



Trusted Technology – Solid Strength

KESORAM INDUSTRIES

Cement Division, Unit: Vasavadatta Cement

An ISO 9001 / 14001

OHSAS / 18001 / 50001 Company

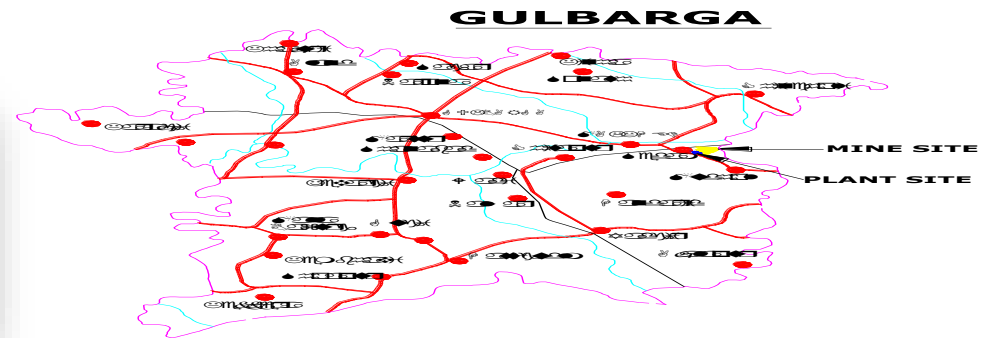


Vasavadatta Cement is 2nd green field Project of Kesoram Industries under the esteemed leadership of Smt. B.K. Birla Ji, as Chairman & Smt .Manjushree Khaitan as Exe.Vice Chairman.

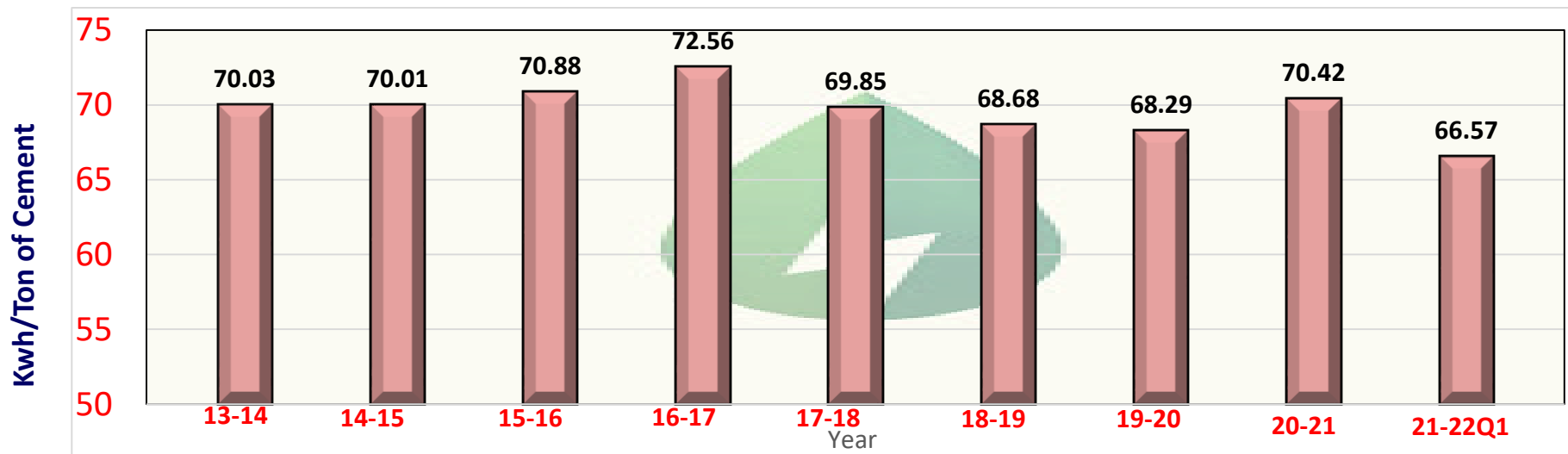
The First unit commercial production started in the year 1986 and the Second unit went in Operation in 1997.The third unit went on stream in Dec 2006 and the fourth unit went on stream in March 2009.

VC is having a Captive Power Generation capacity of 79.2 MW.

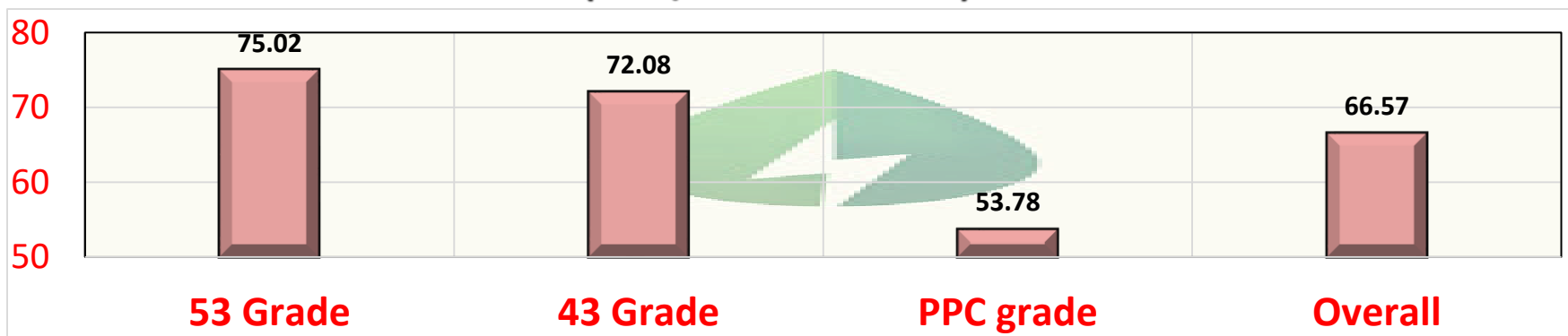
PRODUCTS



**Total Sp. Power Consumption Overall (All Grades)
(Kwh/Ton of Cement)**



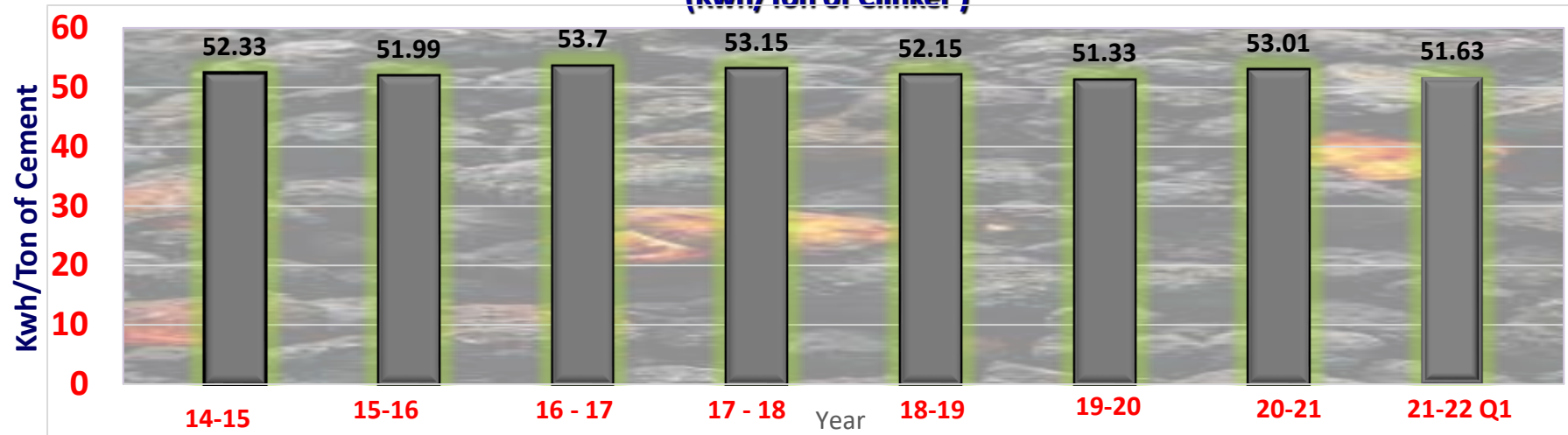
**Comparison of Sp. Power Consumption Overall (Grade wise)
(Kwh/Ton of Cement)**



For the year 2021 – 22 till June'21

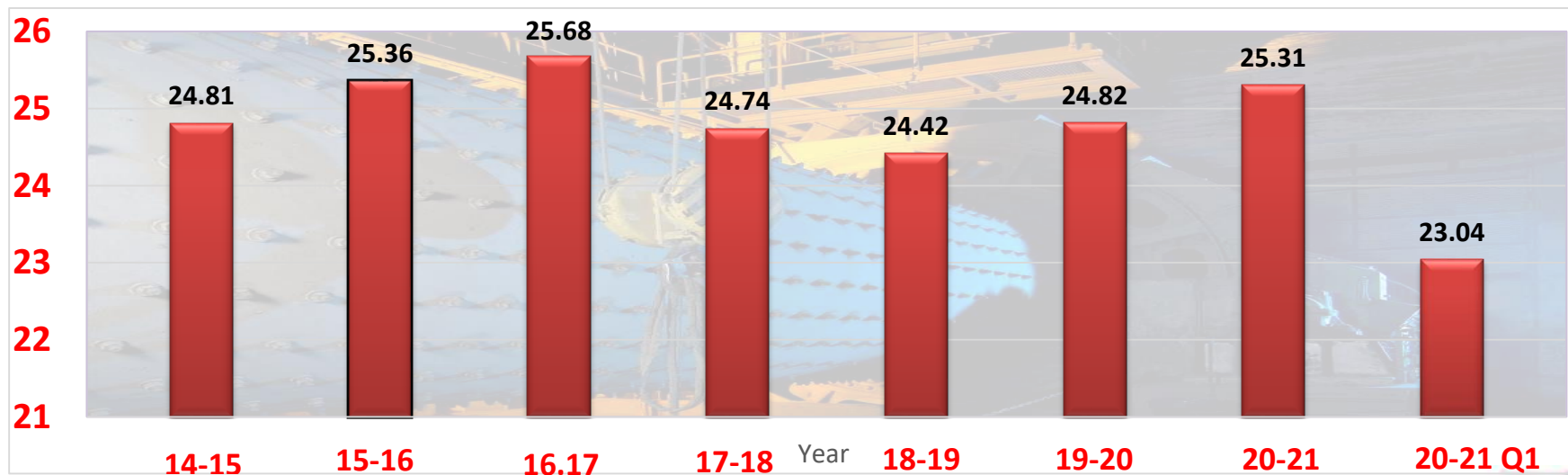
Sp. Power Consumption up to Clinkerisation

(Kwh/Ton of Clinker)



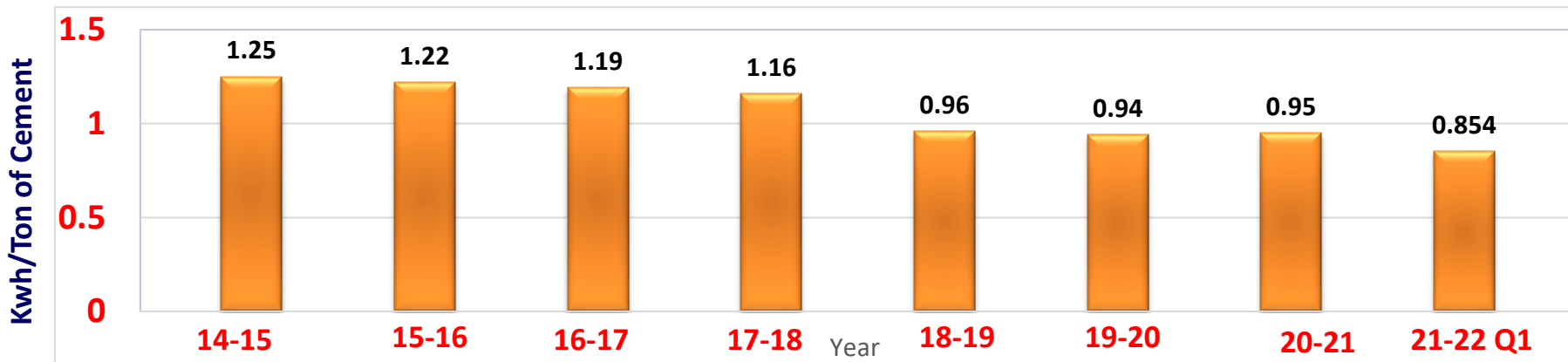
Sp. Power Consumption on cement grinding

(Kwh/Ton of Cement)



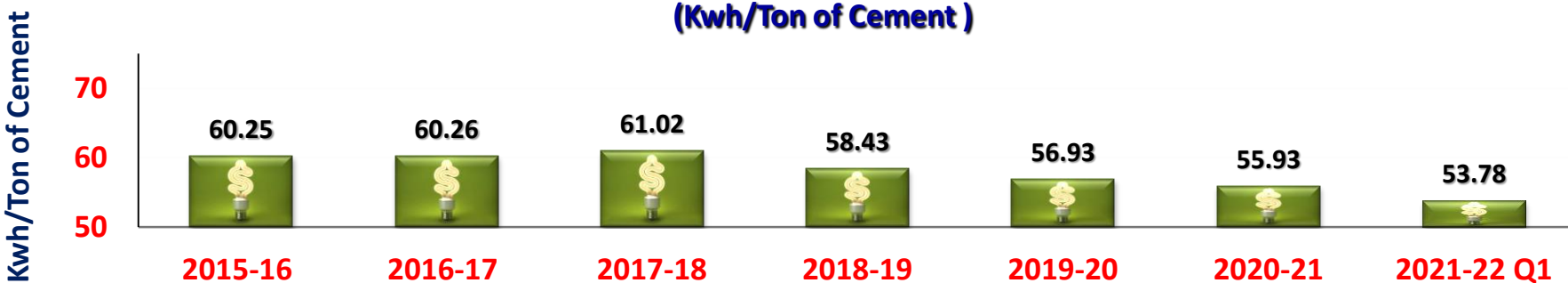
Sp. Power Consumption on cement Packing

(Kwh/Ton of Cement)

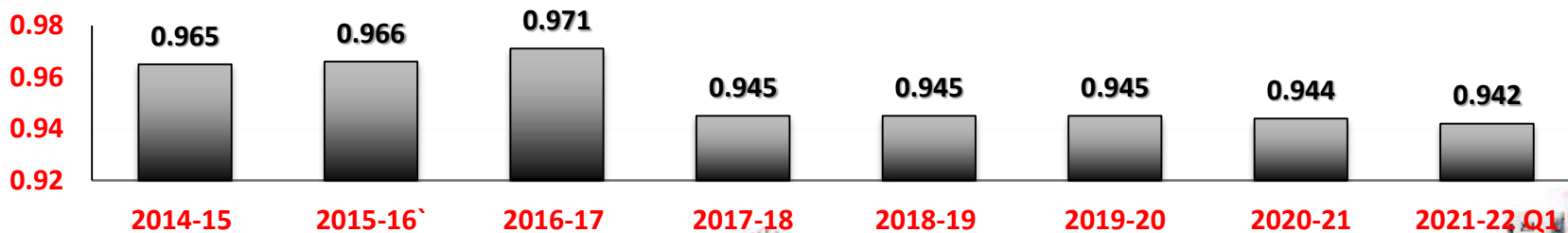


SP. POWER CONSUMPTION ON PPC GRADE

(Kwh/Ton of Cement)

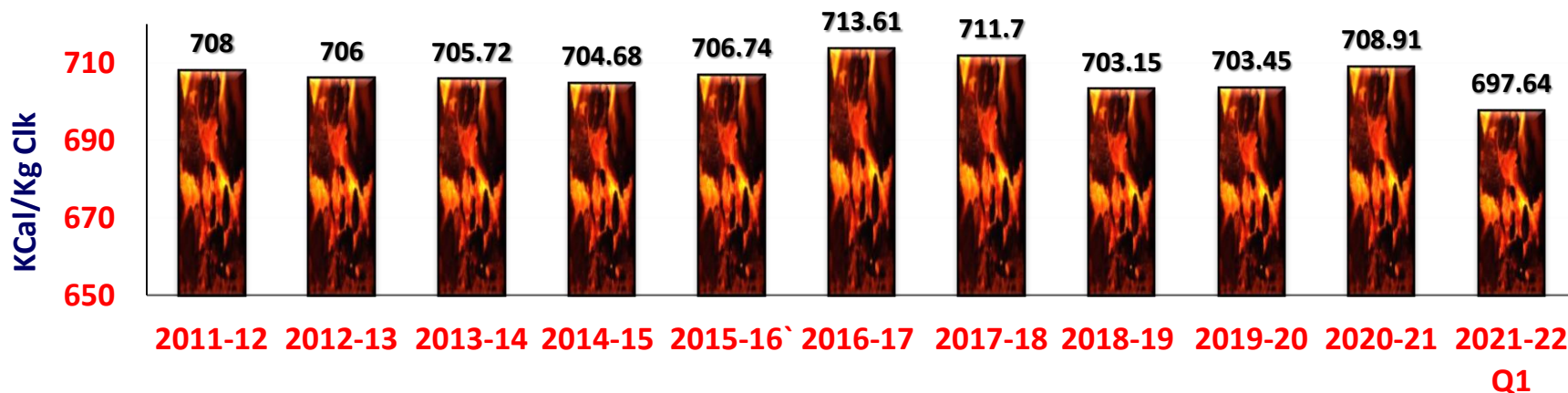


Clinker Factor for OPC cement



Specific Thermal Energy Consumption

Kcal/Kg Clk



Utilization of Waste as fuel (Alternate Fuel Utilization)

AFR Consumed MT	2018-19		2019-20		2020-21	
	Consumed, MT	Coal Saved	Consumed, MT	Coal Saved	Consumed, MT	Coal Saved
Tire Chips	65.15	91	12.3	19.7	15.61	12.7
Carbon Black	23737.60	23488	17350	21669	11995	16176
RDF	66.65	33	**	**	**	**
Stalk (Agri Waste)	7.9	5	**	**	**	**
Plastic Waste	19285.15	9193	17438	6986	6835	3136
Total	43162.45	32810	34800.3	28675	18846	19325



Bench Mark Comparison with other Industry:

S.No	Energy	Unit	National best	International best	VC Value
1	Thermal energy	Kcal / kg clinker	684 (6 stage PH)	667 (Japan) (<i>values for 16-17</i>)	697.64 (Avg of all four units)
2	Electrical energy	KWH /MT Cement	63.91	65 (Japan)	66.57

PAT Requirement

Source – CII Energy Benchmarking V: 4.0

PAT cycle 1	Base Line value 07-10	2010-11	2011-12	2012-13	2013-14	Target year 2014-15
TOE/ton of product	0.1099	0.1102	0.1098	1076.05	0.0997	0.0910
PAT cycle 2	Base Line value 14-15	2015-16	2016-17	2017-18	Target Year 2018-19	
TOE/ton of product	0.0949	0.1041	0.1047	0.0953	0.0931	

Green House Gases

Sl.No	Year	Scope 1 emissions KgCO ₂ /MT of cement	Scope 2 emissions KgCO ₂ /MT of cement	Scope 3 emissions KgCO ₂ /MT of cement	Total KgCO ₂ /MT of cement
2	2017-18	783	0.0033	3	786
3	2018-19	773.97	0.002	2.47	776.4
4	2019-20	761	0.0017	2.47	674.53
5	2020-21	668	0.001	1.21	669.21



Projects With Very Less In House Investments

S.No	Project Description	Investment Rs Lacs	Saving Lac/Annum
1	Optimization of fly ash silo Bag filter fan in PID operation (4N-109) unit-4 cement mill	0	0.58
2	Optimization of Unit-4 Cement mill HR Bag house 4N-26, dust transport system	0	0.84
3	Optimization of Unit-3 RA fan operation, Actually fan is running at higher speed 1480 with 35% damper open @ 105 kw, detail study carried out and fan is operating at lower speed 1250-1300 @ sufficient pressure is getting for bags cleaning, Since last 6 months above modification is under operation	0	0.74
4	Optimization of cooler ESP TR sets unit-1&4	0	408KW/Day
5	After detail study of compressed air requirement for bag filter and PN gates, 5 nos Portable compressors has been isolated/stopped from the circuit. Compressor air provided for said equipment's from the main line.	0	490KW/Day
6	Integration of N2 gas from unit-4 coal mill to unit-1 and unit-2 coal mill, which resulted in direct saving of maintenance and generation cost for both the units.	0	To be calculated

S.No	Project Description	Investment Lac	Saving (Rs.Lac)
7	For effective cleaning of filter bags pulse pipe below nozzles has been added for effective cleaning of filter bags and also sealing of casing has been done, which resulted in increase in mill output by 1-1.5 TPH Avg. DP across bag house also reduced by 15-20mmwc avg.	0	10.20
8	Installation of VFD to TG-3 screen building bag filter fan-2	1.12	1.18
9	Unit-1& 2 cooling tower FRP fan blade replacement with energy efficient blades	0	0.969
10	Replacing of 2BC-10 Bag filter RAL with double Flap.	0	0.98
11	Reduction of lead distance by making Ramp from 415 RL to 405 RL in Pit A	0	6.22
12	Conversion of DOL to VFD U-4 bag filter fan (U4BFSCH)	0	4.27
13	U-4 lime stone reclaimer belt bag filter compressor On & OFF with U- 3 stacker belt interlock.	0	0.64

S.No	Project Description	Year	Investment Rs lac	Saving (Rs.Lac)
14	Reverse interlock to be provided for HR fan with polycom main motor.	18-19	0	0.50
15	Unit-4 ACC fan blade replacement with energy efficient blades.	20-21	0	3.105
16	In Kiln-3 RABH RAL's On/Off Timer Provided in DCS.	20-21	0	0.72
17	In Kiln-3 Cooler ESP RAL-3,4,5 & 6 On/Off Timer provided in DCS.	20-21	0	0.065
18	Replacement Of Coal Drag chain with Weigh feeder.	18-19	0.70	0.35
19	VFD provided for U-2 Coal Mill Reject belt.	19-20	0.55	0.50
20	In packing plant-3&4 , Bag filter fan 1&2 RAL's interlocking with fan running signal in timer mode.	20-21	0	0.73
21	In packing plant-4 , In place of running individual air slide blowers , Running both air slides with common blower.	20-21	0	0.37
22	Fast speed selection has been provided for old coal reclaimer during pile change over.(Taking 30 mins from 90 mins)	20-21	0	1.56
23	Installation of VFD for HP RO feed pump-1 in unit-5 DM plant.	19-20	0	0.43

Projects With high cost benefits

S.No	Project Description	Saving Rs Lac/Annum
1	Reduction in radiation loss by application of Heat resistant paint to Pre – Heater of line - 2	13.3 lacs
2	Optimisation of frequency form 50Hz to 49.8 Hz.	54.56 lacs
3	Optimization of TG frequency from 49.80 Hz to 49.60 Hz.	58.7 lacs
3	Raw Mill Fan suction box modification in line - 2	21.24 lacs
4	Cement mill – 3 optimisation by Polycom roller profiling & grinding media loading.	30.38 lacs
5	Avoid the running of higher capacity compressor for Raw mill 1&2 hopper top bag filters.	5.52
6	Provided VFD Drives for Packer bag filters.	4.90
7	Replacement of Kiln shell Cooling Fan Metal blade with FRP Blades	1.97 Lacs
8	Cooler stack extension of Line - 2	16.04

Innovative Project - 1

Optimization of RABH below dust transport system

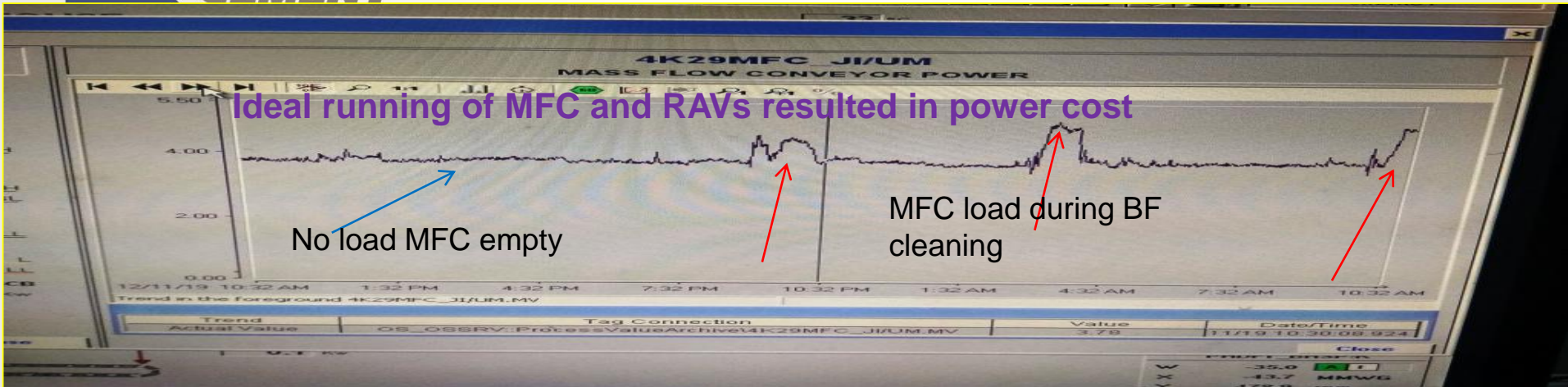
- In view of power saving RABH mass flow conveyors should be optimized with RABH cleaning operation with out effecting equipment performance.
- Also Surge bin venting bag filter running operation can be optimized and logic can be developed with MFC and elevators.

1. Online observation carried out in RABH at different mode of kiln operation. (Compound/Direct Mode).Accordingly RABH DP and cleaning period and MFC load were noted and recorded.
2. Based on inputs design and actual, considering safety of the RABH & MFC suitable logic had been developed.
3. Surge bin venting bag filter running operation logic made with MFC & Elevator.

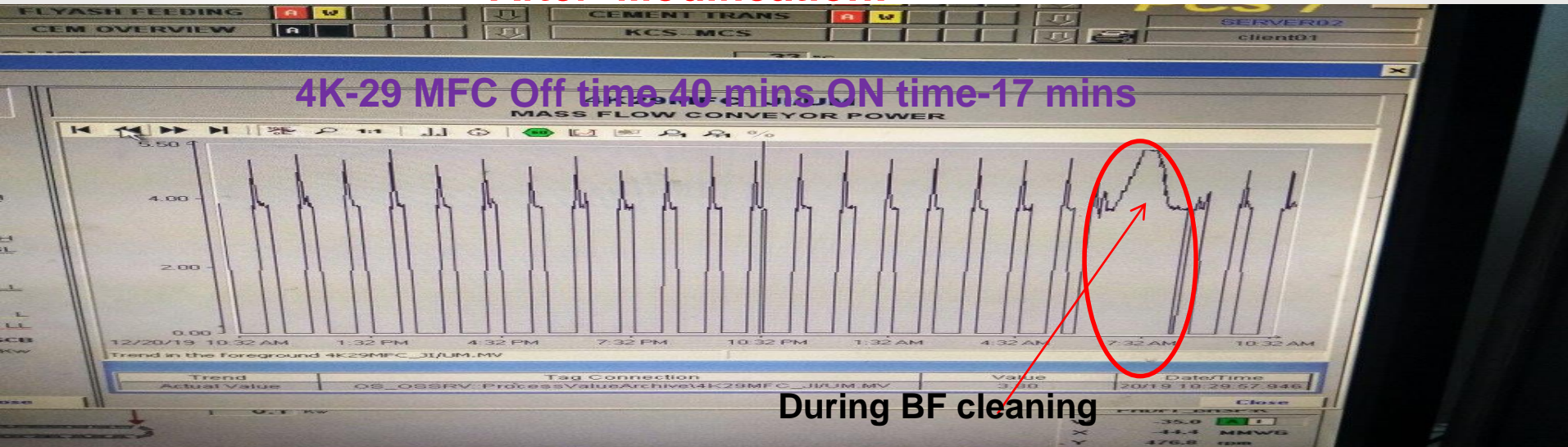
RABH & MFC Control logic :

RABH below RAVs and MFC will be ON as per below logic in view of optimization and power saving.

1. RA fan will be ON at DP a/c BH 130 mmwc and Off at 100 mmwc.
2. RAVs and MFC should be ON before cleaning start i.e.125 mmwc and after cleaning the modules RAVs and MFC should be stop either 75 minutes time delay or MFC load (MFC 4K-28 <2.8KW & MFC 4K-29 <3.8KW) whichever is earlier .
3. Irrespective of bag house DP every 40 minutes RAVs and MFC will be ON for 17 minutes. After MFC ON with time delay of 2 minutes RAVs will ON in sequence with 10secs time delay one by one.(every start)
4. If any hopper level high immediately respective MFC and RAV should be ON.
5. If MFC load > 5.3KW previous cleaned modules RAVs should be OFF (At least 3 no's) until MFC load comes <5KW.
6. If MFC load normal <4.8KW all the RAVs should be ON
7. Above logic is applicable during operation there is no starting interlock s for this logic



After Modification:



Benefits:

1. Day average power saving for RAV and MFC is 242KW/Day, In addition that Surge bin bag filter power saving average per day- 48KW
Total power saving in RABH dust transport is 290 kw.

In terms of commercial $290 \times 4.9 \times 330 = \text{Rs},4,68,930/-$ Annum

2. Wear & Tear of MFC chain and bottom casing has been reduced which resulted increase in MFC life.





Innovative Project - 2

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Production enhancement of Raw mills line-3 & 4

Before Modification:

Raw Mill out put :

Line-3: 300 TPH

Line-4 : 305 TPH

Residue:

19 to 20.0 on 90 Micron & 8.0 to 9.0 on 212 Micron. (in both units)

Sp. Power consumption:

Line-3 : 13.20 KWH/MT

Line-4 : 14.47 KWH/MT

Problem:

Due to lower output of raw mill bottle neck for kiln production & high Sp power consumption

Plate welded across the circumference of HR separators & water spray installation on separator feed belt in Unit-3 & 4 raw mills



150 mm width plate welded across the circumference of HR separators & water spray installed on separator feed belt in Unit-3 & 4 raw mills, resulting in Improved raw mill feed rates due to same residues at lower separator RBM





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After Modification:

Raw Mill out put :

Line-3: 311 TPH

Line-4 : 329 TPH

Residue:

19.0 to 20.0 on 90Micron & 8.0 to 9.0 on 212 Micron. (in both units)

Sp. Power consumption:

Line-3 : 13.00 KWH/MT (Savings of 0.20 KWH/MT)

Line-4 : 13.95 KWH/MT (Savings of 0.52 KWH/MT)

Savings /Benifits

- Raw mills production Increased by 10 TPH in Line -3 & 25 TPH in Line-4.
- Reduction in raw mills sp power consumption
- Kiln Production reduction by want of raw meal is eliminated

Savings achieved:

Power savings → 139784 KW

Cost savings → Rs 6,58,381



Enhancement of Carbon Black Consumption

Before Modification:

Carbon black consumption as alternate fuel in Line-2, 3 & 4 by feeding along with coal in coal mill through controlled system VFD RAL directly to mill feed chute.

Problem:

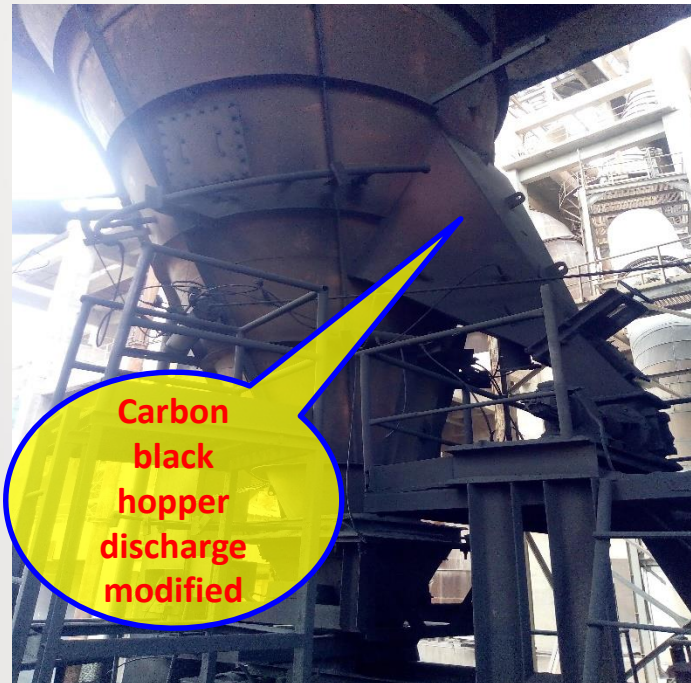
By adding carbon black directly to mill there was problem of increase in mill DP, Mill Vibration, reduction in coal mill output & mill stoppages by high vibration. Due to above all problem there was no possibility to increase carbon black consumption

Before modification Carbon black consumption approximately per day was only 30 to 35 MT/day



Modification done to improve consumption quantity of carbon black in Line-2, 3, & 4 coal mills ,
By keeping existing carbon black feeding system same only carbon black hopper discharge point
slight modified and feeding point location changed.

Carbon black feeding point provided directly to the mill static separator area, as carbon black is fine
material will directly go to product stream, will not enter into the mill & there no disturbances in
mill operating parameters.



After Modification:

Carbon black consumption increased approximately 85 MT per day

Before Modification : CB Consumption 35 MT /Day

After Modification : CB Consumption 122 MT /Day

Saving & Benifits

Carbon black consumption quantity increased.

Savings in terms of coal (Ind+Imp) = 111.35 MT/Day

= 3451.85 MT/ Month

Savings in terms of cost = Rs 4.31 Lacs per Day

= **Rs 133.49 Lacs Per Month**

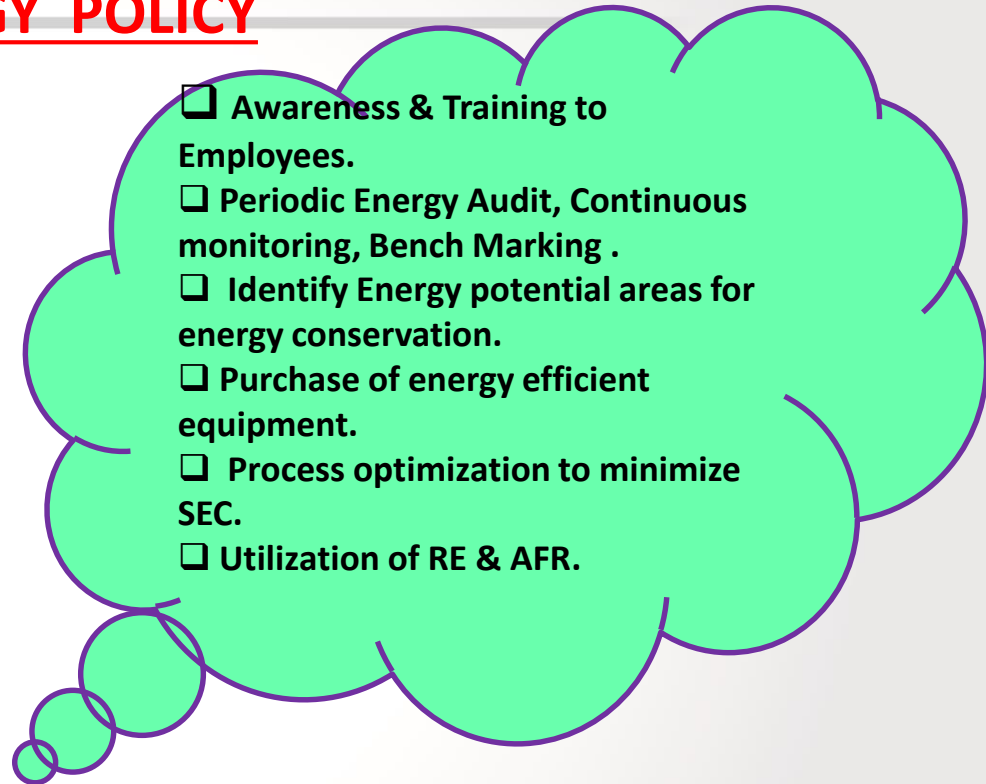


Projects in Pipe Line

1. Feasibility study conducted & Techno – economic feasibility report submitted by Ms. Holtec for WHR system for line 1,2,3 & 4.
2. Injection of CFA to 10% in PPC grade.
3. Up gradation of Unit -1 & 2 cooler.
4. Upgradation of separators for coal mills.
5. Conversion of HP bottom cyclone to LP of unit - 1.
6. Application of heat resistant paint in PH of all other three units.
7. Installation of SPRS for Line -2 raw mill fan HT motor..
8. Installation of belt conveyor for transportation of gypsum from wagon tippler to yard to avoid transportation cost.
9. Installation of shredder to consume more AFR.



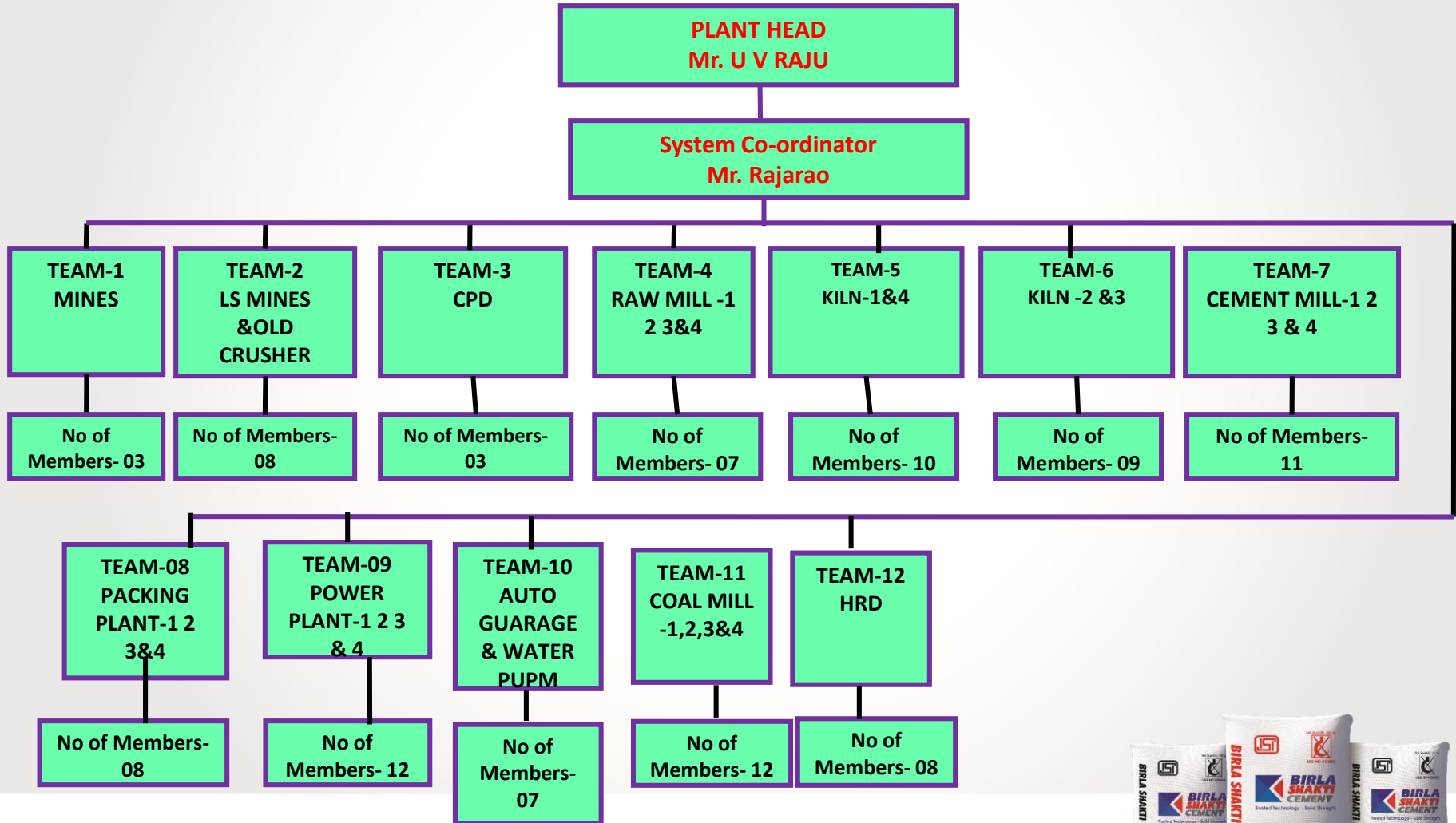
ENERGY POLICY

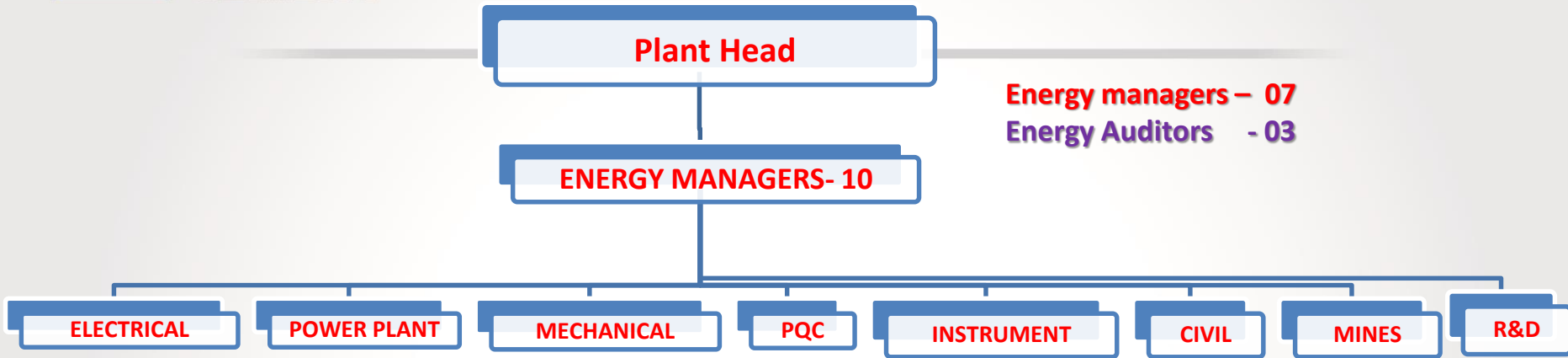


Last Reviewed Date : Aug - 2021
 Next Review Due On : Feb - 2022
 Frequency : Every 6 Months



ENERGY MANAGEMENT CELL FORMED UNDER ISO 50001:2018





LIST OF ENERGY CONSERVATION COMMITTEES

WATER MANAGEMENT COMMITTEE	PACKING PLANT- POWER CONSUMPTION REDUCTION COMMITTEE	CEMENT MILLS-POWER CONSUMPTION REDUCTION COMMITTEE	IDLE RUNNING EQUIPMENTS DETECTING COMMITTEE	STEAM LEAKAGES DETECTION COMMITTEE AT THERMAL POWER PLANTS
TEAM LEADER : Mr. L Vegi (AVP CPP)	TEAM LEADER: Mr. Kallimath (Head PP)	TEAM LEADER: Mr. LB Yadav (GM Elect)	TEAM LEADER: Mr. KVR Murthy (DGM PROCESS)	TEAM LEADER: Mr. Chandrashekhar Ujja
Team Members : 1) Mr. Ravindra L 2) Mr. Rajarao 3) Mr. Shankar Rao Patil	Team Members : 1) Mr. Gangadhar 2) Mr. Shashikanth 3) Mr. Venkatesh Marla 4) Mr. V. Nagesh	Team Members : 1) Mr. B. Praneeth 2) Mr. D. Pramod 3) Mr. Sanket K 4) Mr. Ganapati 5) Mr. Deepak 6) Mr. Nagbhusan	Team Members : 1) Mr. Sriram Arsid 2) Mr. Vishwanath 3) Mr. V. Madhukrishna	Team Members : 1) Mr. Vishveshwarayya Hiremath 2) Mr. K.V. Ramana 3) Mr. R.D.B. Patil

REVIEW PERTAINING TO ENERGY EFFICIENCY.

FREQUENCY	REPORT/SYSTEM	RESPONSIBILITY
24 Hrs X 7days	<ul style="list-style-type: none"> ➤ “Prevention is better than Cure” So On line SP power Monitoring facility provided for Unit-3 & 4 at CCR. 	CCR Operator
Daily	<ul style="list-style-type: none"> ➤ Energy consumptions reviewed in Production Meeting headed by Plant Head. 	Plant Head
Daily	<ul style="list-style-type: none"> ➤ Daily review meeting with power plant O & M team by HOD to optimize plant performance by monitoring and controlling of parameters like auxiliary power, coal, water and plant heat rate. 	HOD
Weekly	<ul style="list-style-type: none"> ➤ Energy consumptions reviewed in Cross functional Meeting headed by Plant Head. 	Plant Head
Monthly	<ul style="list-style-type: none"> ➤ Stoppage , OEE & Benchmark Presentation (Specific Power Consumption, Details of Stoppages, Heat Balance ,Power plant performance) 	Plant Head



1.1 REVIEW PERTAINING TO ENERGY EFFICIENCY.



1. Suggestion Scheme
2. Brain Storming
3. 5s Activity
4. Kaizens
5. Leakage Detection

Year	Total Suggestions	Suggestions Implemented	Suggestions Rejected
2018-19	711	366	25
2019-20	852	710	89
2020-21	285	143	76

- Energy Conservation week.
- Door to Door campaign.
- Distribution of pamphlets.
- Organizing Competitions.



Year	No Of Kaizens Registered	No Of Kaizens Completed	No.of Best Kaizens
2018-19	1820	1757	25
2019-20	1756	1671	22
2020-21	1025	724	20

- Training class to near by villages
- No Vehicle Day Celebration
- Safety Gate Meeting.
- Attending all External Trainings



Leakage Detection Area	Points Detected	Points Attended
Air Leakages	30	28
Fugitive dust & spillages	899	887
Steam & water	99	99
Compressed air	76	76



ENERGY CONSERVATION WEEK



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- Every year Energy conservation week is celebrated in our organization except last 2 years because of Covid - 19.
- Elocution, debate & quiz competition are also organized with a theme of “Energy conservation” for employees, housewives & school children.
- Skits, dramas & street plays are organised to educate the common masses about importance of ENERGY.



Poster presentation competition for employees & their families & school children is conducted.



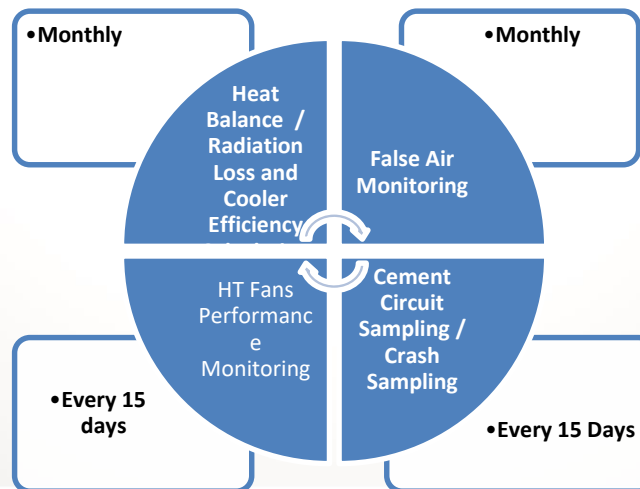
- Door to door campaign is organized in our colony & surrounding villages to create awareness for awareness using “ENERGY RATH”



On line Electrical SP Power Monitoring at CCR

CEMENT MILL GRADE WISE POWER SHEET		PREVIOUS 12-12	PRESENT 12-12
SECTION	PARAMETER	Day	Day
43 GRADE	OPC 43 GRADE POWER	39907.6	0.0
	OPC 43 GRADE RUN HOURS	7.98	0.00
53 GRADE	OPC 53 GRADE POWER	54086.4	36167.0
	OPC 53 GRADE RUN HOURS	10.82	6.93
	OPC 53 GRADE PRODUCTION	2259.0	1394.3
PPC GRADE	PPC GRADE POWER	26289.1	45212.7
	PPC GRADE RUN HOURS	5.35	8.75
IDLE POWER	MILL IDLE POWER	0.0	0.0
	U2 INTEGRATION DEC POWER	38.0	0.0

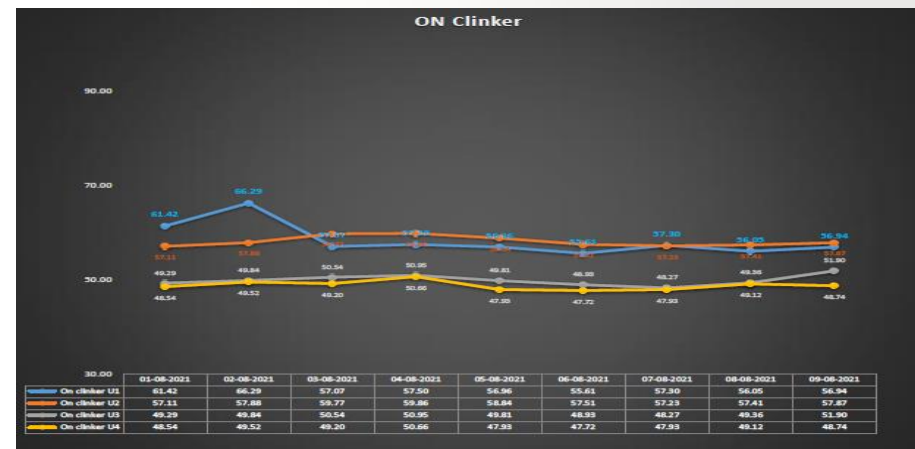
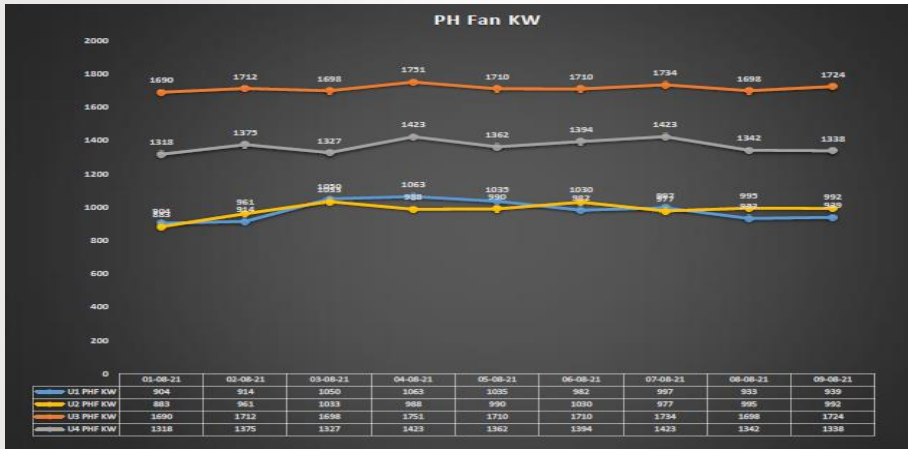
Monitoring Schedule



Sample Comparison Statement for power monitoring

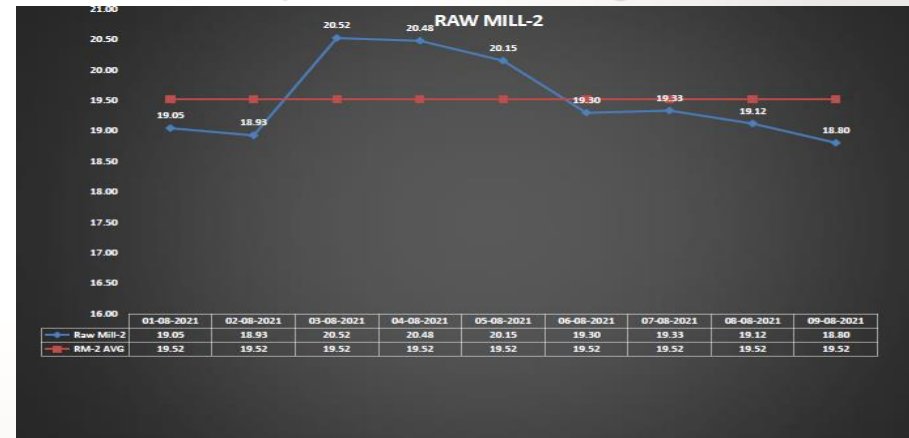
Major HT drives graph day wise

Daily Sp. Power on clinker & cement



Auxiliary power monitoring for each section

Section wise power monitoring

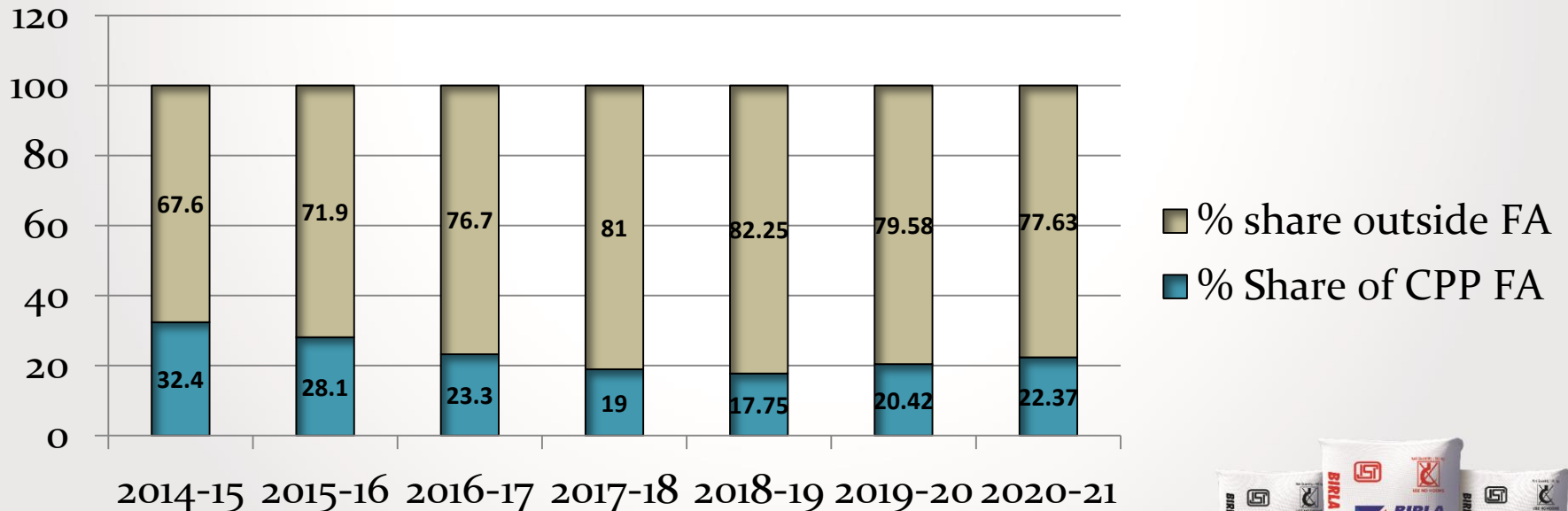
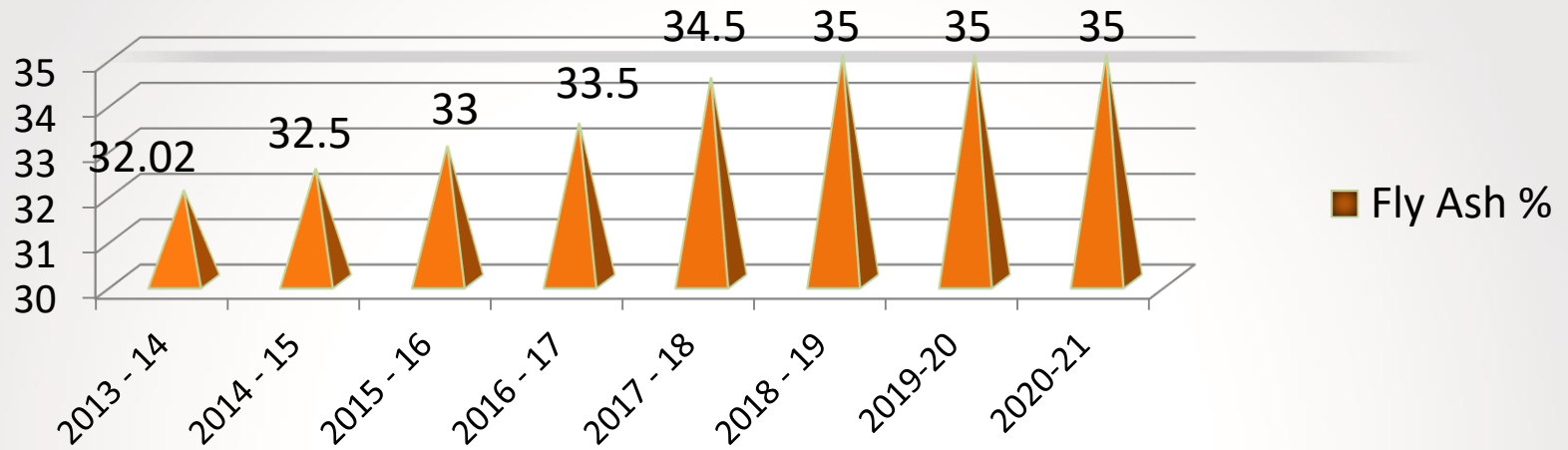


- Efforts to increase % share of Blended Cement in total production shows our eco- friendly nature.
- Lab trials of blended cement with CFA completed & implemented.
- Increase in addition of performance improvers in cement, resulting in fuel and natural resources conservation.
- Shredder installation project under progress to consume more quantity of AFR.
- Use of rice husk in pyro process is under implementation & suitable modifications are also being done to increase the consumption.
- Lab trials for composite cement is being taken, which can reduce clinker factor drastically.
- First Cement Plant to Participate in GREENCO rating Project actively conducted by M/s CII and awarded as First **GREENCO PLATINUM** cement company in India.





Fly ash injection Trusted Technology - Solid Strength



Renewable Energy



- Significant potential for renewable energy is not available.
- Under RPO obligation, purchasing REC's on regular basis.
- 6% solar & 7% non – solar, renewable energy certificates of total captive consumption are purchased every year.
- Exploring the possibilities of renewable energy, no matter how small the potential is.
- Solar plant execution of 1.25MWp capacity is under planning stage.

Purchased Renewable Energy Certificates FY 2018-19. REC's FY 2019-20 & 2020-21 are due as REC trading is under suspension by Hon'ble APTEL. Once the trading starts we have to purchase FY 2019-20 & 2020-21

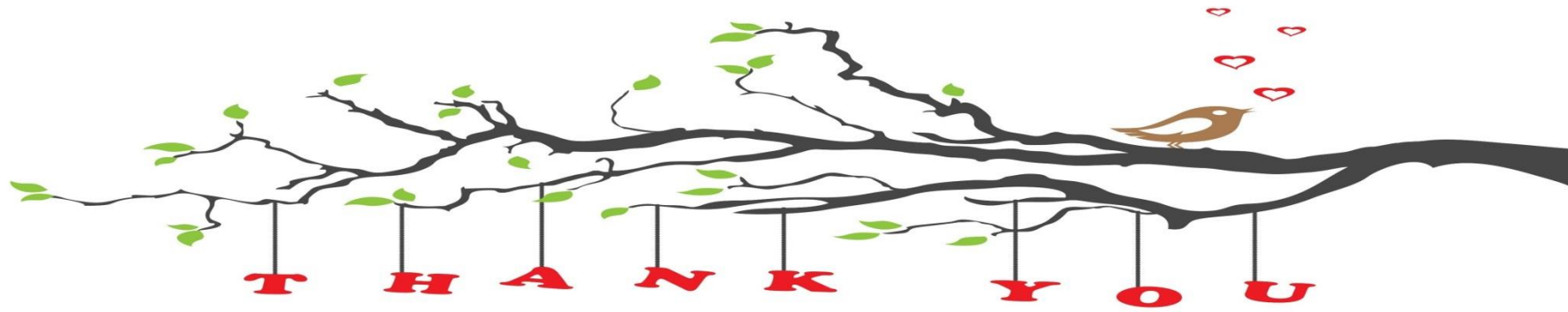


Environmental Projects

**Initiatives
On
Environment
Conservation**

1. Obtained Authorization From CPCB & KSPCB For Burning Of Hazardous waste /Non Hazardous Waste , like Tire Chips, Plastic Waste etc.
2. Permission for use of hazardous liquid AFR has been taken & talks with suppliers is under progress.
3. Fly ash & gypsum transportation by rail.
4. Reduced the bauxite consumption percentage by optimizing the raw mix.
5. Planted Huge number of trees with 53.5 % of survival.
6. Rain water storage capacity of 40.00 Lac cu.mt at Mines & 4.00 Lac cu.mt at Power plant pit.
7. Majority % of water requirement is full filled by Rain Water.
8. Recorded 96 % of plant water requirement is managed with Rain water Harvesting. Planning to reach 100 %.
9. **Signed MOU with Goa Government for Supply of Plastic Waste.**





Team Members –

- 1. Mr. U.V Raju (Plant Head)**
- 2. Mr Uday Mugali (Head PQC)**
- 3. Mr. Raja Rao (GM Instrumentation)**

