THE RAMCO CEMENTS LIMITED,JAYANTHIPURAM

Team Members:

S. Rajasekharan
P. Raghuram
G . Hanumath Prasad

22nd National Energy Award for Excellence in Energy Management - 2021

The Ramco Cements Limited, Jayanthipuram Profile

A flagship company of RAMCO Group, having five Cement manufacturing units, four grinding units and one packing unit with the total capacity of 20 MTPA.

Jayanthipuram plant was setup in three phases 1986 ,2008 &2021 with Cement capacity of 4.65 Million Tons / Annum with 3 No Kilns.

The manufacturing products are Ordinary Portland Cement, Portland Pozzolana Cement ,Ramco Super Crete as per BIS standards

2 * 18 MW+ 6 MW Coal Based Thermal power plant

2 * 9 MW Waste Heat Recovery System

IS/ISO 9001:2015	Quality Management System
IS/ISO 14001:2015	Environment Management System
IS 45001:2018	Occupational & Health Management System
IS/ISO 50001:2018	Energy Management System

Plant Capacity at a Glance

Year	Milestone	Cumulative Clinker Capacity Million TPA	Cumulative Cement Capacity Million TPA
1986	Line-1 commissioned	0.75	0.75
1995	Line-1 Up-gradation	1.10	1.10
1999	Slag Cement	1.10	1.60
2008	Line-2 commissioned	2.80	2.60
2010	Expansion (Installation of VRPM)	2.80	3.65
2016	Line-1 Upgradation	3.185	3.65
2020	**Phase-1 WHRS in Line-2 Commissioned**	**9 MW**	**8.0 (Generating)**
2021	**Phase-2 WHRS in Line-1 Commissioned**	**9 MW**	**8.2 (Generating)**
2021	**Line-3 Commissioned**	**4.6**	**3.65**

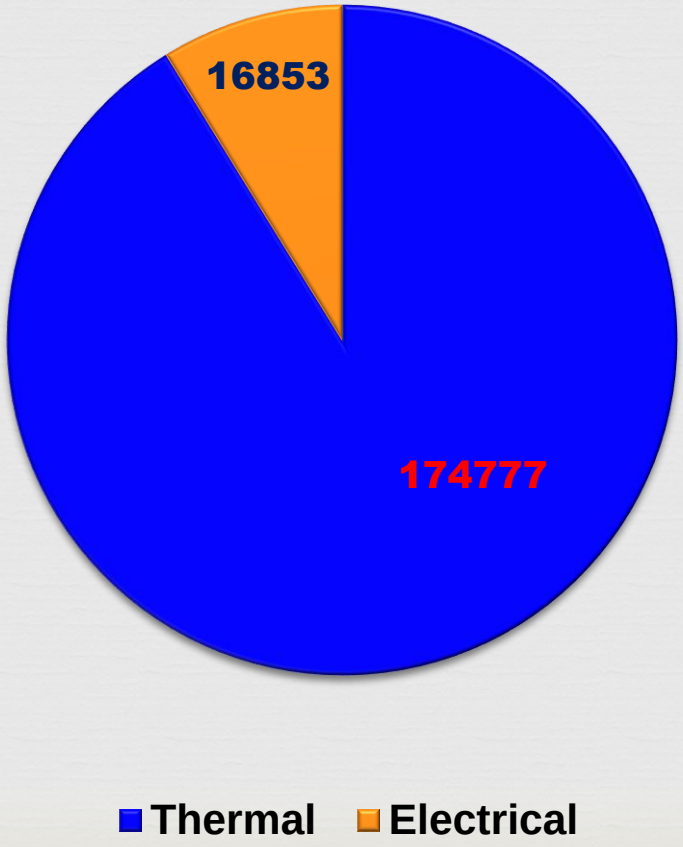
Impact of Covid-19

- We have stopped our kilns on March’2020 due to Covid -19 Pandemic.
- We have started again in the month of May’2020 with Guideline provided by Ministry of Industries
- The clinker production and cement production were decreased due to Covid -19 Pandemic.
- Domestic cement demand is expected to increase in FY 2022 with volumes reaching back to around FY 2019-20 levels.
- This follows a sharp volume contraction witnesses in FY 2021.

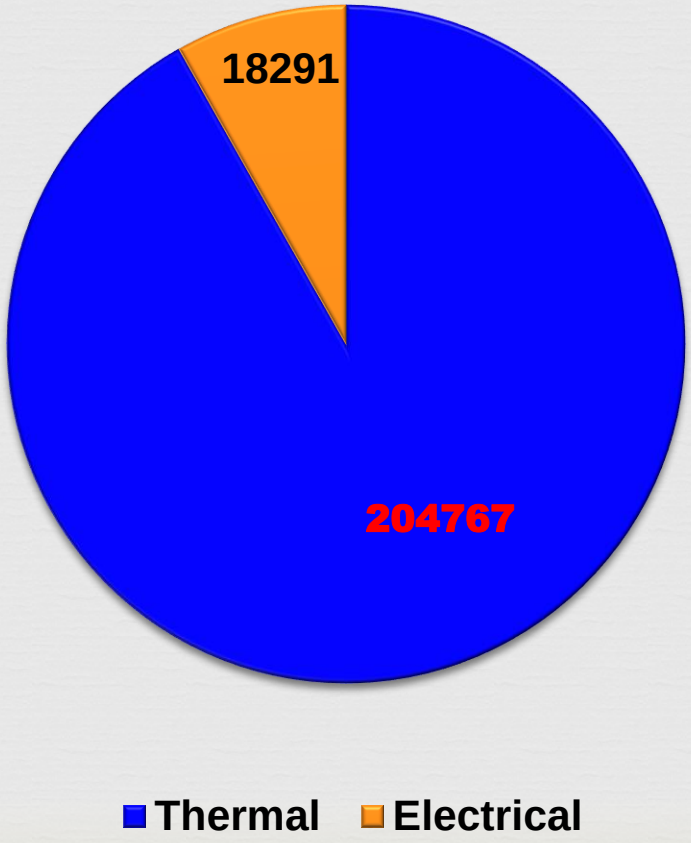
Thermal and Electrical Use

Annual thermal and electrical consumption in MTOE

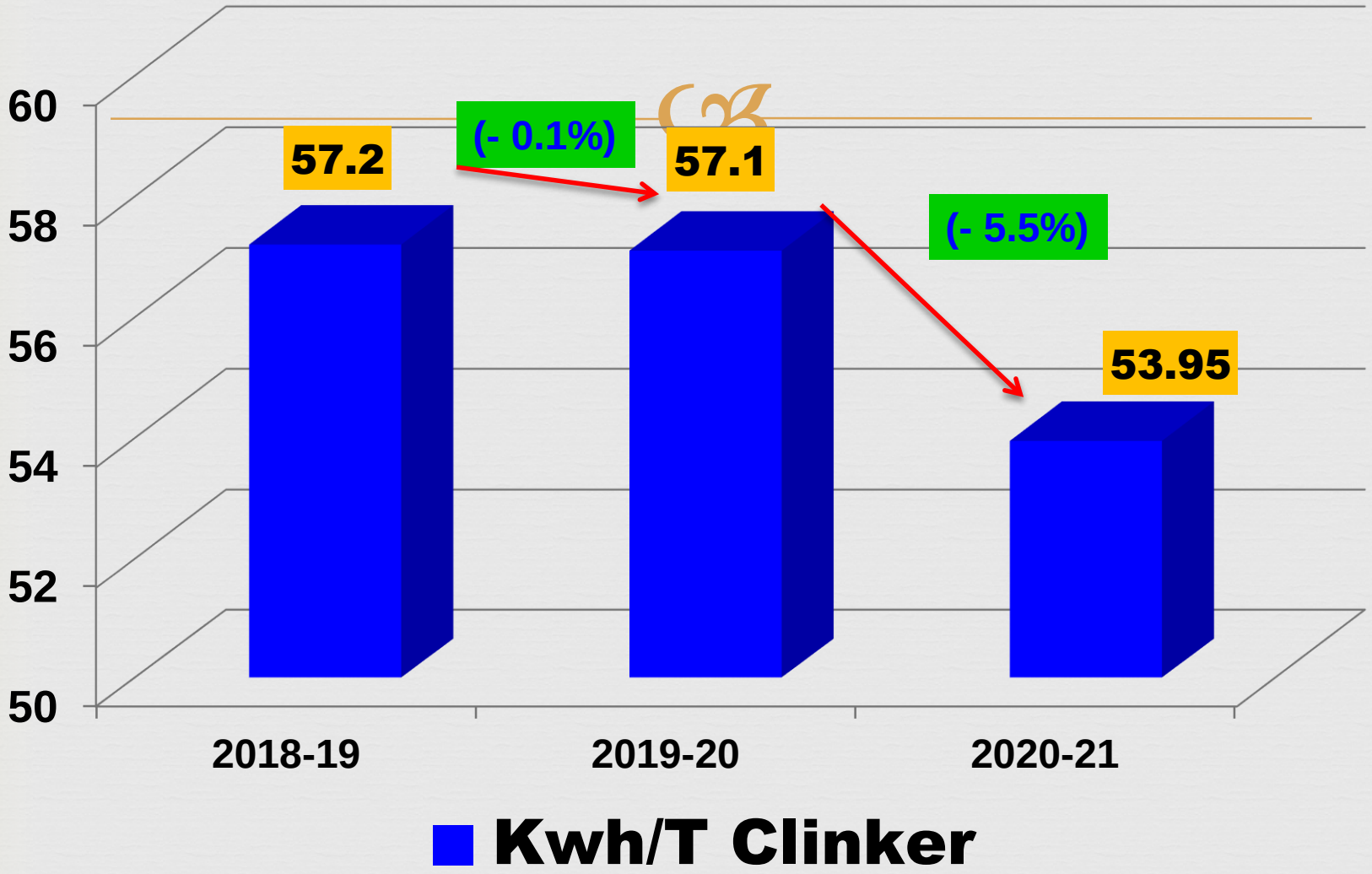
2020-21



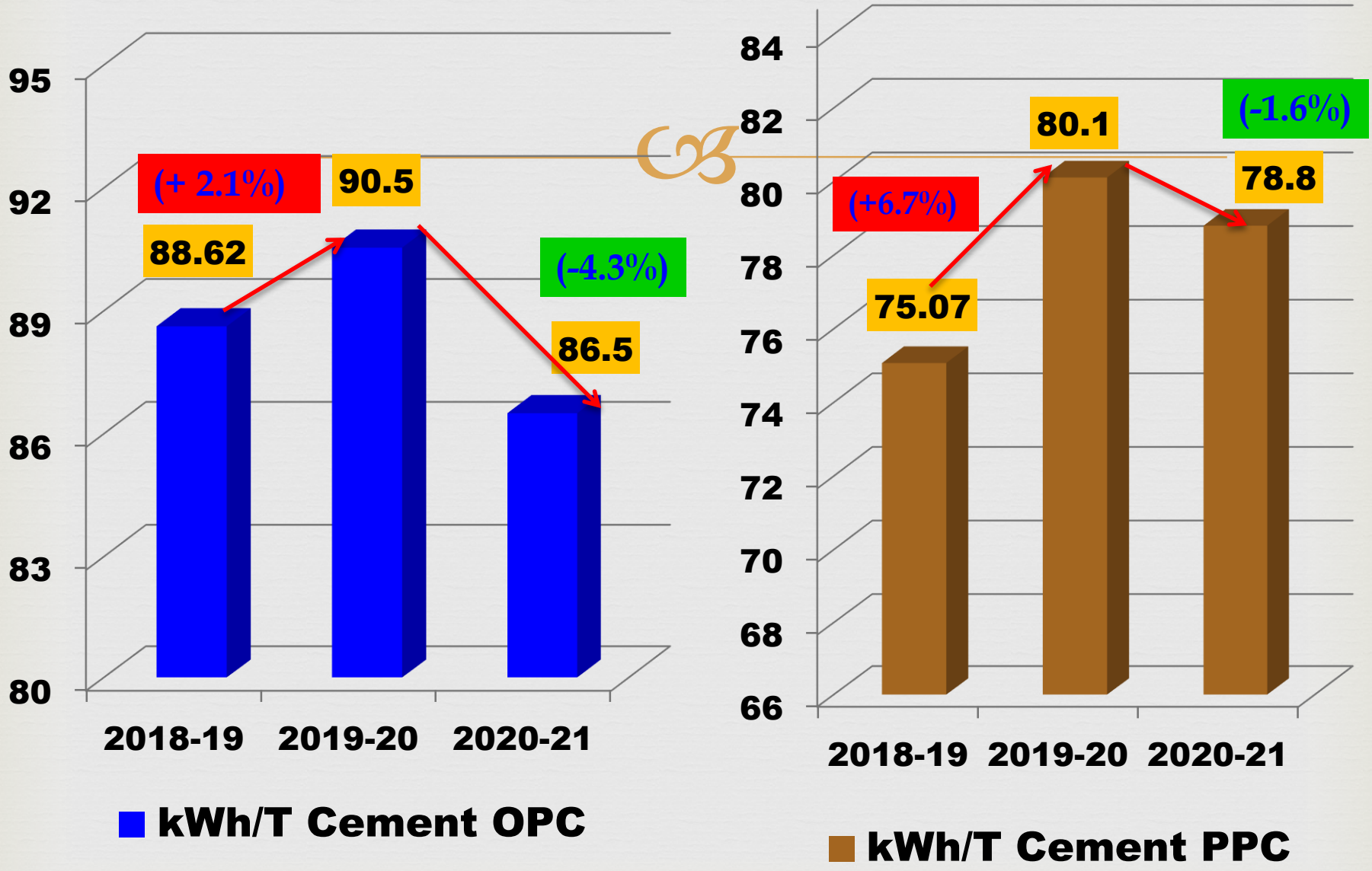
2019-20



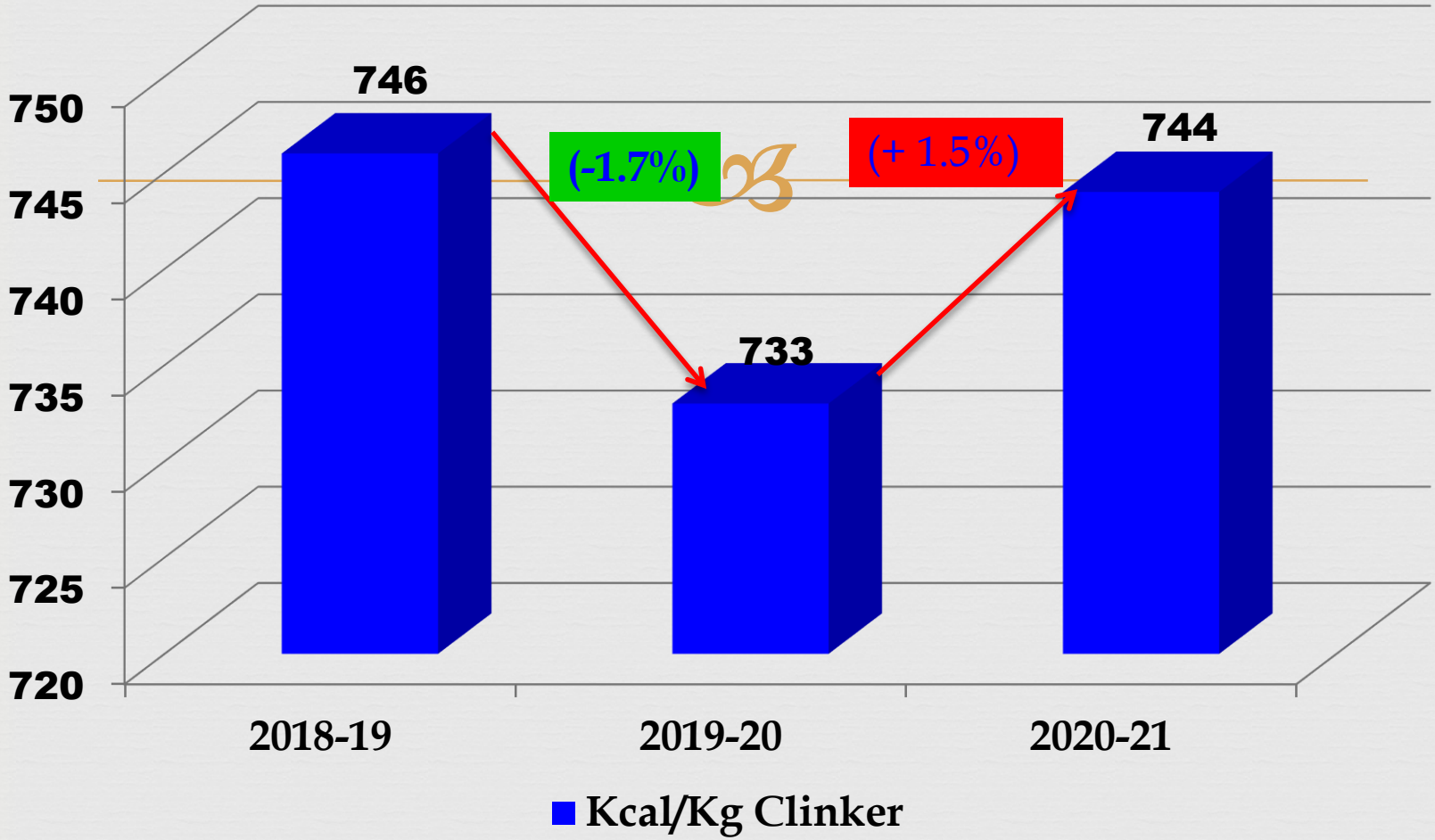
Electrical Specific Energy Consumption up to Clinker



Electrical Specific Energy Consumption

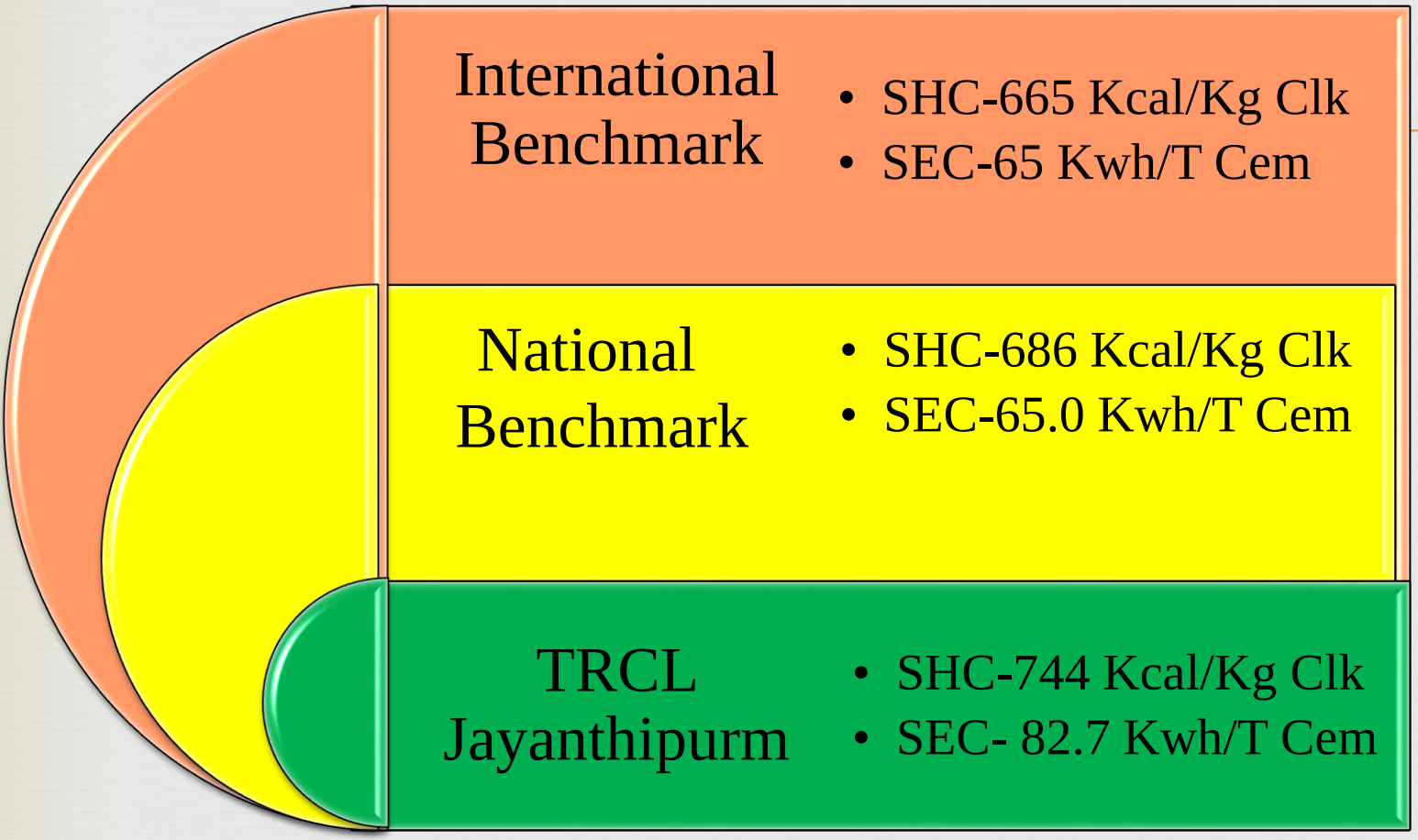


Thermal energy Consumption



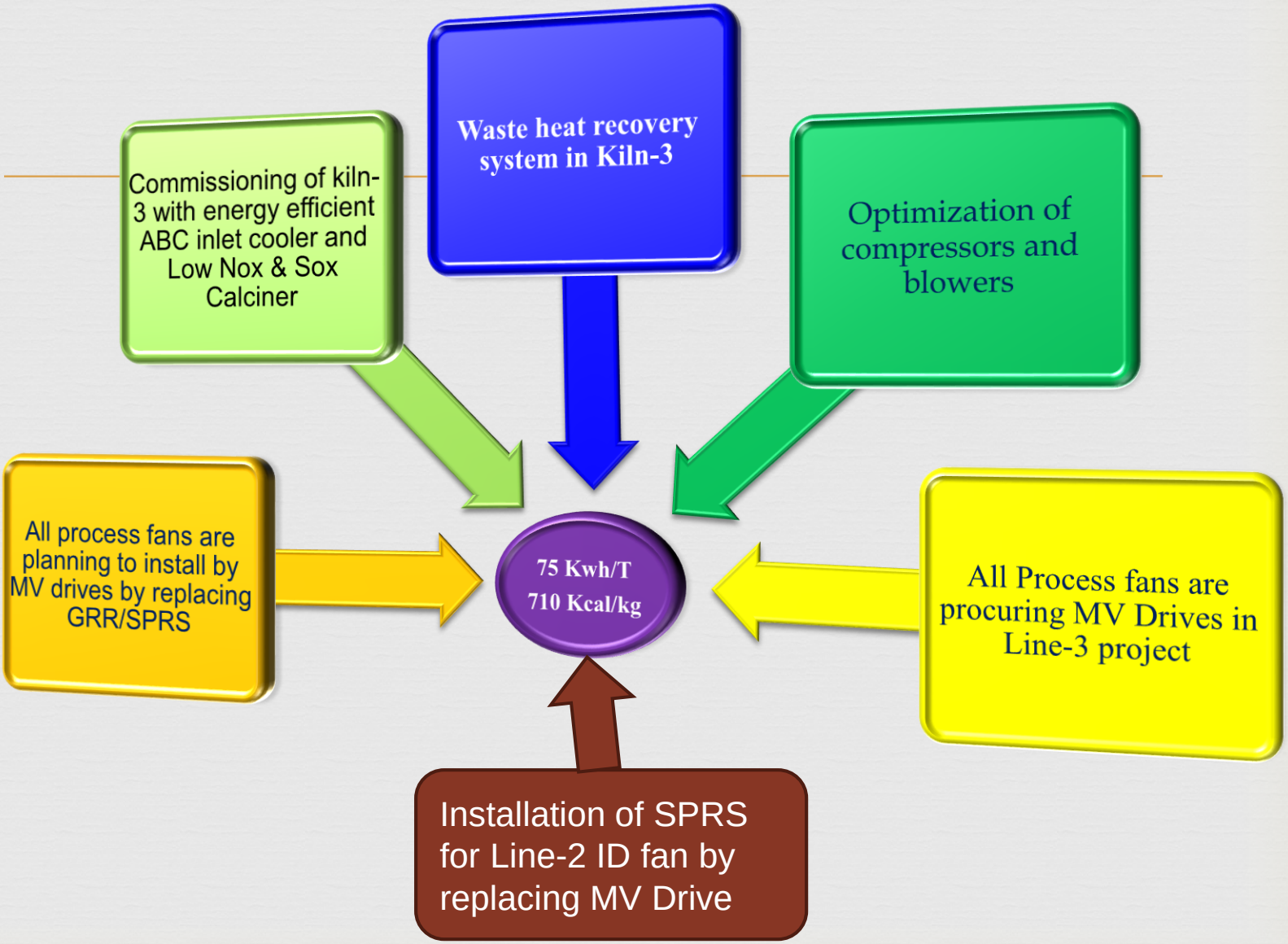
- Specific Heat Consumption increased due to Commissioning and Stabilization of WHRS system in Line-2
- We have observed so much disturbances in kiln and build ups at 18-20 mtrs, Later we have optimized kiln performance by TAD damper settings and Cooler optimization.

Global Norms/Standards



Reference:
National Benchmark: Energy Bench Marking For Cement Industry May 2015 Version 2
International Benchmark : Indian cement and construction industries-global competitiveness-NCB-CMA special publication presented in 8th NCB International Seminar

Road Map To Achieve Benchmark



Energy Conservation Projects Implemented in the years 2018-19, 2019-20 & 2020-21

No of Projects – 74

Projects with Nil investment - 35

Total Amount Invested – 166.45 Crores

Cost savings achieved – 9.50 crores

Electrical Energy Saved – 91.40 Lakh kWh

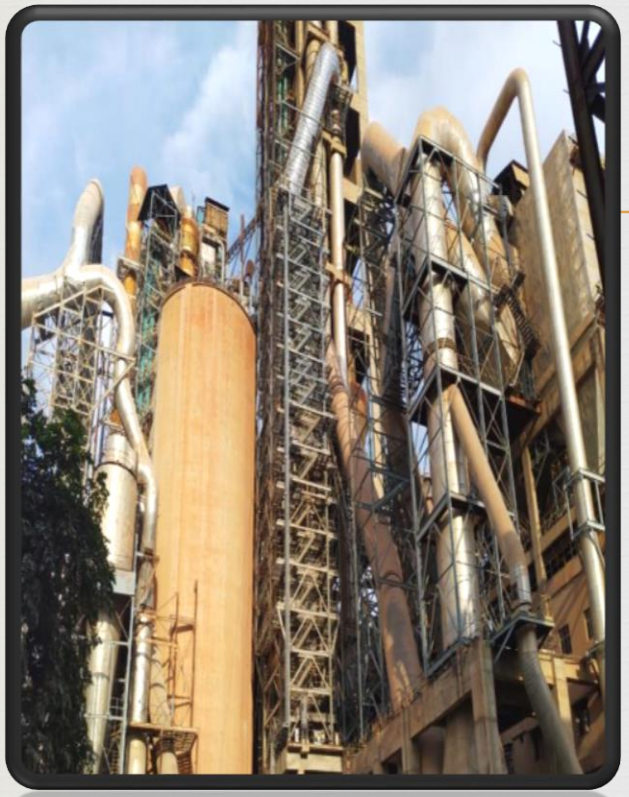
Thermal Energy Saved – 21699 MT of coal

Reduction in GHG Emission – 75946 MT of CO_2

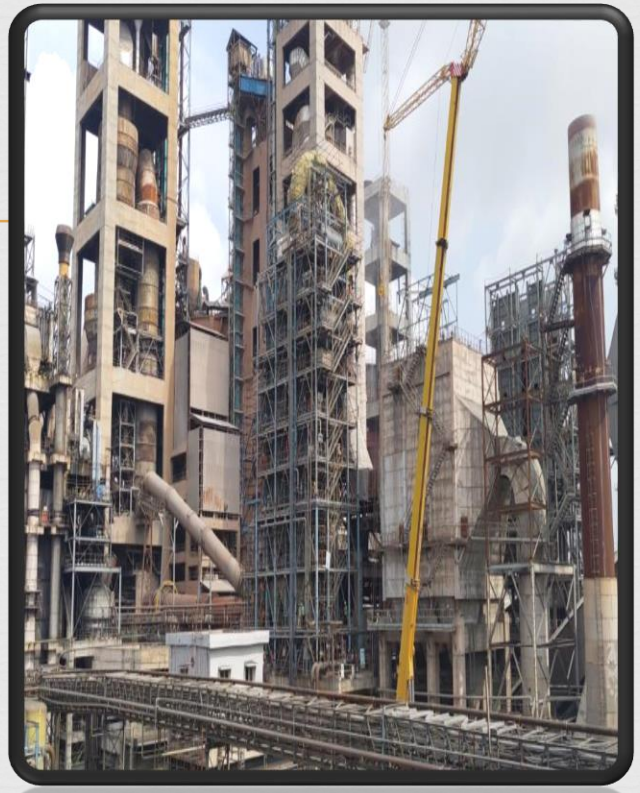
Major ENCON Projects with Investment

S No	Project	Year	Investment (Rs lacs)	savings (Rs Lacs)
1	Installation of Novaflam Burner from M/s Pillard in kiln-1	2018-19	56	29.2
2	Installation of Novaflam Burner from M/s Pillard in kiln-2	2019-20	61	32.6
3	STG's Specific steam consumption reduced by doing major overhaul and plugging all leakages, Fine combution tuning, Coal fineness percentage reduction by changing screen size	2019-20	100	350
4	Installation Waste heat recovery system in kiln-2 (9 MW)	2020-21	8266	245
5	Installation Waste heat recovery system in kiln -1 (9 MW)	2020-21	8105	70
6	132KW HIGH EFFICIENCY PUMPS-NB MINES-7NO	2020-21	26	11

Waste Heat Recovery System In Line-2 (9 MW)



PH-2 Boiler



AQC-2 Boiler

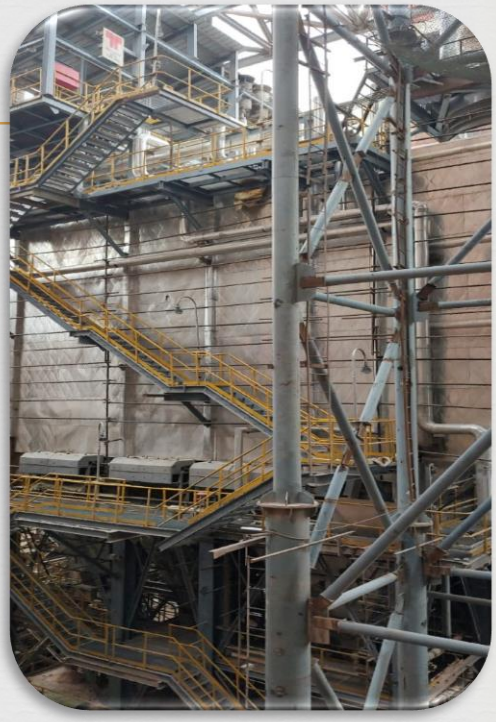
Phase -1 WHRS in Line-2 was commissioned on 13/09/2020

Units Generated in 2020-21 : **2,71,14,350 kWh**

Waste Heat Recovery System In Line-1(9 MW)

AQC-1

PH-1B

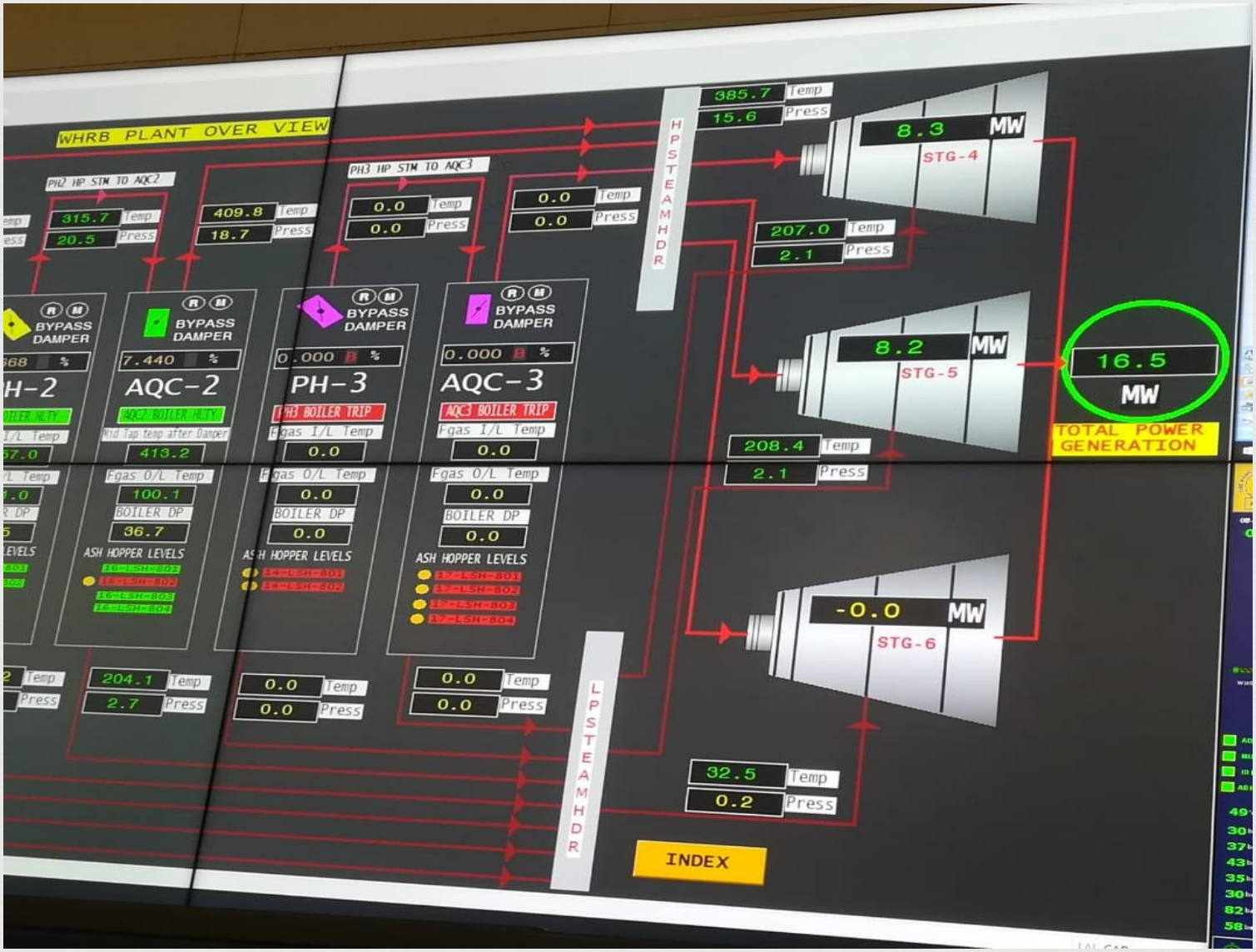


PH-1A

Phase -2 WHRS in Line-1 was commissioned on 25/02/2021

Units Generated in 2020-21 : **43,38,520 kWh**

WHR Power Generation for Line-1 & Line-2



INNOVATIVE PROJECT-1

Hot air Duct tapping from TPP to Coal mill-2

- Coal Mill-2 is required to run during Line-2 shutdown also to avoid the production loss in Line-1.

- During Line-2 shutdown, we have taken the trial of Coal Mill-2 running without hot air. But, due to insufficient air and temperature the mill was not able to run even with the reduced feed and reduced table speed.

- Hence, to run the Mill during Line-2 shutdown, it is proposed to tap the hot air from TPP to Coal Mill Hot ESP Fan inlet. The temperature at the TPP ID Fan outlet is maintaining around 150°C and 85000 m3/hr gas flow, which can be utilized for the Coal grinding. The Coal Mill-2 availability requirement will be as follows during Line-2 Shutdown.

Coal Mill-2 requirement during Line-2 Shutdown

Parameters	Additional Fuel required	Coal Mill-2 Productivity	Coal Mill to be run for Line-1
	MT	TPH	hrs
Petcoke	113	15	8
Coal	152	19	8
Petcoke & Coal (50:50)	127	17	7

The adequacy of existing Hot ESP Fan was checked and found that the fan can run with the available hot air from TPP.

The new duct (of diameter 1.60 m) has been laid for connecting the TPP ID Fan outlet to Coal Mill-2 Hot ESP Fan inlet.

Benefit :- **Kiln-1 running with normal feed at 295 TPH.**

Production loss Avoided – 35 TPH of kiln feed (21 MT clinker / hour)

Hot gas duct from TPP

Hot gas duct joining coal mill-2 inlet duct

Utilization of Renewable Energy sources

Type of Res	2018-19		2019-20		2020-21	
	Energy Generated (kWh/Kcal)	Annual Savings (Rs.)	Energy Generated (kWh/Kcal)	Annual Savings (Rs.)	Energy Generated (kWh/Kcal)	Annual Savings (Rs.)
Solar Photovoltaic	-	-	-	-	3380	14331
Bio Gass Plant	-	-	1020700	28500	77000	19500

Technolgy (Electrical)	Type of Energy	Onsite/Off site	Installed Capacity (MW)	Generation (million kWh)	Year	Capacity addition & Investment made	Share Considered for plant
Renewable	Wind	Off site	159.785	272.82	2018-19	Nil	Nil
Renewable	Wind	Off site	159.785	257.11	2019-20	Nil	Nil
Renewable	Wind	Off site	159.785	272.82	2020-21	Nil	Nil

Waste utilization and management

S. NO	Type of Waste fuel used	Location	Quantity of waste Fuel Used	Equivalent of Conventional energy used (Ton of coal)
1	Rice husk	TPP	324	181
2	Chip Dust	TPP	238	129
3	Sheagum	Kiln	85	78
4	Colony waste	Kiln	13	2

S.No	Year	Name of Aletrnate raw material used	Name of Material gets replaced	Quantity Used (MT/Year)
1	2019-20	Slag	IR Laterite	18501
2	2020-21	Slag	IR Laterite	15002

Learning from CII Award 2020

- Great Platform to explore our company art of technology used and results achieved
- We have analyzed the plant performance of ours with respect to other competitors
- Innovative ideas for actions to reduce Energy
- Specific Electrical & Thermal consumption in Global level

GHG Inventorisation

Year	Total CO_2e (MT)/T Cement
2018-19	662
2019-20	693
2020-21	658

Scope 1 emissions	Calcination, Fuel for kiln & CBPP, owned vehicle, Refrigeration & AC
Scope 2 emissions	Power consumption
Scope 3 emissions	Raw Material Supply & Product delivery

GHG Inventorisation

Action taken:
To reduce the CO2 emission, we have installed the Waste heat recovery system is installed in Kiln-1 & Kiln-2 (Pre heater & Cooler Mid tap)

Target 2021-22:
To reduce CO2 Emission by 52500 MT of CO2

Action Plan :
WHRS for Kiln-3 (Pre heater & Cooler Mid tap)

Budget:
Investment – 80 Crores

Green supply Chain Management

- We are communicating the message of “Energy Efficiency” & “Technical specifications for Energy Efficiency on purchase equipment to supplier
- Awareness on green purchase policy for suppliers to evaluate.
- Going to environment friendly evaluation during product evaluation.
- Reverse logistics from Kakinada & Vizag port for Coal & Gypsum ,Same rake transferring clinker to Vizag grinding unit
- Benefits achieved through reverse logistics for 2020-21 : INR 538,58,000

Projects :

- All lights are replaced by LED fittings entire plant
- Procuring high efficient motors & fans for Line-3 project
- Replaced Air cooled condenser instead of Water cooled condenser for WHRS

THE RAMCO CEMENTS LIMITED,
KUMARASAMY RAJA NAGAR.

ENERGY POLICY
(As per ISO 50001:2018)

We, at THE RAMCO CEMENTS LIMITED, manufacturers of Clinker & Cement, are committed to continually improve our Energy performance and Energy Management System for sustainable growth by:

- Complying with all applicable legal and other requirements related to energy use, consumption and efficiency
- Providing the necessary information & resources needed for achieving the objectives & targets
- Supporting the use of energy efficient products and services in our procurement and improving the design of our processes for energy performance
- Generating and utilizing the Electrical power
- Reviewing the applicable energy parameters at relevant levels within the organization.

Date: 30.03.2020

Unit Head

Teamwork, Employee Involvement & Monitoring

- Daily monitoring report for power consumption will be reviewed by unit head
- Review meeting chaired by Unit head & Works Head
- We have spent 160 Crores for Waste heat recovery system in both Line-1 & Line-2.
- Due to Covid-19 Pandemic, The internal & External training programs are not conducted
- Projects implemented through kaizens – 04 Nos

Energy Reporting Format

Power Report on

Equipment	R.Hrs.			Production			TPH			Parameter	KWH			KW			Kwh/ T of Material			Kwh/ T of Clinker			Kwh/ T of Cement		
	OTD	MTD	YTD	OTD	MTD	YTD	OTD	MTD	YTD		OTD	MTD	YTD	OTD	MTD	YTD	OTD	MTD	YTD	OTD	MTD	YTD	OTD	MTD	YTD
Mines Water works										JPM															
										Ravirala															
										Sub Total															
LS Crusher										Auxilliaries															
										Main Drive															
										Lighting															
										Maintenance															
Crusher Laterite										**Sub total**															
										Crusher Laterite															
Raw mill -1										Additives															
										Auxilliaries															
										Raw Mill Fan															
										Latrite Crusher															
										Main Drive															
										Maintenance															
										Sub total															
Raw mill -2										Additives															
										Auxilliaries															
										Raw Mill Fan															
										Latrite Crusher															
										Main Drive															
										Maintenance															
										Sub total															
Coal mill -1										Auxilliaries															
										Coal Mill Fan															
										Main Drive															
										Maintenance															
										Sub total															
Coal mill -2										Auxilliaries															
										Coal Mill Fan															
										Main Drive															
										Maintenance															
										Sub total															
Coal mill -2-1										Auxilliaries															
										Coal Mill Fan															
										Main Drive															
										Bin Transport															
										Maintenance															
										Sub total															
Kiln -1										Auxilliaries															
										Clinker Crusher															
										Cooler Fans															
										Bag House Fan															
										ID Fan -1															
										ID Fan -2															
										Kiln Feed															
										Maintenance															
										Kiln Stoppage															
										Sub Total															
Kiln -2										Auxilliaries															
										Bag House Fan															
										Cooler Fans															
										ID Fan															
										Kiln Feed															
										Maintenance															
										Kiln Stoppage															
										Sub Total															
Pre Clinker Service										**AC**															
										Dist. Losses															
										Lighting															
										Water Pump															
										Workshop															
										Sub Total															
Line1 Clinker										**Up to clinker Line-1**															
Line2 Clinker										**Up to clinker Line-2**															
Up to clinker Combined										**TOTAL Upto Clinker**															
Cement mill										Auxilliaries															
										Main Drive															
										Maintenance															
										Sep Fan															
										VRPM Auxilliaries															
										VRPM CA Fan															
										VRPM Main Drive															
										Sub Total	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!						
Slag mill										Auxilliaries															
										Main Drive															
										Maintenance															
										Sep Fan															
										VRPM Auxilliaries															
										VRPM CA Fan															
										VRPM Main Drive															
										Sub Total	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!						
Post Clinker Services																									
Packing plant																									
										Paddle Mixture															
Clinker Export	0	0	0	4012	92378	629966				**Clinker Export**															
										Flyash to Silo															

Training Programs (2020-2021)

Sl.No	Type	Training Agency	Training Program
1	External	Confederation of Indian Industry (CII)	Enhancing Energy Efficiency in Captive Power Plants
2	External	Confederation of Indian Industry (CII)	Online training on Energy Efficiency In Cement Plants
3	External	FLSmidth	Operation & Maintenance In Hydraulic equipment
4	External	National Council for Cement and Building Materials (NCCBM)	Optimisation of Raw mix to Improve Clinker Productivity
5	External	QCFI – Hyd Chapter	Effective application of PST combining QC Methodology
6	External	M V KUMAR - Freelancer	EnMS Awareness
7	External	FLSmidth	Hydraulic Equipment Maintenance - (BASICS, VRM & COOLER SPECIFIC)

Quality Circle

SNO	DEPARTMENT	TEAM NAME	PROJECTS TITLE
1	Civil	Ramco Dream Builders	1. Unsafe Practice during tarpaulin tying for Cement trucks and Wagon, 2. Frequent Jam in Colony Sewage Main Line, 3. Effective utilization of Sewage treatment plant treated water,
2	Mines	Ramco Miners	1. Excessive consumption of Cap-Sensitive Explosives in Watery holes (Energy & cost savings) 2. Remote Operation of Dewatering Pumps (Safety & cost Savings)
3	Mechanical - Coal Mill-1	Ramco Challengers	1. Frequent tripping of wagon tippler on overload, 2. Frequent tripping of Line-1 plant fine coal bins bottom floating shoe Rotary air lock with overload, 3. Coal Mill stoppage due to seal air fan problem.
4	Instrumentation	Ramco Rainbow	1. Transweigh Weigh Feeders Tacho Speed problem, 2. Kiln-1 inlet analyzer probe over travel problem, 3. Frequent problem of Kiln-1 HTD Limit Swich fault.
5	Electrical - Line-1	Ramco Rakshak	1. To avoid nuisance trip for Kiln during compressor startup, 2. Retrofitting of 6.6KV HT panel for mines 400KW motor & 3. To avoid damaging of LS crusher secondary screen deck.
6	Mechanical - Workshop	Ramco Riders	1) High turbidity and Total suspended solids(TSS) in plant water, 2)Drive shaft problem in E110 screw compressor
7	Mechanical -Crusher	Ramco Risers	1. Frequent tripping of B1 Conveyor with overload, 2. Additive crusher truck tippler stopper Ram hydraulic pipes and hoses damages frequently
8	Materials	Vanquishers	1. Problem in evaluation of cost / lumen of LEDs, 2. More time taking for coal reconcilation & 3. Problem in passing weight of slag trucks.
9	Mechanical - Slag Mill	Ramco Sudarshan	1. Avoid running of 7th silo top bag filter for 6th silo discharge. 2. To avoid pumping of water for cement mill water spray from pump house. 3. To avoid damage of Reclaimer scraping buckets.
10	Process & Quality Control	Ramco Wisdom / Wings of Fire	1. Changing of anchor design for improving castable life.
11	Mechanical - Packing Plant	Ramco Krushi	1. Clinker wagon spout hood derailment. 2. Difficult to fixing of parallel distributor cloth erection. 3. Frequent over load tripping of infra bulk loading elevator.
12	Electrical - Cement Mills	QC - 201 Ramco Power	1. Frequent failure of control cable in Slag Mill EOT crane. 2. Providing door sensor in packer discharge conveyor. 3. Frequent failure of GRR power contactor kit.
13	TPP	Ramco Energy	1. More quantity of Steam blowing vapors from Deaerator. 2. Frequent erosions of In-Bed super heater coils at Fixed support area. 3. Optimization of Coal crane circuit operation hours for TPP coal Daybins feeding.
14	Mechanical - Raw Mill-2	Ramco Parishkar	1. Solving the hindrance facing in double flap gate working during both Raw mill 1,2 running condition.

Implementation of ISO 50001/Green Pro

bsi.

Certificate of Registration

ENERGY MANAGEMENT SYSTEM - ISO 50001:2018

This is to certify that:

The Ramco Cements Limited
Kumarasamy Raja Nagar,
Jaggayyapet Mandal,
Krishna District,
Andhra Pradesh 521 457
Andhra Pradesh
India

Holds Certificate No: **ENMS 616875**

and operates an Energy Management System which complies with the requirements of ISO 50001:2018 for the following scope:

The Manufacture of clinker and cement, Generation & utilization of thermal/ DG/ WHRB captive power, bio-gas and sale of power, Utilization of fuel for material handling/ industrial canteen within the premises.

For and on behalf of BSI:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2014-10-30
Latest Revision Date: 2020-10-29

Effective Date: 2020-10-16
Expiry Date: 2023-10-15

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...making excellence a habit.™

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An electronic certificate can be authenticated online.
Printed copies can be validated at www.bsi-global.com/ClientDirectory or telephone +91 11 2692 9000.

Investment of energy saving projects on total turnover of the unit – 17.6% (2020-21)

Forward Way to Conserve Energy

- Installation of Waste Heat Recovery Systems (WHRS) for Line-3 Kiln (9 MW)
- Installation of VFD for Line-2 ID fan by replacing GRR
- Installation of VFD for all fans by replacing GRR/SPRS
- Implementation of 4 MW capacity of Solar plant, Technical Specifications are under review.

National level Energy Awards

CII

Confederation of Indian Industry

125 Years - Since 1895

21st National Award for

Excellence in Energy Management 2020

This is to certify that

The Ramco Cements Limited, Jaggayyapet

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
Executive Director
CII - Godrej GBC

Ravichandran Purushothaman
Chairman, Energy Efficiency Council
CII - Godrej GBC

The Ramco Cements Limited,
KSR Nagar
05-06-2017
State Level
Environmental Award for
Better Environmental Practices

Save energy
Save planet