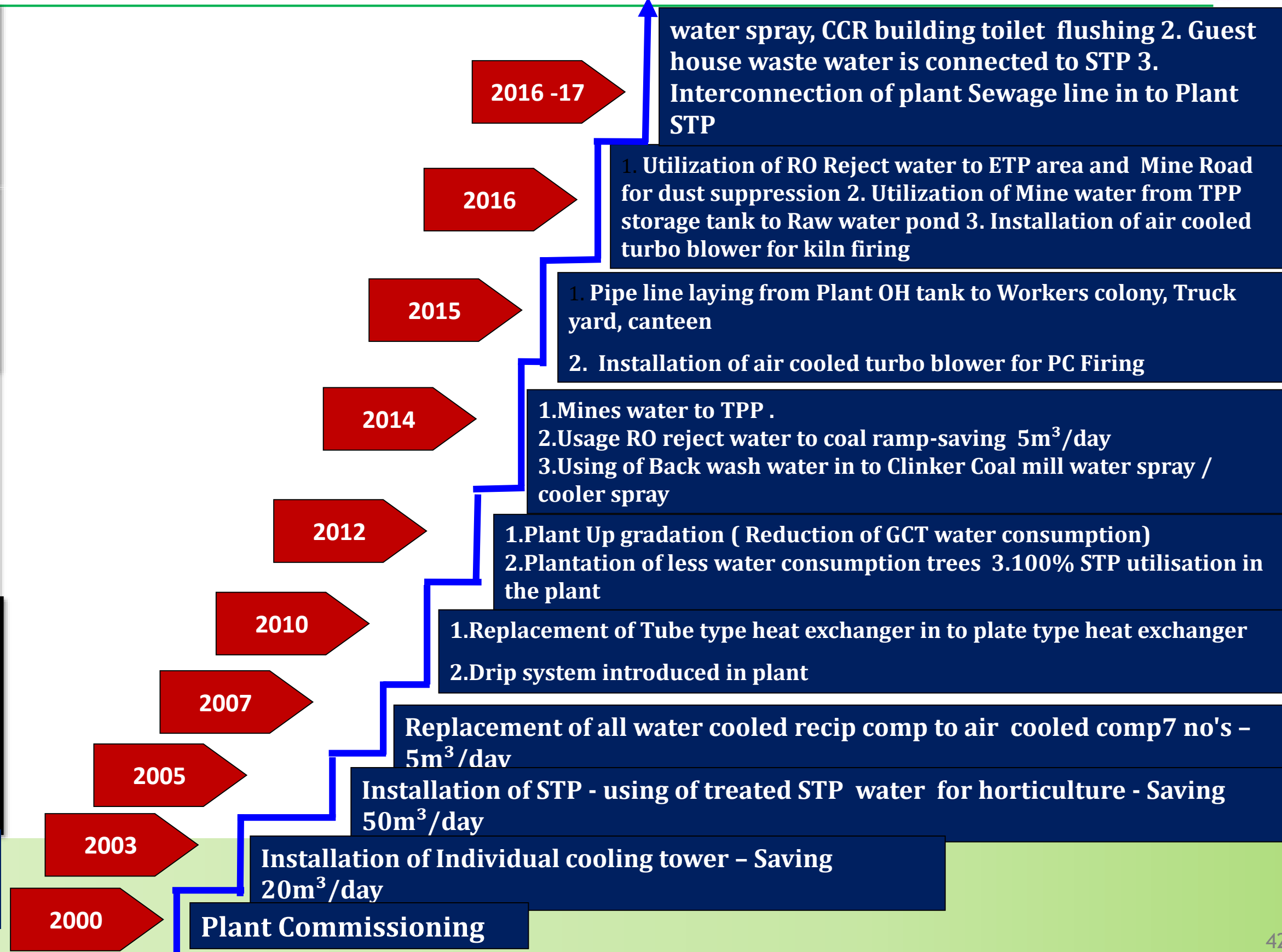
Class - A	Class - B	Class - C
LOI < 2.5%	2.5% > LOI < 5%	LOI > 5%
LR > 5.5 MPa	LR > 4.5 MPa	LR > 4.5 MPa
Blaine > 280 m ² /kg Residue < 34% on 45 μ	Blaine > 280 m ² /kg Residue < 34% on 45 μ	Blaine > 280 m ² /kg Residue < 34% on 45 μ
Color – Smoke grey	Color – Smoke grey	Color – Black, Reddish etc
Mettur, NLC – TP-1	OPG, Suryadev, Sree Balaji	NLC – TP-2, Shakti, Everest, Ind- Bharat
New 1200 MT silo, New 750 MT silo	120 MT Bin	Old 750 MT Silo



Water Conservation Initiatives

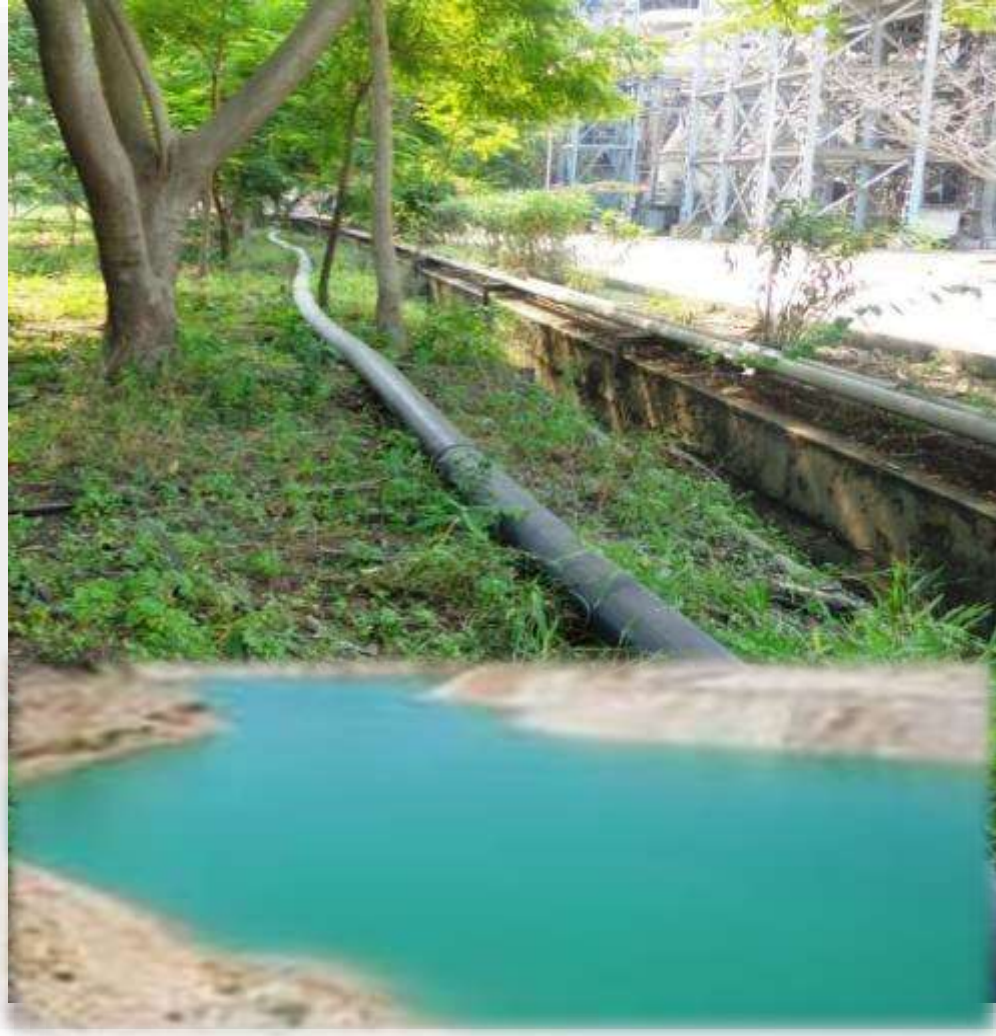


Rainwater Harvesting Plant , Colony & Mines



Water Conservation Initiatives

Annual average rain fall – 1021 mm



Rain Water harvesting at mines
500000m³



Drip irrigation at Colony & Plant

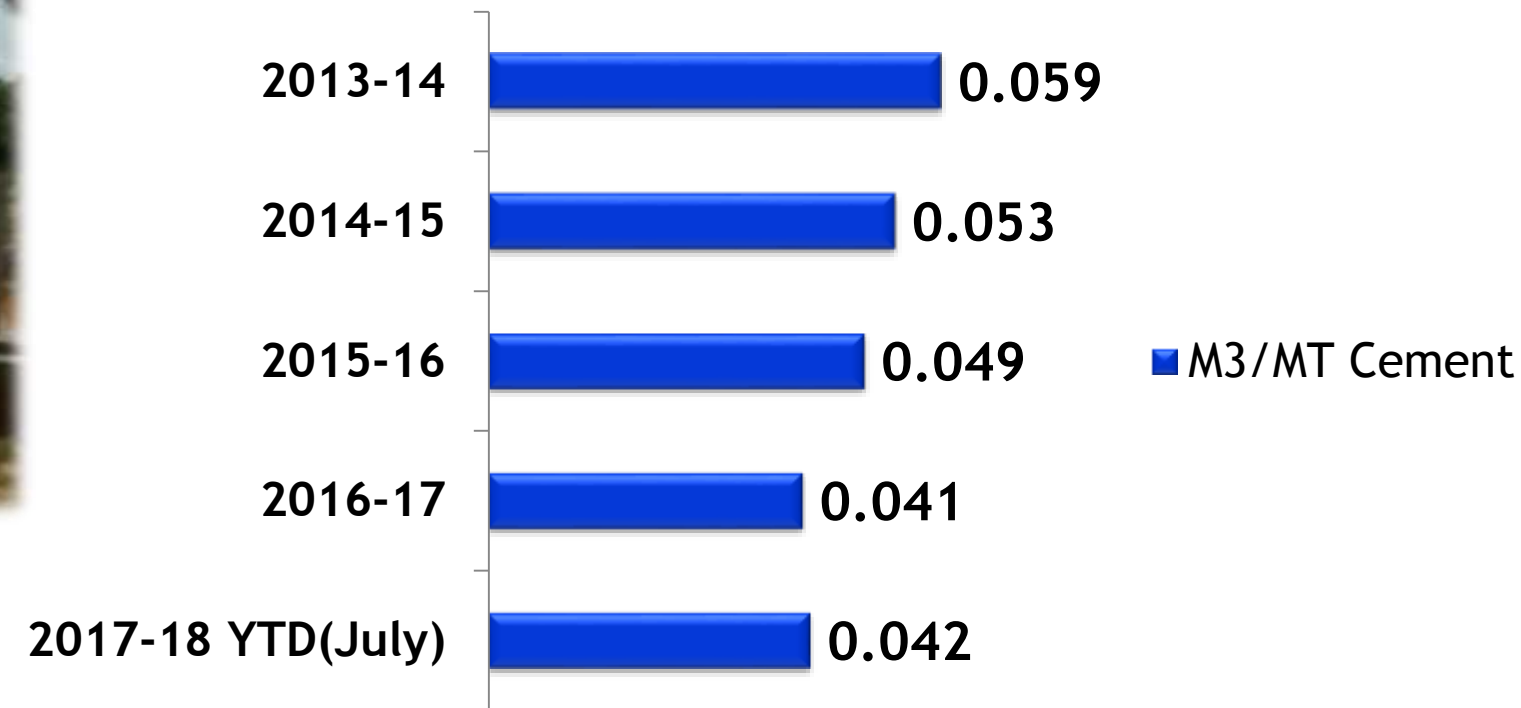


Rain water harvesting at Truck yard

Initiatives

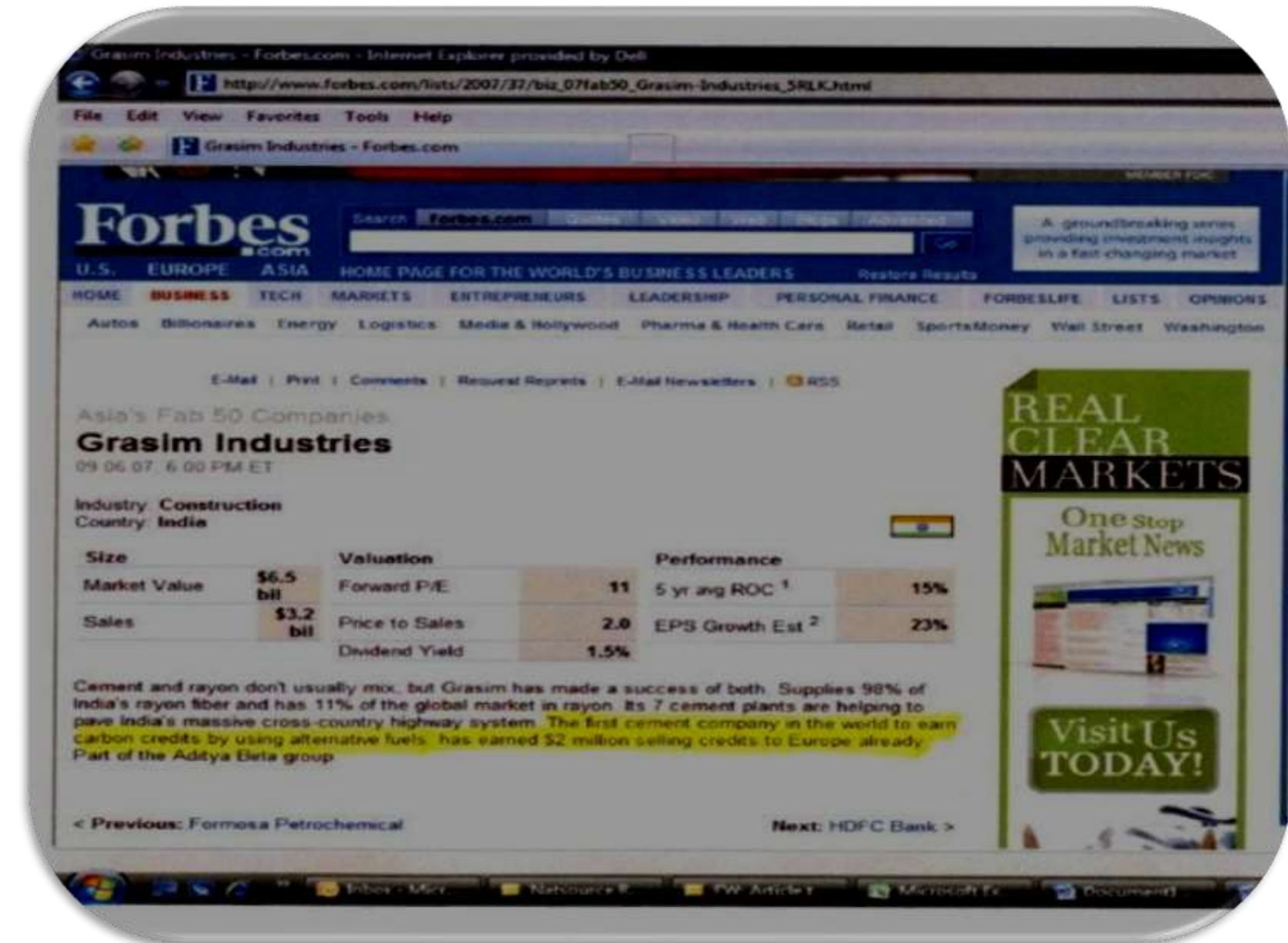
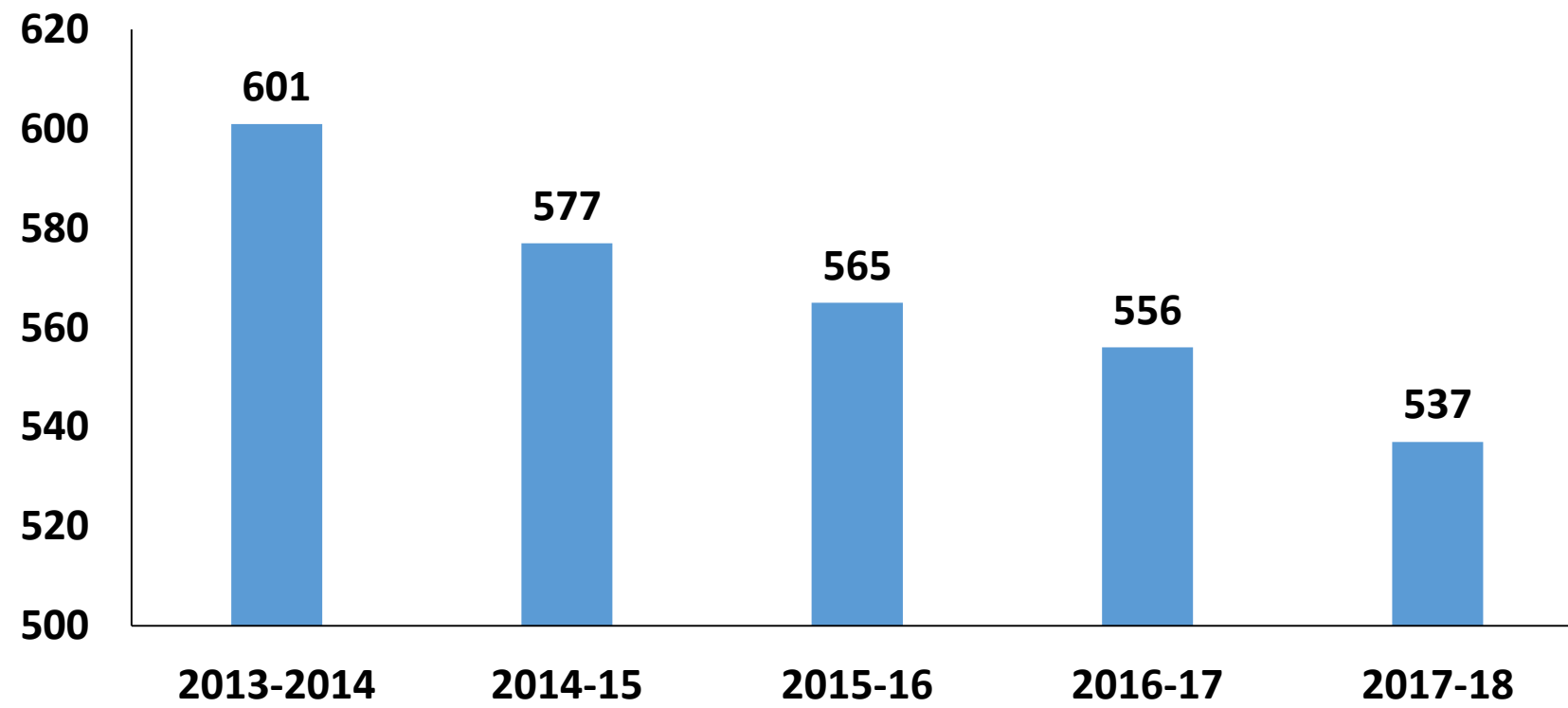
- Mines water for Plant & TPP utilization
- Use of STP Water for horticulture
- Drip irrigation in plant & Colony
- Usage of RO reject water for coal ramp

Specific Water Consumption M3/MT Cement



Net CO2 Emissions

Kg CO2/MT Cementitious Material

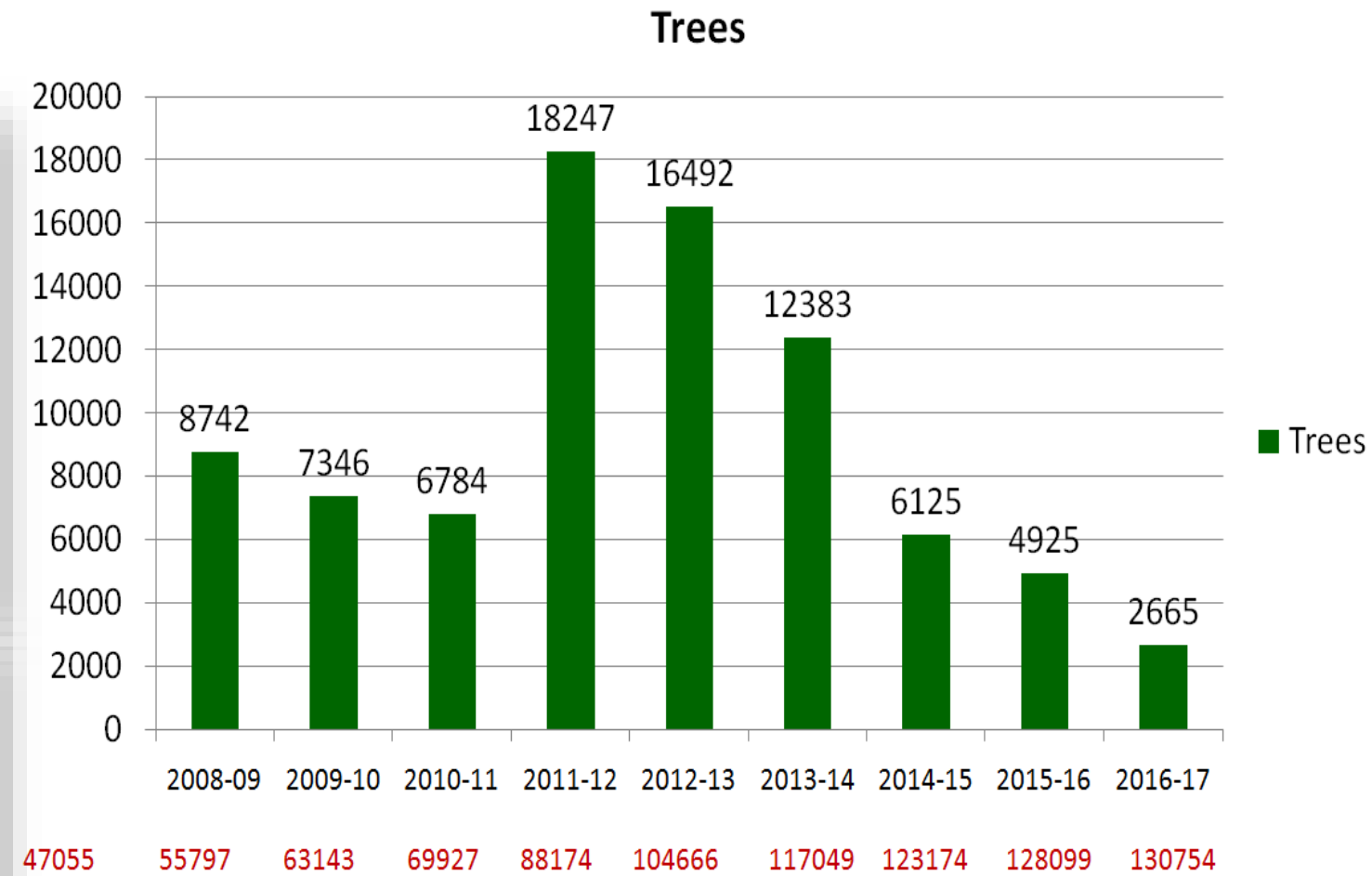


The First Cement Company in the World to earn Carbon Credits by using alternate fuels and earned 52 million selling credits to Europe already part of the Aditya Birla Group in **2007**

Green Belt Development

39 % of total area covered with tree plantations as against 33% of statutory norms

Tree plantations
Plant/Colony/Mines



Survival rate - 96%

Green Initiatives

On the eve of World Environment Day 5th June, 2017, a Green Walk was organised among our employees while coming to factory, thereby avoiding vehicle usage on that particular day



We have organised Environment Day Celebration at our nearby village in Reddipalayam that included sapling plantation. We have issued an “Environment Pack” which comprised of one Jute bag printed with UltraTech Logo, one Mango sapling, two numbers of CFL lamps, energy saving pamphlets and one children gift to every house in the village. Through this initiative we covered 250 village residents.

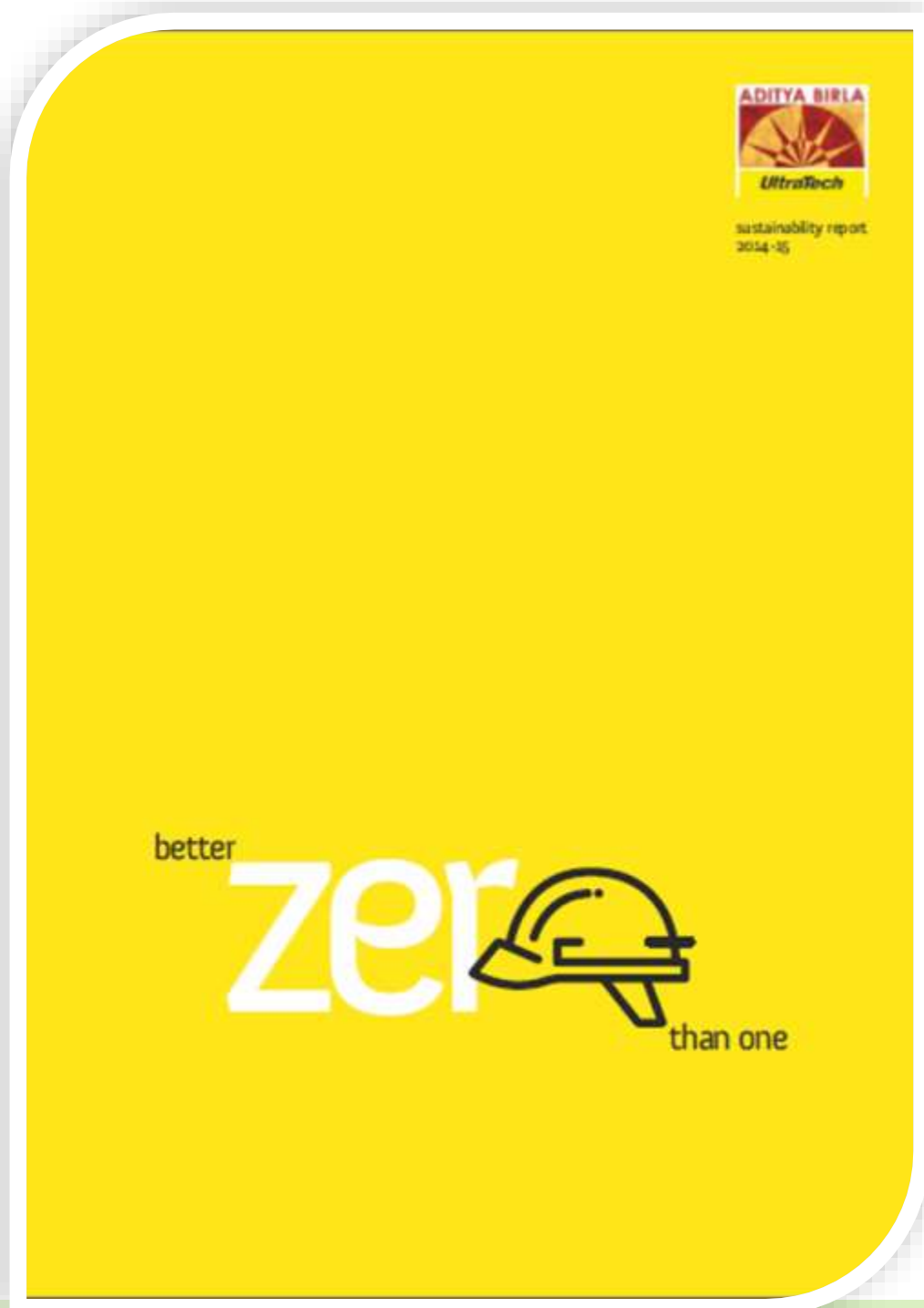


Awareness initiatives

WORLD ENVIRONMENT DAY CELEBRATIONS



KNOWLEDGE SHARING



- We are already part of CSI - Switzerland
- Participating in benchmarking process of Whitehopleman & others
- Publishing best practices in Cement sustainability report
- Sharing best safety & environmental practices
- Knowledge up gradation at all levels
- Participating in BEE's PAT Scheme

AWARDS & ACCOLADES



AWARDS & ACCOLADES

RDCW has been awarded the “Green Co” - Gold Certification by Confederation of Indian Industry in accordance with the Green Company rating system. This award recognize the significant contribution of RDCW in the area of energy reduction, environment and sustainability performance.

RDCW is among few companies in India and first in our cement business to be certified under Green Co.

RDCW was measured on ten parameters and environmental practices. The Green Co drivers for excellence are- Energy Efficiency, Water conservation, GHG emission, Waste management, Material conservation, Recycling, Recyclability, Green supply chain, Renewable Energy, Product Stewardship and Life Cycle Assessment.



AWARDS & ACCOLADES

RDCW has been awarded “**Most Innovative Project**” for the **Best Practices in Waste Management** by CII GreenCo Best Practices Award 2016.



AWARDS & ACCOLADES : Safety

- ❖ First place for best safety practices “SAFECON 2015” by CII
- ❖ State Level Safety Award from Tamil Nadu Government (1999,2000, 05, 06 & 08)
- ❖ Safety Appreciation Award from NSC Tamilnadu Chapter 2003
- ❖ Greentech Safety Award - Bronze in 2006 , Silver in 2007 & Silver in 2010.
- ❖ Two First Prizes State Level Safety Award from Tamilnadu Government (2005 & 2006)
- ❖ Global Cement Awards Lowest Injury Incidence Rate - First prize (\$1000).(2006)
- ❖ Golden Peacock Award GPOHSA 2009 & 2010 .



State Government Safety Award



Greentech Safety Award



SAFECON 2015

AWARDS & ACCOLADES : Energy

- ❖ “GreenCo Gold” certification by CII-Green Company Rating System - 2015
- ❖ National Excellent Energy Efficient Unit Award by CII - (2009, 2010, 2011, 2013, 2014, 2015 & 2016)
- ❖ National Energy Efficient Unit Award by CII (2004, 2006, 2007, 2008 & 2012)
- ❖ Global Cement Awards, Lowest Specific Energy consumption, raw meal & clinker grinding - 2006
- ❖ NCCBM Best Electrical Energy Performance Award 2008-09
- ❖ NCCBM Second Best Improvement in Thermal Energy Performance Award 2008-09



CII Energy Awards

AWARDS & ACCOLADES : Environment

- ❖ Green Manufacturing Excellence Award by Frost & Sullivan 2013,2014,2015,2016,2017
- ❖ Tamil Nadu Pollution Control Board - Green Award 2012
- ❖ FIMI National Award in Environment -2014
- ❖ GreenTech Environment Excellence - Silver Award 2006 & 2009 & Gold -2012
- ❖ Global Cement Award Lowest specific CO2 emission - 2006
- ❖ Most Innovative Scheme for environmental impact abatement - 2006
- ❖ FICCI Environment Sustainability of Business Award 2006 - 2007



TNPCB GREEN AWARD



FIMI National Award



Frost & Sullivan Leader award
for Sustainability 4.0



Frost and Sullivan GMEA



Thankyou