THE RAMCO CEMENTS LIMITED, GOVINDAPURAM WORKS - ARIYALUR

24th NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT

13th - 15th SEPTEMBER - 2023

PRESENTING TEAM MEMBERS:

ANAND SRIDHAR - DEPUTY MANAGER (PROCESS)

CHINNARASU – DEPUTY MANAGER (ELECTRICAL)

MUNEES THANGAM – ASSISTANT MANAGER (MECHANICAL)

COMPANY PROFILE

❖Founded in 1962 by **Shri P.A.C. Ramasamy Raja**

❖**The RAMCO group** is a well known business conglomerate has grown to be a pioneer in different sectors like Cement, Software, Textiles etc.

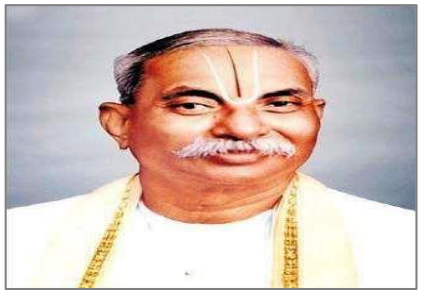
❖**5th Largest Cement Producer** in India with total installed capacity of **22 MTPA** located at 11 places throughout India.

❖RAMCO also produces Ready Mix Concrete and Dry Mortar products, and operates one of the largest wind farms in the country

GROUP COMPANIES

- THE RAMCO CEMENTS LIMITED
- RAMCO INDUSTRIES LIMITED
- RAMCO TEXTILES LIMITED
- RAMCO SURGICAL COTTON MILLS LIMITED
- RAMCO SYSTEMS LIMITED

RAMCO CEMENTS LEADERSHIP TEAM



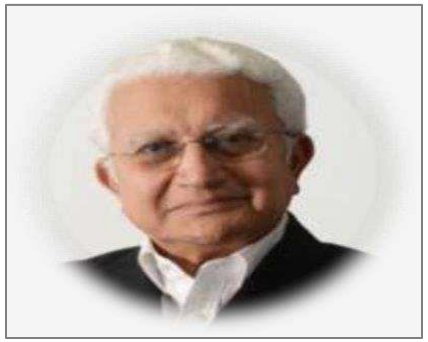
Shri. P.A.C Ramasamy Raja
Founder

Shri. Ramasubramania Raja
Former Chairman

Shri. Venketrama Raja
Managing Director

Mr.A.V.Dharmakrishnan
Chief Executive Officer

Mr. M.Srinivasan
Executive Director - Operations



Mr. Balaji.K.Moorthy
Executive Director - Marketing

RAMCO - ARIYALUR PLANT MANAGEMENT

- Unit Head – Mr. Madhusudan Kulkarni
- Head of Energy Management System – Mr. Ganesh Ram
- Designated Energy Manager – Mr. Jothiswaran (EM - 6869)
- Certified Energy Auditor – Mr. Vinoth Bharani (EA - 21278)

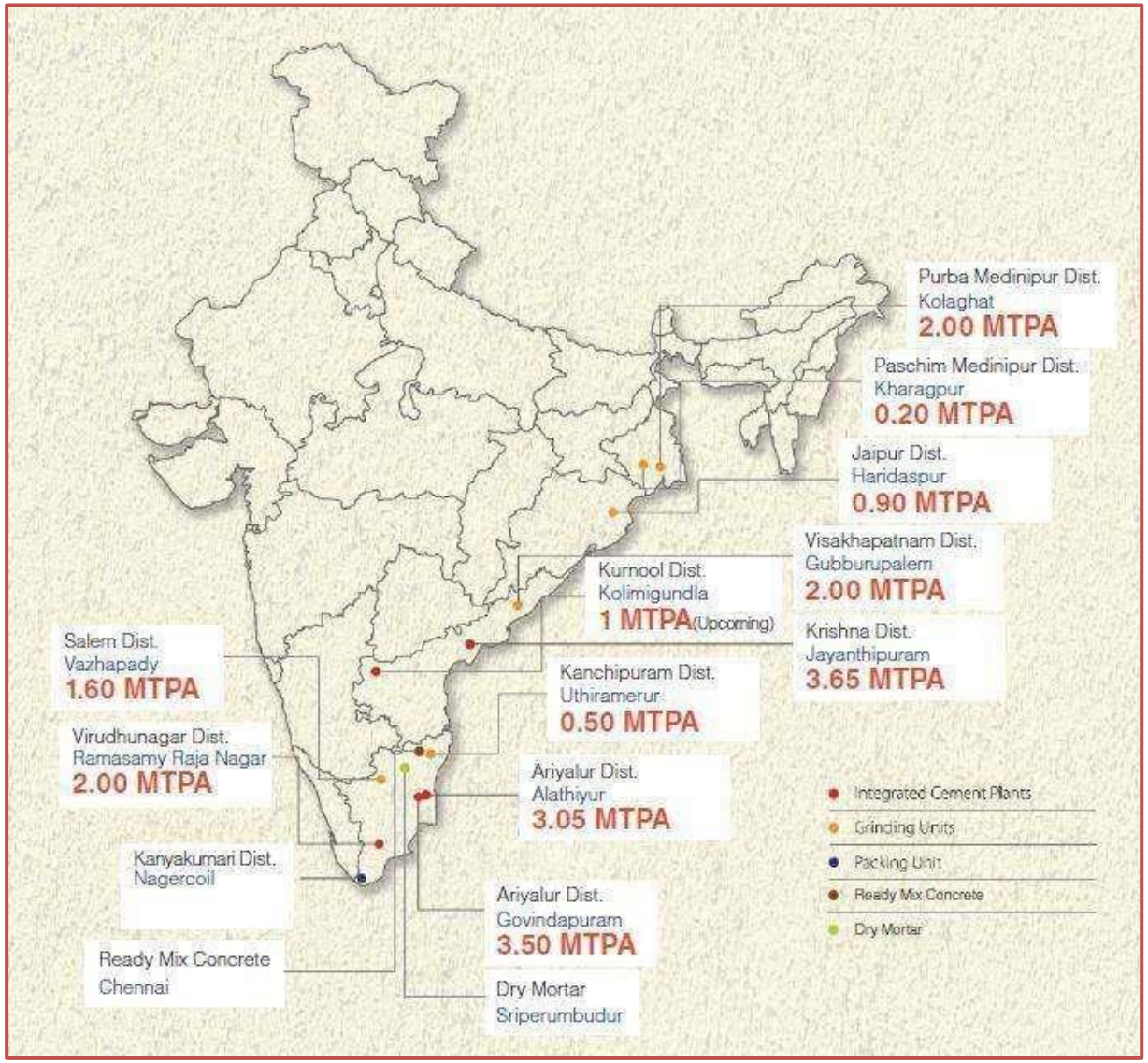
Presenting Team Members -

- S Anand - Deputy Manager (Process) – (EA - 35003/23)
- C Munees Thangam – Assistant Manager (Mechanical)
- A Chinnarasu - Deputy Manager (Electrical)

Mr. Madhusudan Kulkarni
SVP – Manufacturing

Mr. Ganesh Ram
SGM – E&I

RAMCO CEMENTS PROFILE

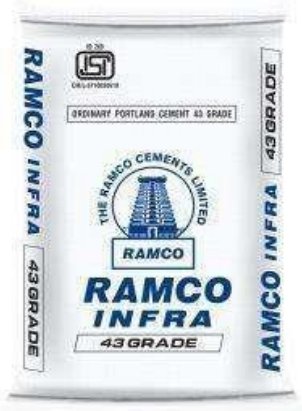


- 5 INTEGRATED CEMENT PLANTS & 6 GRINDING UNITS ACROSS 5 STATES
- TOTAL CEMENT PRODUCTION CAPACITY OF 22 MTPA
- 5TH LARGEST CEMENT PRODUCER IN INDIA
- 1 READY MIX PLANT & 3 DRY MORTAR PLANTS
- 1 STATE OF THE ART RESEARCH & DEVELOPMENT CENTRE

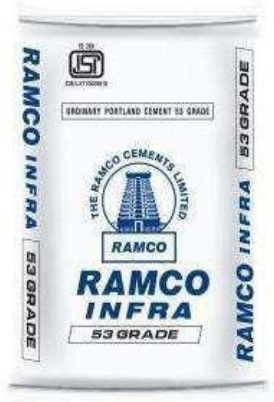
OUR PRODUCT RANGE – RIGHT PRODUCT FOR RIGHT APPLICATION

Ramco Supercrete

Ramco Supergrade

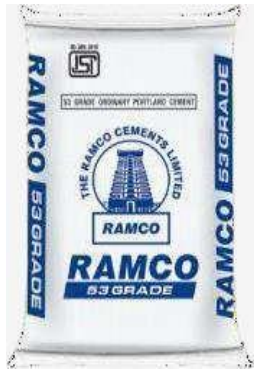


OPC 43 Infra

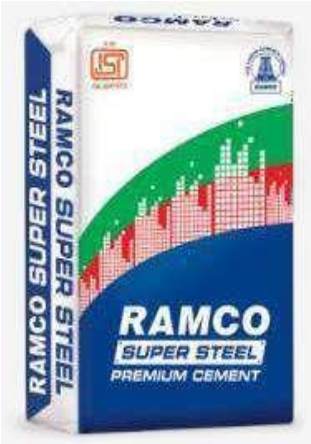


OPC 53 Infra

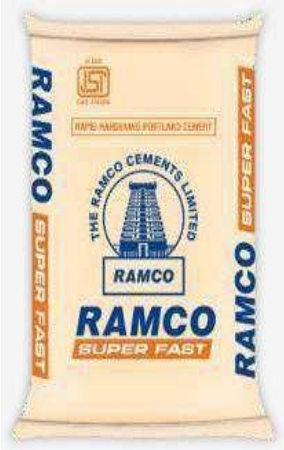
OPC 43 Grade



OPC 53 Grade



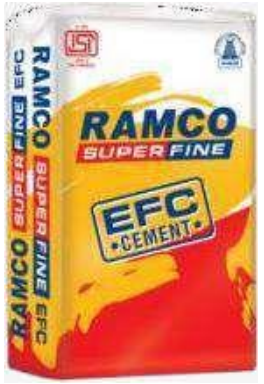
Ramco Super Steel



Ramco Super Fast

Ramco Supercoast

Ramco Samudra



Ramco Superfine EFC

Karthik Super Plus

OUR PRODUCT RANGE – FOR BUILDING CONSTRUCTION

PLANT SPECIFICATIONS

RAMCO - ARIYALUR	CLINKER CAPACITY (MTPA)	COMMISSIONING YEAR	CEMENT CAPACITY (MTPA)
LINE-1	1.63	2008	5.50
LINE-2	1.98	2011	
Thermal Power Plant – 66 MW (40+20+6 MW Turbines) with 3 Boilers of 85 TPH Steam generation			

✓ The Products manufactured at Ramco - Ariyalur are Ordinary Portland Cement (OPC) as per BIS & SLS Standards and Portland Pozzolona Cement (PPC) as per BIS Standards.

TECHNICAL SPECIFICATIONS – ARIYALUR UNIT

CRUSHER

MAKE: L&T

CAPACITY: 900 TPH

RAWMILL-1

TYPE: VRM

MAKE: LOESCHE

MODEL: LM-46.4

CAPACITY: 335 TPH

RAWMILL-2

TYPE: VRM

MAKE: FLSMIDTH

MODEL: ATOX-42.5

CAPACITY: 350 TPH

KILN-1

MAKE: FLSMIDTH

CAPACITY: 4200 TPD

3.95*61 m

5-Stage PH - ILC

KILN-2

MAKE: FLSMIDTH

CAPACITY: 5000 TPD

4.15*64 m

5-Stage PH - ILC

CEMENT MILL-1

TYPE: VRM

MAKE: LOESCHE

MODEL: LM-56.3

CAPACITY: 305 TPH (PPC)

CEMENT MILL-2

TYPE: ROLLER PRESS & BALL MILL

MAKE: THYSSENKRUPP - POLYSIUS

CAPACITY: 230 TPH (PPC)

PACKER

Nos: 4

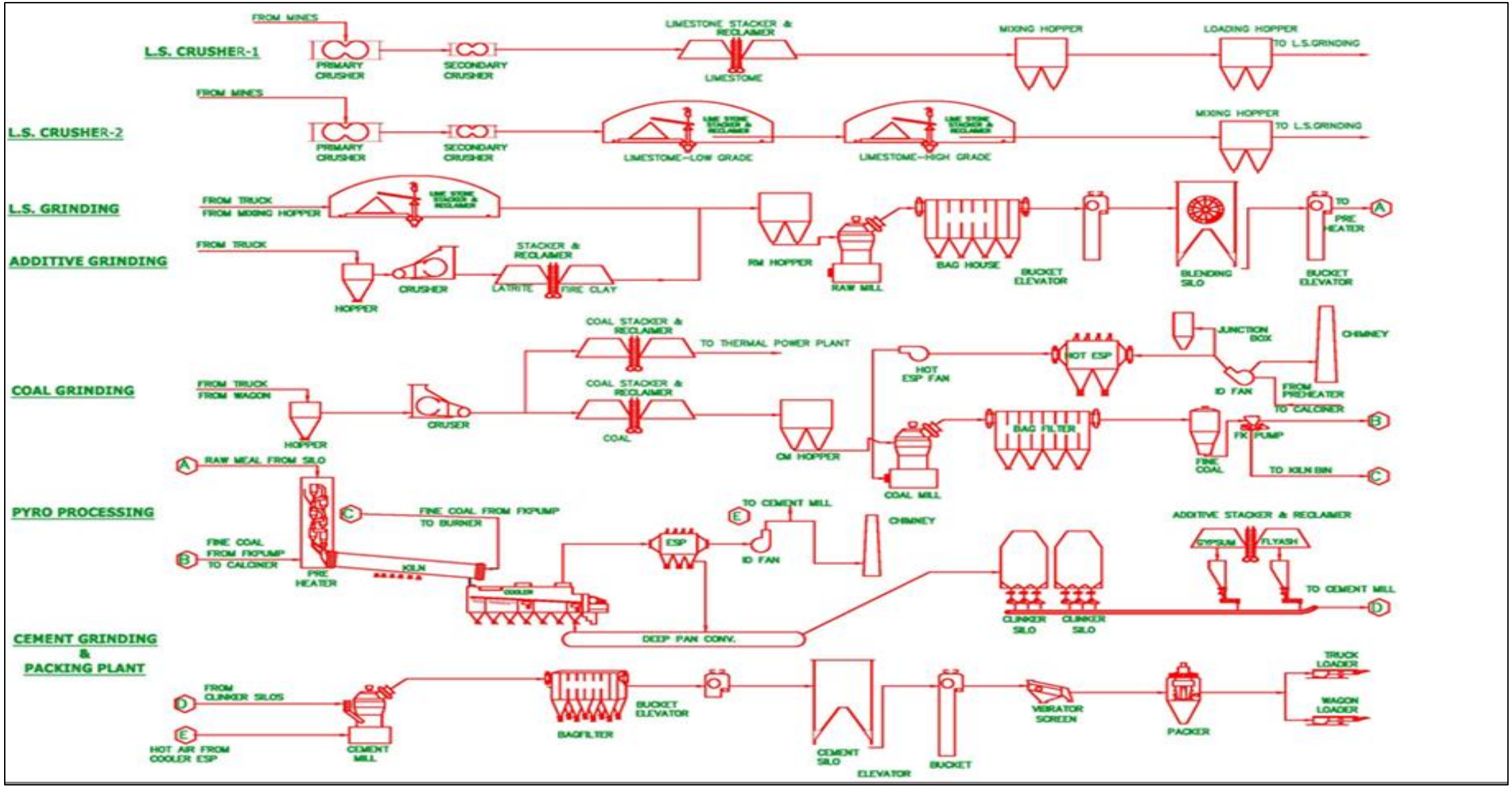
MAKE: EEL INDIA LTD

CAPACITY: 240 TPH

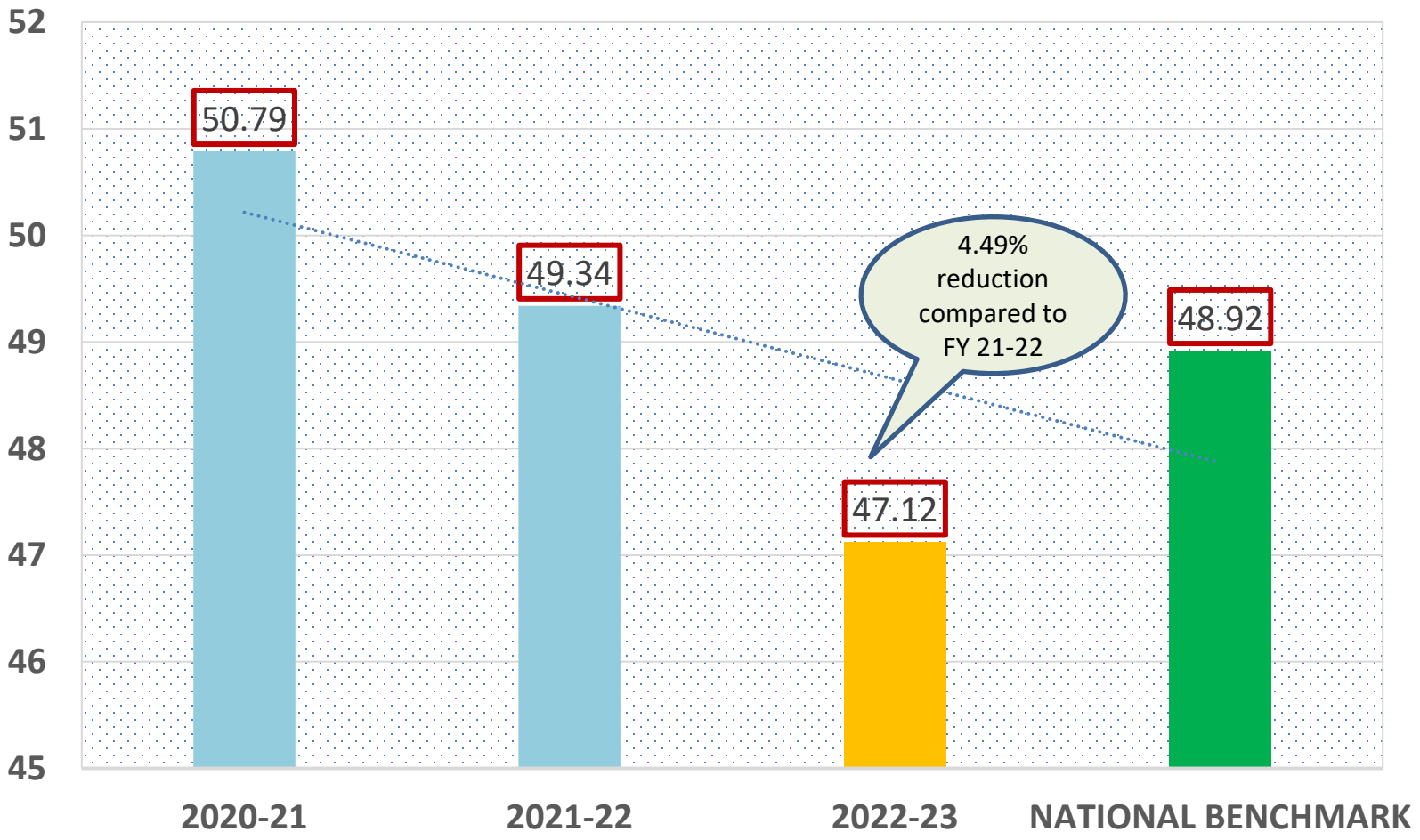
SALIENT FEATURES OF ARIYALUR UNIT

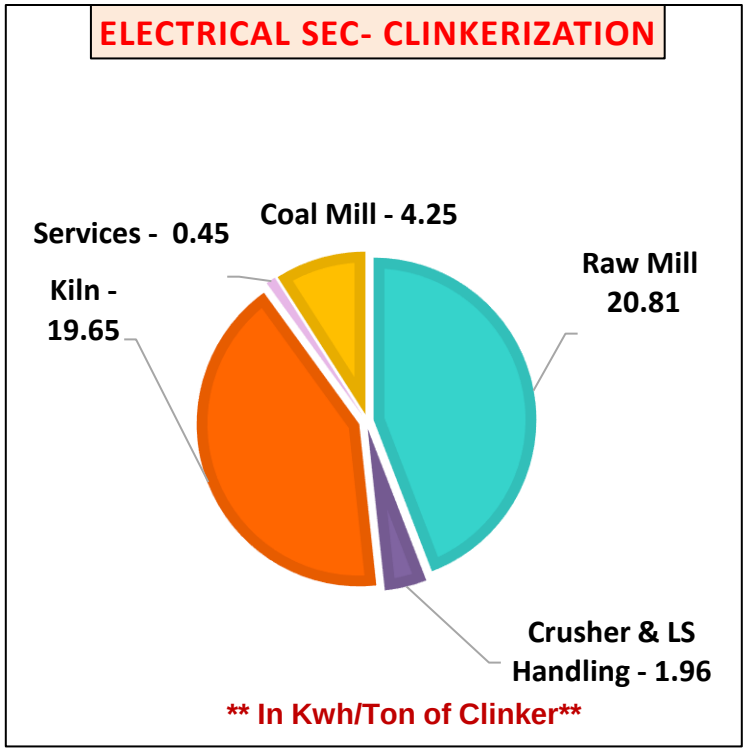
- We are ISO – 9001, 14001, 45001, 50001 Certified
- Online Cross-Belt analyzers for quality control at the Raw materials stage itself
- Modern X-ray methods – XRD & XRF for analyzing elemental and chemical composition
- State-of-the-art grinding Technology and 950 TPH Packing Plant with Auto- truck loader arrangement
- India's first Aluminum dome for Limestone storage
- Covered sheds for Additive & Fuel storage
- Energy efficient plant operation using RAMCO OPTIMA / BLENDX with consistent quality

ARIYALUR UNIT - PROCESS FLOW DIAGRAM



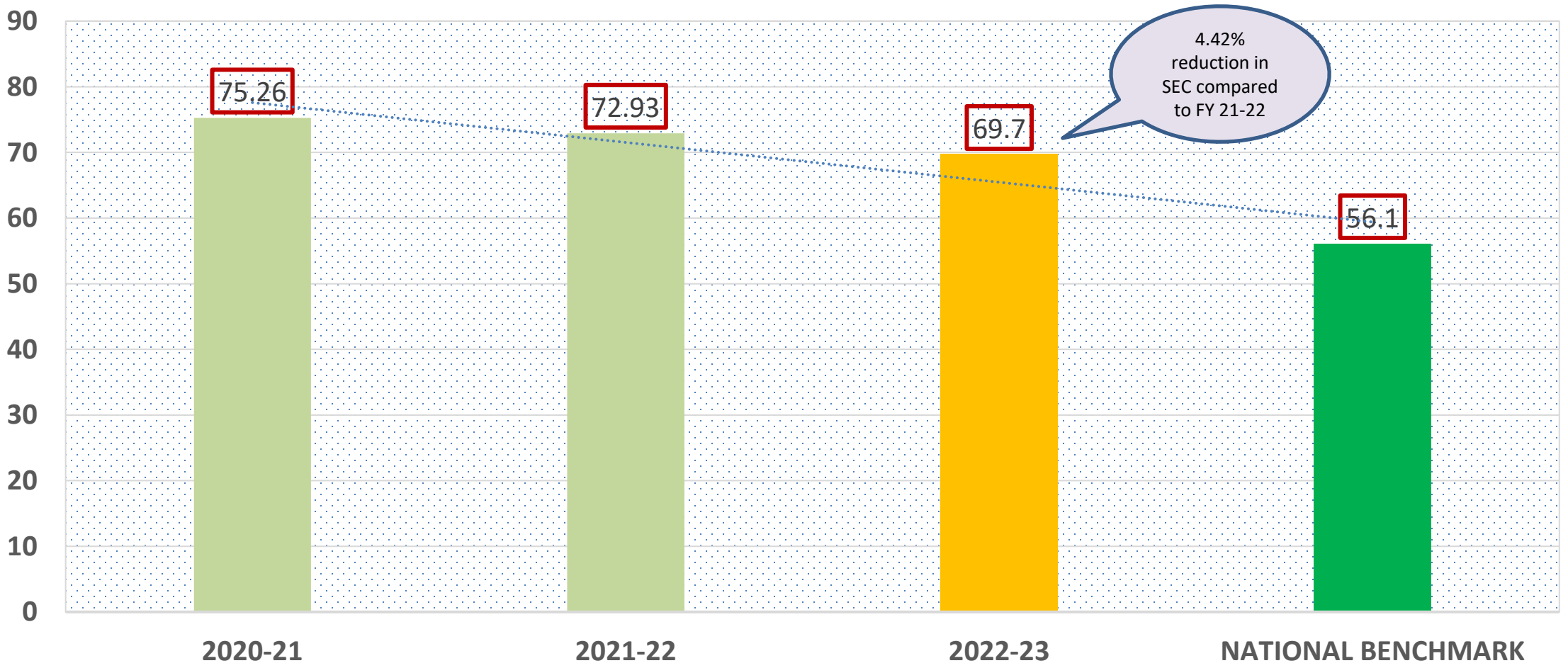
ELECTRICAL SPECIFIC ENERGY CONSUMPTION – UPTO CLINKER





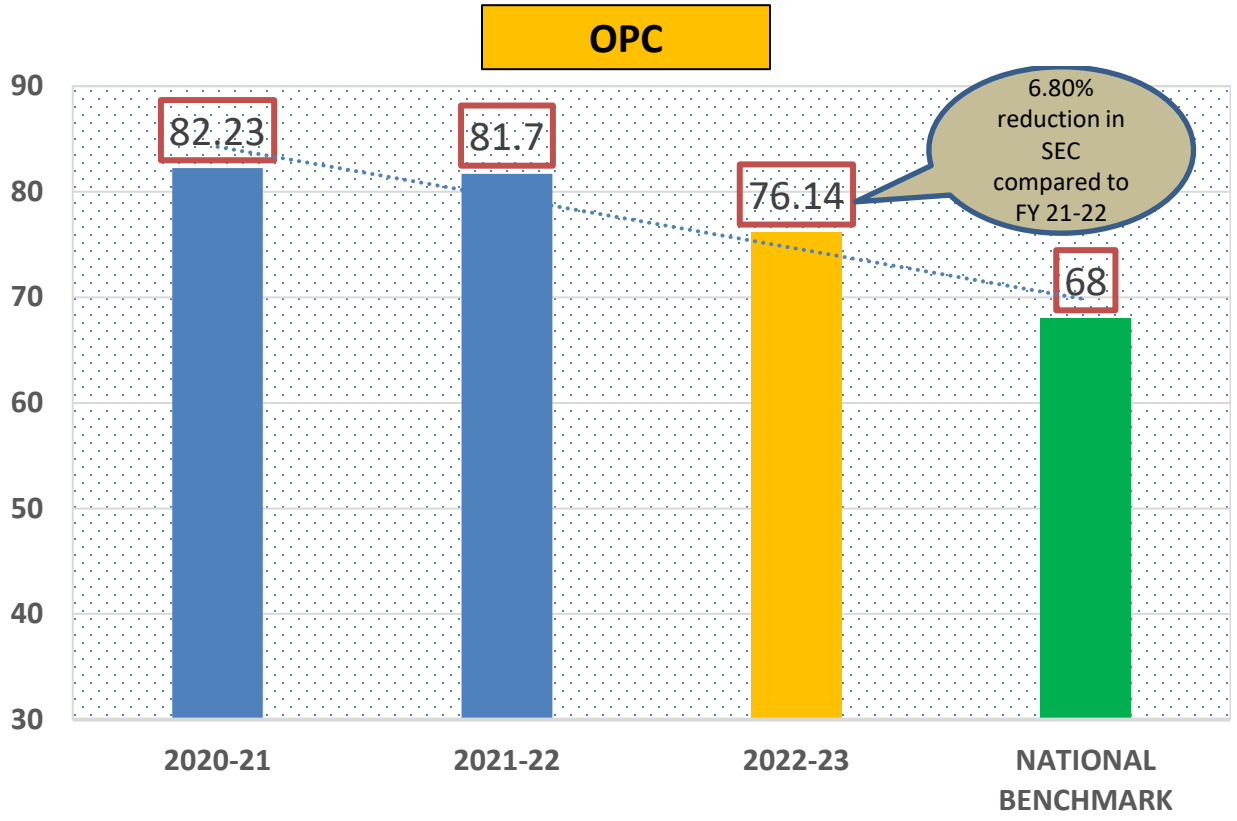
❖ CII ENERGY BENCHMARKING FOR INDIAN CEMENT INDUSTRY – VERSION-5, 2021

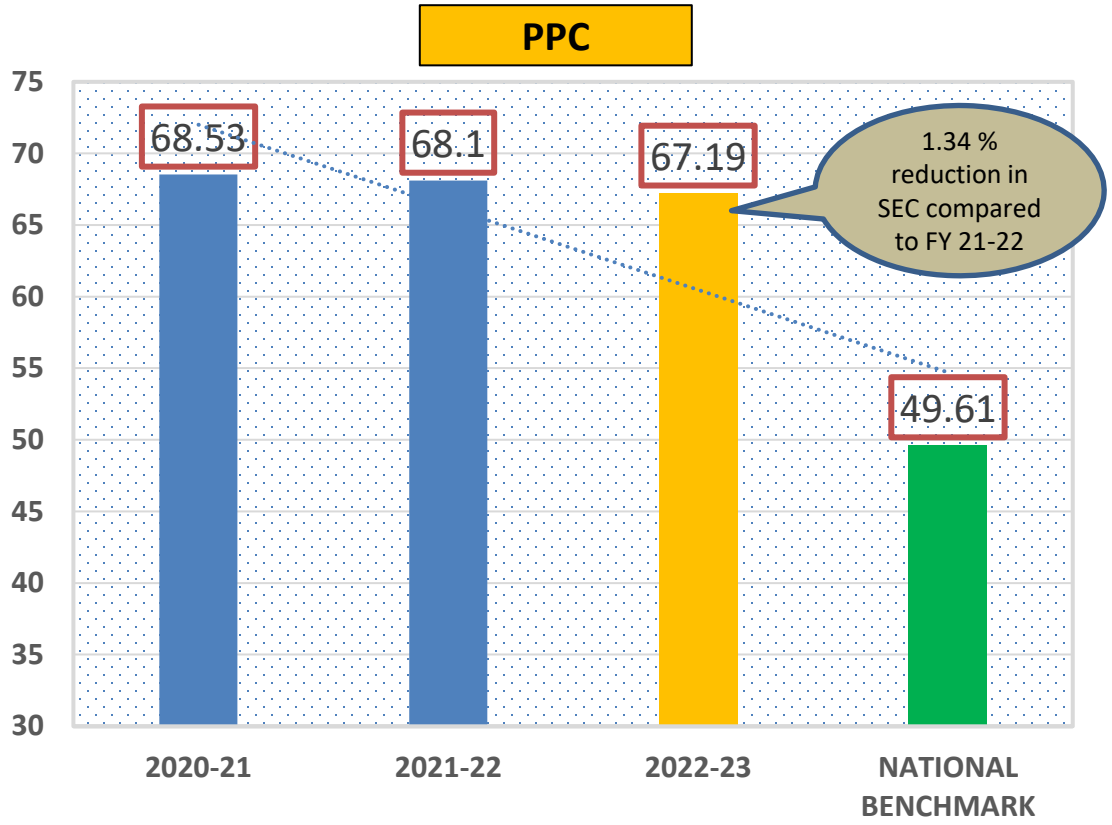
ELECTRICAL SPECIFIC ENERGY CONSUMPTION – CEMENT (OVERALL)

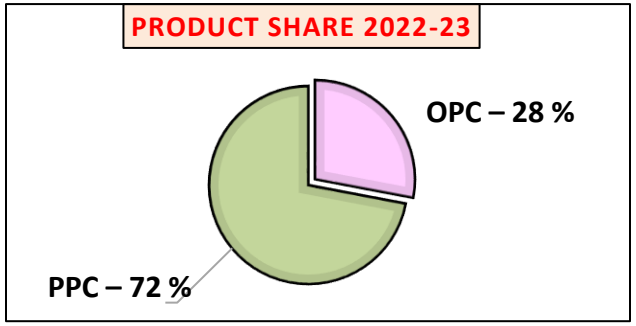


- CII ENERGY BENCHMARKING FOR INDIAN CEMENT INDUSTRY – VERSION-5, 2021

ELECTRICAL SPECIFIC ENERGY CONSUMPTION – CEMENT (GRADE-WISE)

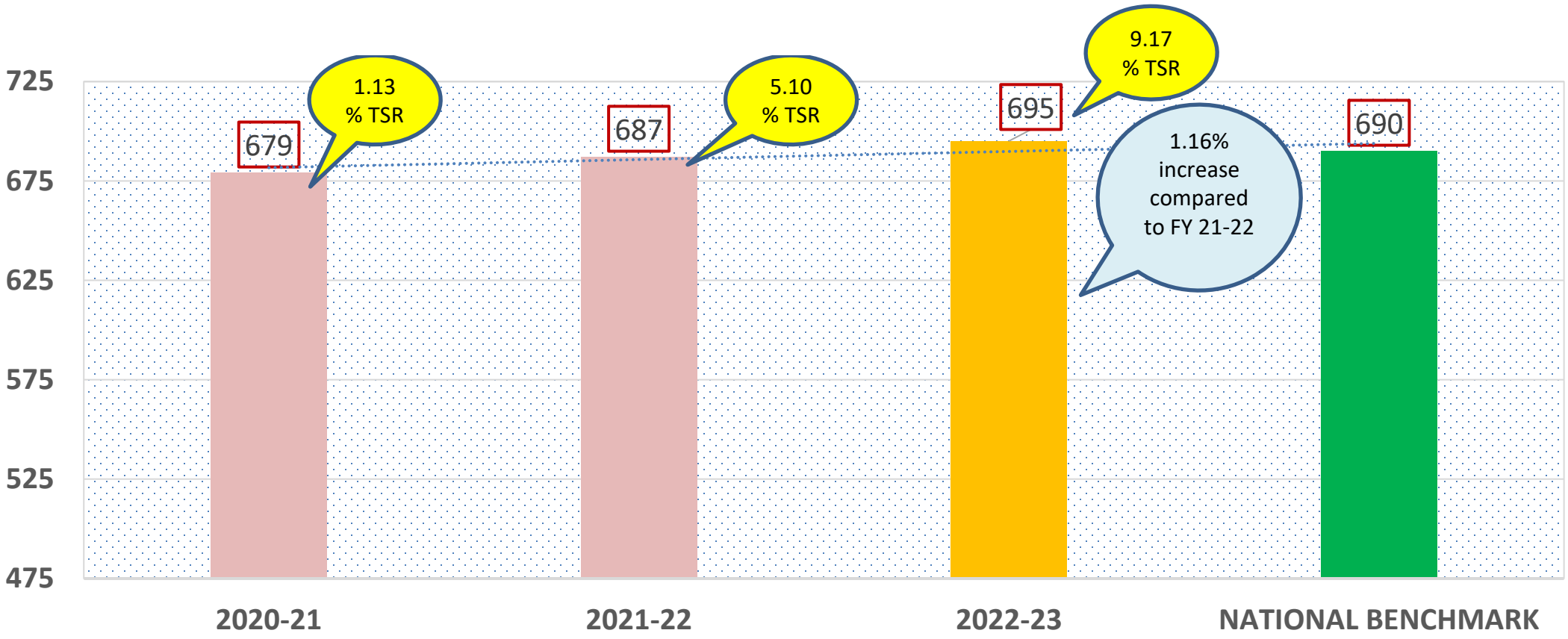






- CII ENERGY BENCHMARKING FOR INDIAN CEMENT INDUSTRY – VERSION-5, 2021

THERMAL SPECIFIC ENERGY CONSUMPTION



❖ CII ENERGY BENCHMARKING FOR INDIAN CEMENT INDUSTRY – VERSION-5, 2021

Reason behind the trend:

TSR % has increased from 5.10% to 9.17% compared to last year

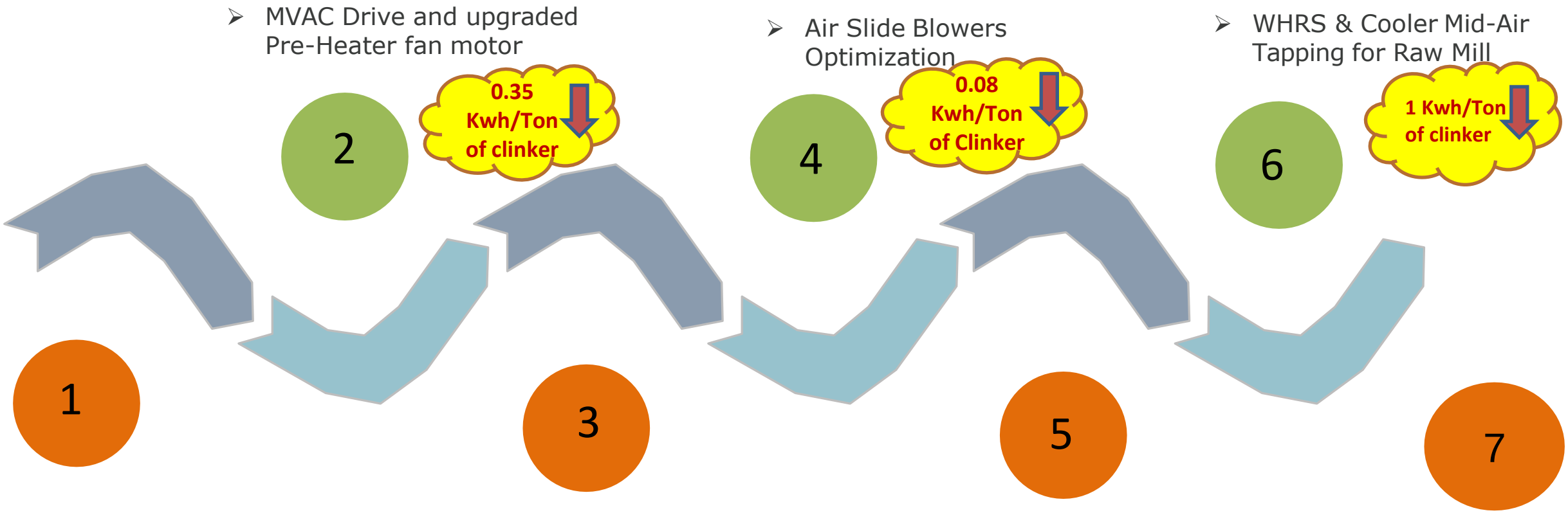
BENCHMARKING – NATIONAL & GLOBAL

DESCRIPTION	INTERNATIONAL BENCHMARK	NATIONAL BENCHMARK	RAMCO-ARIYALUR (2022-23)
Specific Heat Consumption (Kcal/ Kg Clinker)	665	690	695
Specific Power Consumption (KWH/Ton of Cement)	56	56.10	76.14 (OPC) 67.19 (PPC)

Source of Benchmarking Data:

- National Benchmark – CII CEMENT INDUSTRY BENCHMARKING – VERSION-5, 2021
- International Benchmark – UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION - BENCHMARKING REPORT FOR CEMENT INDUSTRY - 2014

ROADMAP TO ACHIEVE BENCHMARK



- CFD Modification in Line-2 Preheater 1st cyclone exit

0.30 Kwh/Ton of clinker & 3 Kcal/kg Clinker

- MVAC Drive and upgraded Pre-Heater fan motor

0.35 Kwh/Ton of clinker

- Compressor & Bag Filter Optimization

0.10 Kwh/Ton of clinker

- Air Slide Blowers Optimization

0.08 Kwh/Ton of Clinker

- Conversion of GRR to VFD and removal of inlet dampers in Line-1 Process Fans

0.70 Kwh/Ton of clinker

- WHRS & Cooler Mid-Air Tapping for Raw Mill

1 Kwh/Ton of clinker

- Utilization of Wind-Wheeling

IMPLEMENTED ENCON PROJECTS SUMMARY – LAST 3 YEARS

Year	No of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)
FY 2020-21	10	1.39	2.80	44.37	18.21
FY 2021-22	13	4.78	3.07	-	18.95
FY 2022-23	18	0.466	1.06	-	8.67
TOTAL	**41**	**6.636**	**6.93**	**44.37**	**45.83**

IMPLEMENTED ENCON PROJECTS – FY 2020-21

S. No.	Name of Energy saving projects	Investments (INR Million)	Electrical Savings (Million Kwh)	Thermal Savings (Million Kcal)	Total Savings (Million Rs.)
1	Optimization of Raw material mix & fuel mix for clinkerization process	-	0.253	42.16	4.90
2	Cooler fans optimization	-	0.506	2.10	3.99
3	Grinding medium optimization in Cementmill-2	-	0.940	-	3.72
4	Cement mill roller edge welding to increase the roller life and improve the mill performance	-	0.608	-	2.41
5	Belt Conveyor Idle Run Hours study made and Logic modification done to reduce the idle hours	-	0.237	-	0.94

IMPLEMENTED ENCON PROJECTS – FY 2020-21

S. No.	Name of Energy saving projects	Investments (INR Million)	Electrical Savings (Million Kwh)	Thermal Savings (Million Kcal)	Total Savings (Million Rs.)
6	Bore-well Automation System - Operating bore-wells spread across 10KM circle through mobile SIM operated automation system and avoided overflow of tanks and vehicle movement	0.03	0.027	-	0.10
7	Feeding of limestone from crusher to ASR	0.80		0.11	1.10
8	Line-2 Nose ring cooling fan 55 KW,1500RPM MOTOR replaced with 55KW,1000RPM MOTOR	-	0.15		0.60
9	RPM Mines office Solar Power supply	0.38	0.005		0.05
10	ASR – 2 Power Cable Reeling Drum Analog Panel Modified to Drive Panel and Stall Torque Motor to Induction motor	0.18	0.10		0.40
TOTAL		**1.39**	**2.80**	**44.37**	**18.21**

IMPLEMENTED ENCON PROJECTS – FY 2021-22

S. No.	Name of Energy saving projects	Investments (INR Million)	Electrical Savings (Million Kwh)	Thermal Savings (Million Kcal)	Total Savings (Million Rs.)
1	20 MW ACC fan blade with hub replaced by energy efficient blade with hub (4 Sets)	2.65	0.633	-	4.44
2	AFR Saving in terms of coal mill run hours and usage in Line-1 (One hour per day)	-	0.33	-	2.31
3	Dry Handling of TPP ash in calciner firing in Line-1	0.20	0.648	-	4.54
4	LOSS matrix done for unloading belt conveyors and process equipment. PLC logic modified and idle hours reduced	-	0.213	-	1.49
5	Stage blinding of 40 MW condensate extraction pump (CEP)	0.20	0.06	-	0.42
6	Clinker silo extraction DPC motor rpm reducing work	0.25	0.25	-	0.18
7	Elevator feed air slide blower line actuator fixing work	0.12	0.277	-	0.19

IMPLEMENTED ENCON PROJECTS – FY 2021-22

S. No.	Name of Energy saving projects	Investments (INR Million)	Electrical Savings (Million Kwh)	Thermal Savings (Million Kcal)	Total Savings (Million Rs.)
8	Raw meal silo feed elevator vent line modification work	-	0.108	-	0.76
9	Ball mill Vent fan (260FN02) VFD Installation	0.80	0.198	-	1.39
10	Star – Delta Controller installation at Packing Plant Elevators	0.06	0.011	-	0.78
11	Permanent Star Connection for LT motors in Line-1 Raw mill & Coal mill circuit	-	0.058	-	0.41
12	Ball mill nip trap blower stopped (260BL03)	-	0.057	-	0.40
13	Dry handling of TPP Ash for calciner firing in Line-2	0.50	0.234	-	1.64
TOTAL		**4.78**	**3.07**	**-**	**18.95**

IMPLEMENTED ENCON PROJECTS – FY 2022-23

S. No.	Name of Energy saving projects	Investments (INR Million)	Electrical Savings (Million Kwh)	Thermal Savings (Million Kcal)	Total Savings (Million Rs.)
1	Modification of Nozzle blockage design in Cement mill-1	0.05	0.100	-	0.80
2	Line-2 false air arresting work	-	0.118	-	0.95
3	Line-1 false air arresting work	-	0.158	-	1.267
4	Reduction in idle run hours of coal unloading conveyors	-	0.117	-	0.936
5	Kiln inlet analyser probe – Cooling water pump idle run hours reduction	-	0.005	-	0.04
6	Jumbo bag system and elevator interlock – timing changed based on site observation	-	0.026	-	0.20
7	Silo extraction bin and silo bag filter interlock	-	0.008	-	0.06
8	Bag-filter Fan interlock minutes to be reduced from 20 min to 10 mins	-	0.017	-	0.138
9	Operate raw water pumps with level based level sensor	-	0.092	-	0.74

IMPLEMENTED ENCON PROJECTS – FY 2022-23

S. No.	Name of Energy saving projects	Investments (INR Million)	Electrical Savings (Million Kwh)	Thermal Savings (Million Kcal)	Total Savings (Million Rs.)
10	Replaced the damaged diaphragm kits & pipe lines at Mill floor	0.025	0.048	-	0.39
11	Optimisation of Ball Mill Performance through Complete Replacement of Grinding Media.	0.125	0.193	-	1.56
12	Elimination of chute jam at wobbler discharge by modifying chute	0.100	0.062	-	0.51
13	Installation of VFD for 100hp pump motor and LDR for tower lights at RPM mines to reduce the consumption of EB power.	0.060	0.060	-	0.49
14	Jumbo bag loading machine bag filter change	-	0.032	-	0.26
15	PP Elevator & screen interlock, cement silo and packer bag filter interlock	-	0.00019	-	0.00
16	Installation damper control at delivery point of CCR building AC duct.	0.004	0.0027	-	0.02
17	Bag cleaning device air-slide blower to bag brush modification	0.100	0.0278	-	0.22
18	Optimisation of Plant cooling water fan	0.002	0.011278	-	0.09
TOTAL		**0.466**	**1.06**	**-**	**8.67**

ENCON PROJECTS – 2023-24 (PLANNED)

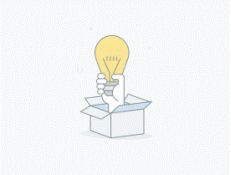
S. No.	Title of Project	Electrical Savings (in Million kWh/Annum)	Thermal Savings (in Million Kcal/Annum)	Investment (in Million Rs./Annum)
1	Cooler mid-air tapping to be done and to be used for Raw mill	3.15	-	20
2	Implementation of recommended CFD changes in Line-2 to reduce the pressure drop and Preheater (ID Fan) power consumption	0.58	6.60	20
3	Installation of MVAC Drive in RAW Mill -1 Fan	2.40	-	18.50
4	Removal of damper and replacement of bag filter fan in old crusher	0.06	-	-
5	Installation of VFD in raw water pump	0.01	-	0.50
6	Optimization of compressed air pressure in TPP	0.04	-	-
7	Installation of MVAC Drive in Preheater Fan -1	0.974	-	9.70
TOTAL		**7.214**	**6.60**	**68.70**

INNOVATIVE PROJECT – 1

Project Title: **REPLACEMENT OF VIBROFEEDER WITH REJECT BASED LOAD HANDLING SYSTEM IN RAW MILL-1**

Project Description:

As per Loesche (OEM) design, vibro-feeder is present at the mill reject circuit and material from the vibro-feeder is then uniformly fed to the conveyor and followed by elevator to transport the material to reject bin. We have modified this design and replaced the vibro-feeder with VFD operated load based reject handling system.



Trigger for implementing the project:

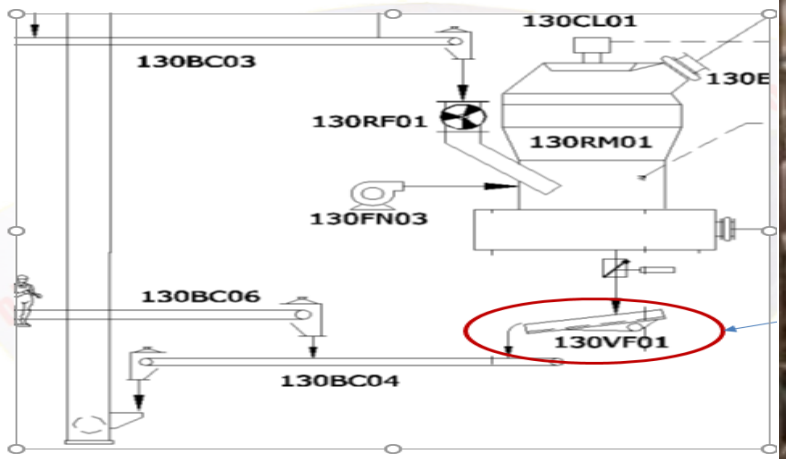
Due to **high limestone moisture, vibro-feeder coating was frequent**, leading to unplanned mill stoppages and man power has to be used to remove the hard coating. Raw mill section availability was critically affected due to this persistent issue.

Why this is innovative?

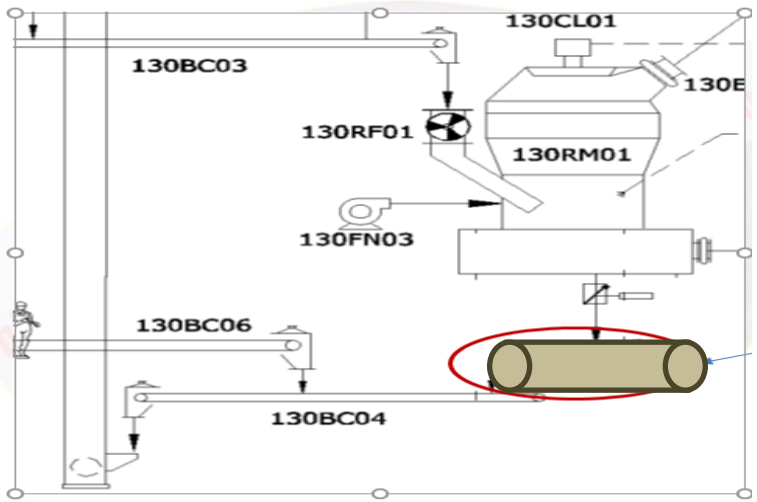
Original design has been modified due to the problem caused by high moisture in limestone. After this modification, no stoppage has occurred due to this issue.

INNOVATIVE PROJECT – 1

BEFORE



AFTER



INNOVATIVE PROJECT – 1

Replication Potential:

It can be replicated for the plants having Loesche mill facing the same issue of coating formation due to high moisture in raw material.

Mill availability improved and Productivity increased

Tangible Benefits:

- **Annual savings of Rs.1.15 Lakhs** per annum is achieved against the initial **investment of Rs. 2 Lakhs**
- Completely avoided mill stoppage due to coating formation in reject circuit
- **Saving of 0.10 Kwh/Ton of material**

Intangible Benefits:

- Improved mill availability and increased productivity
- Frequent loading of scrapper has been avoided
- Frequent cleaning of vibro-feeder has been avoided

PARTICULARS	BEFORE	AFTER
Coating Formation Tendency	Frequent	No Coating formation
Average number of mill stoppages per month	5	Nil

INNOVATIVE PROJECT – 2

Project Title: **REPLACEMENT WITH ENERGY EFFICIENT TURBINE IN THERMAL POWER PLANT**

Project Description:

In order to reduce the specific steam consumption in the 40 MW turbine, we have decided to retrofit the turbine and approached our turbine OEM M/s. Siemens for upgrading the turbine with high efficiency.

Trigger for implementing the project:

Our specific steam consumption increased up to **4.20 Tons /MW against the design of 4.13 Tons /MW** leading to more operating cost and fuel consumption. Therefore we proposed retrofit of the existing turbine to OEM and increase the operating efficiency.

Why this is innovative?

With the same casing of the turbine and without any changes in gearbox and generator, turbine has been modified and number of stages has been increased from 18 to 25. This design modification was implemented along with OEM.

INNOVATIVE PROJECT – 2

RETROFITTED 40MW TURBINE

INNOVATIVE PROJECT – 2

Replication Potential:

It can be replicated for the plants having high specific steam consumption in turbines.

Reduction of 125 Kcal/Kwh , Improved Turbine efficiency and reduction of Power cost

Tangible Benefits:

- **Annual savings of Rs.380.16 Lakhs** per annum is achieved against the investment of Rs. 7.83 Crores.
- Heat rate of the turbine **reduced from 2525 Kcal/kWh to 2400 Kcal/kWh**.
- Return of Investment is 1.89 years
- **Specific steam consumption of the old turbine is 4.20 Tons/MW**, but the design upgraded **new turbine's specific steam** consumption is only **3.97 Tons/MW.**

PARTICULARS	BEFORE	AFTER
Specific Steam Consumption	4.20 Tons/MW	3.97 Tons /MW
Turbine Heat Rate	2525 Kcal/kWh	2400 Kcal/kWh
Turbine Efficiency	34 %	36 %
No. of Stages in Turbine	18	25

Intangible Benefits:

- Due to low steam consumption by the turbine, steam generation in the boiler is reduced, thereby achieving savings in fuel consumption.

INNOVATIVE PROJECT – 3

Project Title: **STAGE BLINDING IN 40 MW STG CONDENSATE EXTRACTION PUMP**

Project Description:

Condensate extraction pump is present at the outlet of Condensate tank and is used to pump the condensate to the deaerator tank. Since the head developed by the pump is found to be higher, it was decided to reduce the head developed by the pump by reducing the impeller stages. During the overhauling of CEP pump, we have blinded two stages of the impellers with blind bush and blind sleeve.

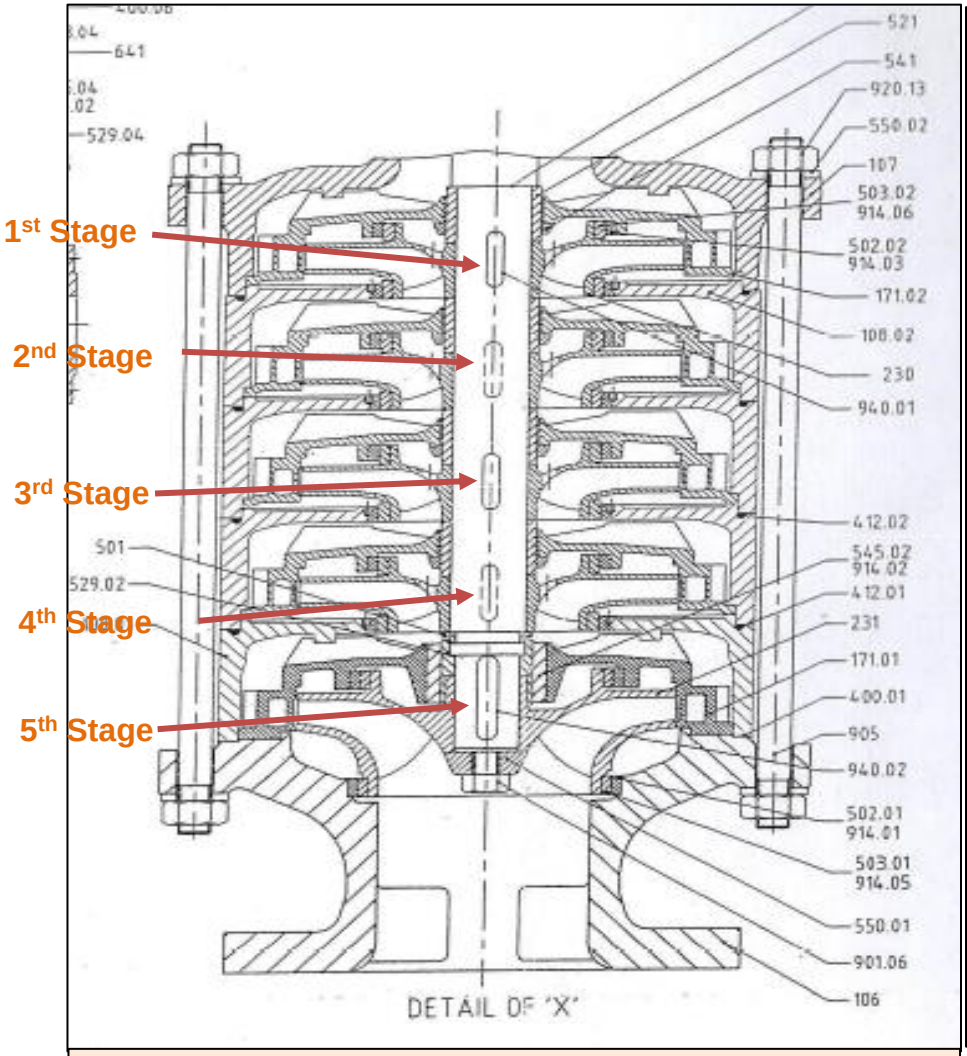
Trigger for implementing the project:

At present, pressure developed by the CEP at the discharge is 16 Kg/cm2 which is then reduced to 8 Kg/cm2 with the help of pressure control valve on auto mode. This leads to higher power consumption and it was decided to reduce the pump head through modifications in impeller.

Why this is innovative?

Without affecting the pump discharge pressure and flow, we have removed two impeller stages from the pump and replaced with two blind bushes and sleeves. Impeller design has been modified based on the plant conditions.

INNOVATIVE PROJECT – 3



Original design of CEP from OEM

Condensate Extraction Pump (CEP)

In-house Modified Design with removal of Two stages of impeller and replaced by blind bush and blind sleeve

INNOVATIVE PROJECT – 3

Replication Potential:

It can be replicated in any multi-stage pumps operating in higher pressure and flow controlled mode of operation.

Almost 50% reduction in power consumption of CEP after modification

Tangible Benefits:

- **Annual savings of Rs.18 Lakhs** per annum is achieved against the **investment of Rs. 5 Lakhs**
- Power consumption of pump **reduced from 99 kwh to 56 kwh. (43 units saved per hour)**

Intangible Benefits:

- Wear and tear of control valve is saved due to valve kept always in full open condition.
- Operation flexibility of pump at various load combination and power savings is achieved.

PARTICULARS	BEFORE	AFTER
Impeller Stages	5	3
Pressure developed by CEP	16 Kg/cm2	8 Kg/cm2
Pressure control valve position	50 %	Full Open
Volumetric Flow	132 m3/hr	132 m3/hr
CEP Power Consumption	99 Kwh	56 Kwh

UTILISATION OF RENEWABLE ENERGY RESOURCES

Onsite Generation				
Year	**Technology (solar/wind/biomass etc)**	**Installed Capacity (MW)**	**Consumption (million kWh)**	**% of overall electrical energy consumption**
FY 2020-21	SOLAR	0.054	0.03	-
FY 2021-22		0.054	0.03	-
FY 2022-23		0.065	0.04	-
Offsite Generation				
Year	**Technology (solar/wind/biomass etc)**	**Installed Capacity (MW)**	**Consumption (million kWh) – allotted for plant**	**% of overall electrical energy consumption**
FY 2020-21	WIND	153	-	-
FY 2021-22			-	-
FY 2022-23			-	-

- Out of the total installed capacity, 57.30 MW has been allotted for Ariyalur plant and Wind wheeling has been started in current Financial Year

WASTE UTILIZATION AND MANAGEMENT

WASTE UTILISED AS FUEL				
S. No	Waste as fuel	Quantity (Tons)	GCV (Kcal/kg)	Waste as percentage of total fuel
1	ALTERNATE FUEL - LIQUID MIX	2479.55	1800	0.20
2	ALTERNATE FUEL - HARD PLASTIC & RUBBER COMPOSITE GRANULES, SIZE: <= 5 MM	2588.129	4400	0.50
3	ALTERNATE FUEL SOILID WASTE	13126.183	1500	0.86
4	ALTERNATE FUEL- PAINT PIGMENTS	247.48	1500	0.02
5	ALTERNATE FUEL - PRODUCTION ASH WASTE	32.78	2000	0.00
6	ALTERNATE FUEL LIQUID MIX - SPENT WASH	37.25	400	0.00
7	ALTERNATE FUEL - SHREDDED FOAM AND RUBBER	1457.506	5050	0.32
8	ALTERNATE FUEL - SHREDDED RDF 40-60 MM	13290.041	2000	1.17
9	ALTERNATE FUEL - SHREDDED TYRE .	464.741	6500	0.13
10	Raw Mill/ Kiln	196	4600	0.04
11	ALTERNATE FUEL WOODCHIPS .	4006.81	3000	0.53
12	COAL ASH – POWER PLANT	26167.138	2500	2.87
13	ALTERNATE FUEL WASTE PLASTIC RUBBER .	2205.93	2000	0.19
14	ALTERNATIVE FUEL - MLP WASTE	2,489.14	2000	0.22
15	ALTERNATE FUEL - DIP PLASTIC WASTE	697.537	2000	0.06
16	ALTERNATE FUEL CARBON BLACK	107.789	5800	0.03
17	ALTERNATE FUEL - MANGO SEED	9070	4000	1.59
18	ALTERNATE FUEL RICE HUSK .	2892.013	3200	0.41
19	ALTERNATE FUEL - RESIDUES OF STARCH	142.675	3600	0.02
20	ALTERNATE FUEL - SHREDDED COIR WASTE	75	4749	0.02

81773 Tons of AFR used and achieved 9.1% TSR in FY 22-23

WASTE UTILIZATION AND MANAGEMENT

WASTE UTILISED AS RAW MATERIAL			
Sl No	**Waste as Raw material**	**Quantity (MT)**	**Name of raw material getting replaced**
1	Slag	28271	Laterite & Fe-rich Limestone

- For quality correction in the raw mix, laterite was being used earlier which is now replaced by Slag from Steel industry as alternative raw material
- Utilization of waste from other industry as a raw material
- Cost effectiveness due to this replacement apart from natural raw material conservation

Total Fe rich Limestone replaced- 75201 Tons
& Total Laterite replaced – 37600 Tons based on Iron correction

INFRASTRUCTURE FOR AFR CO-PROCESSING

- 1 Shredder – 30 TPH Capacity
- Closed shed for storage of shredded AFR
- Weigh Bridge for AFR pre-processing
- Chain conveyor for conveying AFR to shredder
- Double flap gate at AFR discharge point at Preheater
- Dedicated Wheel loaders and tippers for AFR system
- Separate shredder for processing colony waste
- Apart from usage of AFR in Pyro-section in both lines, AFR usage also started in our Thermal Power Plant with dedicated over-feeding system

Storage yard

Shredder

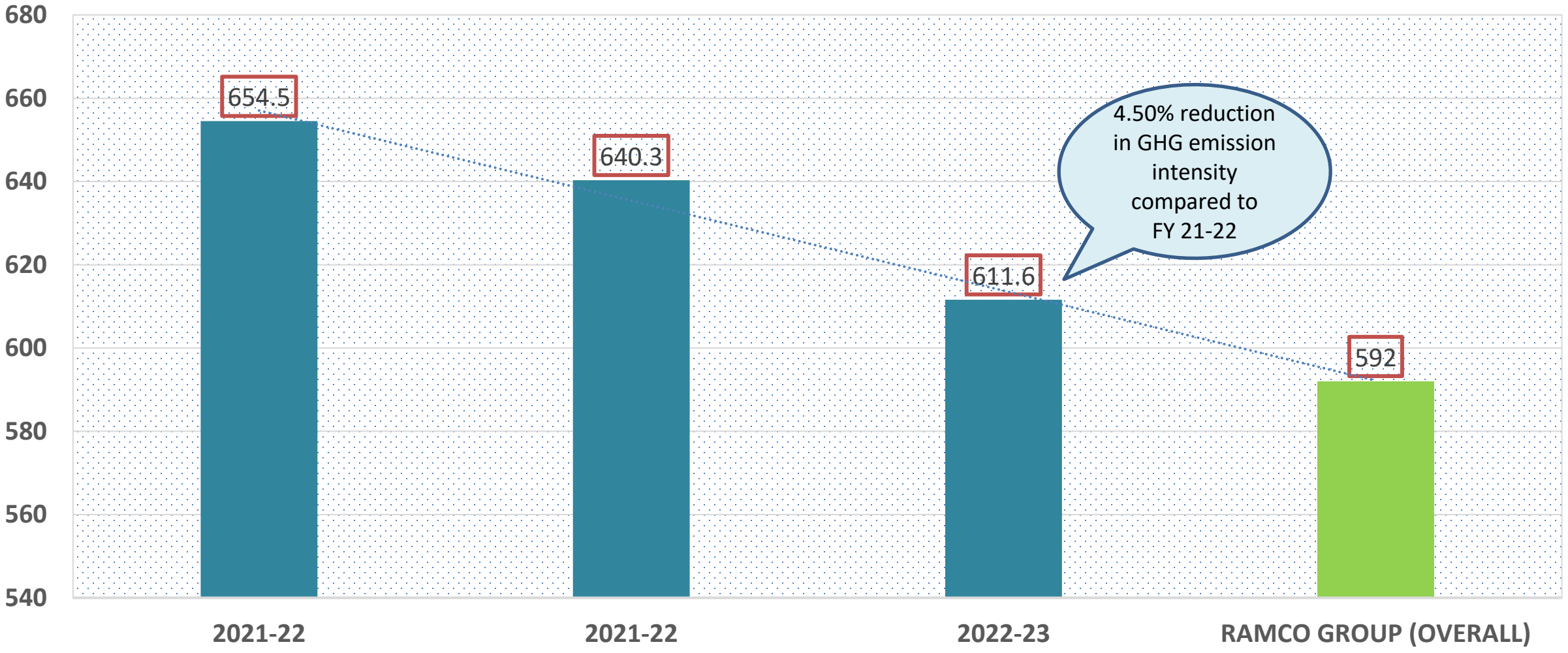

Shredded AFR


AFR Feeding System


Conveying System


Shredder Rotor

GHG INVENTORISATION



❖ GHG EMISSIONS IN Kg CO2 / Ton of PPC

GHG EMISSION REDUCTION GOALS

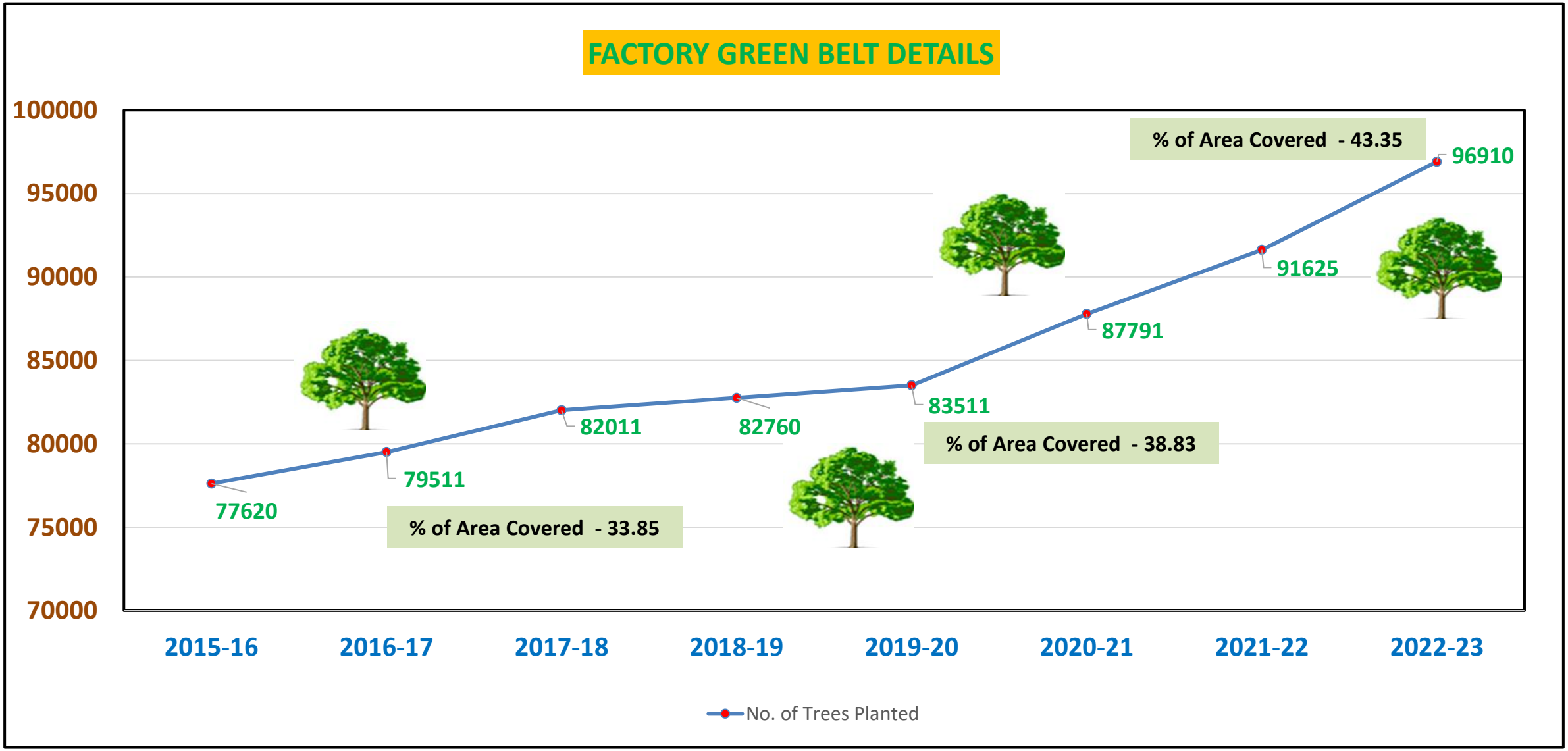
Short Term Goal:

- Effective energy reduction measures in operations
- Continuous Green belt development
- Increased production of Blended cement
- Usage of E-vehicles for transportation inside the plant premises
- Power wheeling from Wind farms to plant

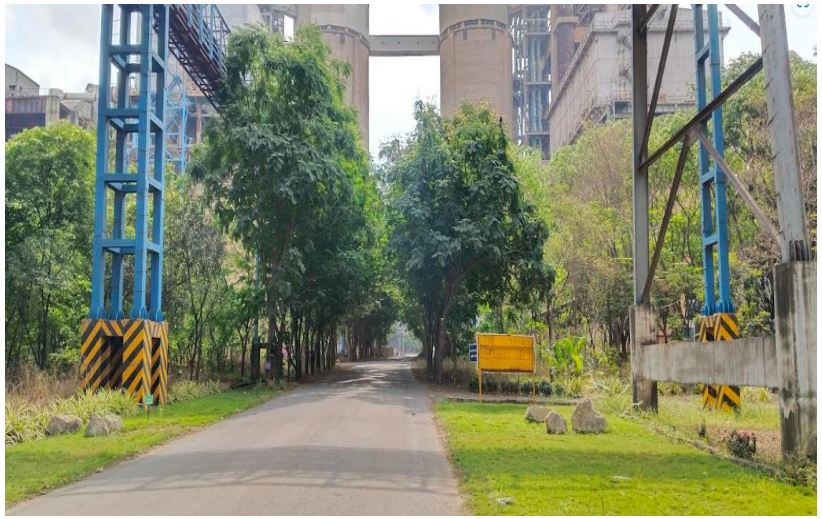
Long Term Goal:

- Reduction of nearly **31000 Tons of CO2 emission per year** by proposed renewable energy utilization including solar power and wind wheeling of power to cement plant from our wind farms.
- Large scale green belt development in plant, mines and all surrounding villages with the aim of planting **15000 trees per year**.
- To achieve 20% TSR in Kiln by effective utilization of AFR which will help us reduce nearly **1.50 Lakh Tons of CO2 emission per year**.

GREEN COVER – RAMCO ARIYALUR



GREEN BELT DEVELOPMENT



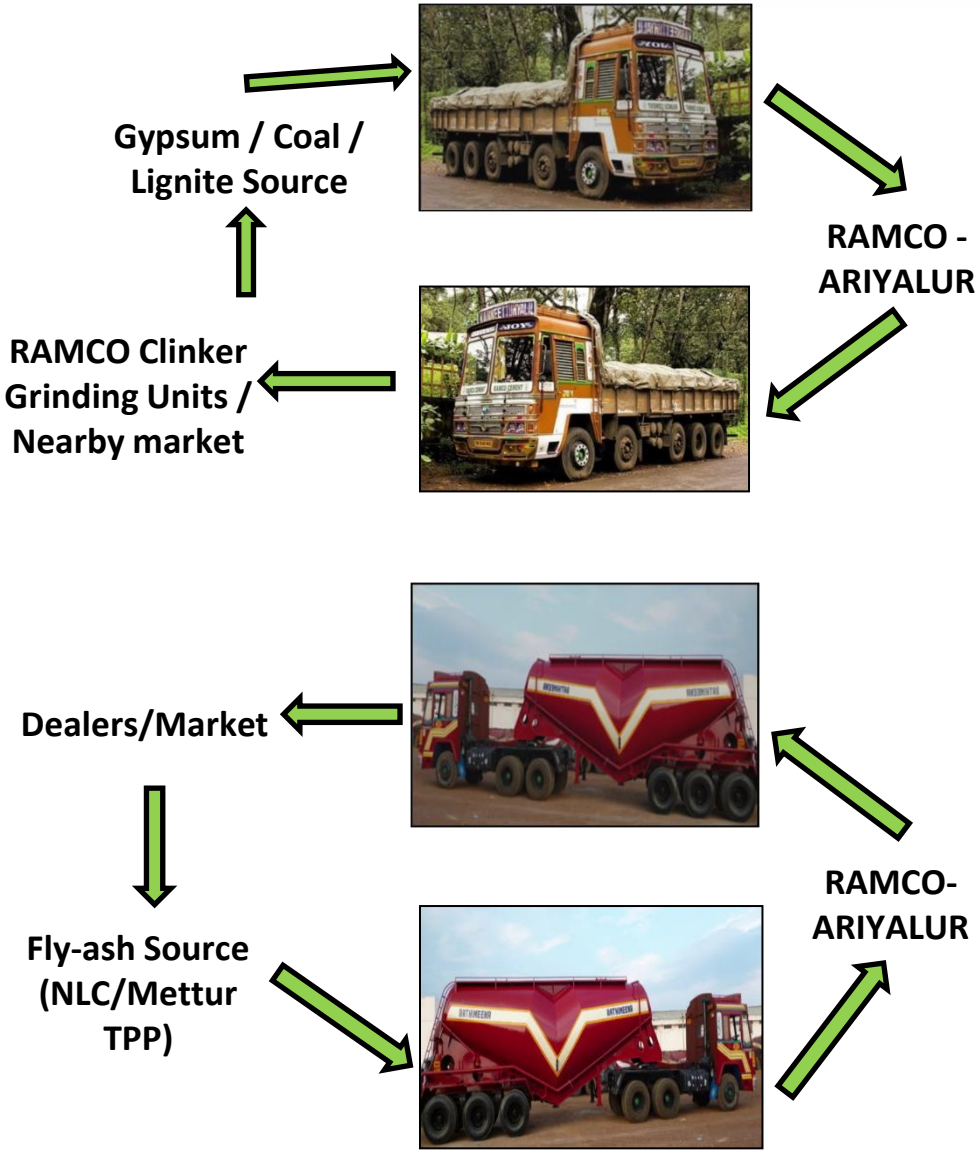
REDUCTION OF GHG EMISSIONS BY GREEN SUPPLY CHAIN

- **Reverse Logistics Methodology:** Utilization of Gypsum and Fly-ash trucks as clinker / cement trucks and Cement Bulker respectively
- Utilization of Cement / clinker trucks as raw material trucks
- **Increased usage of Rail transportation** for clinker and cement which is both cost effective and faster compared to other modes.

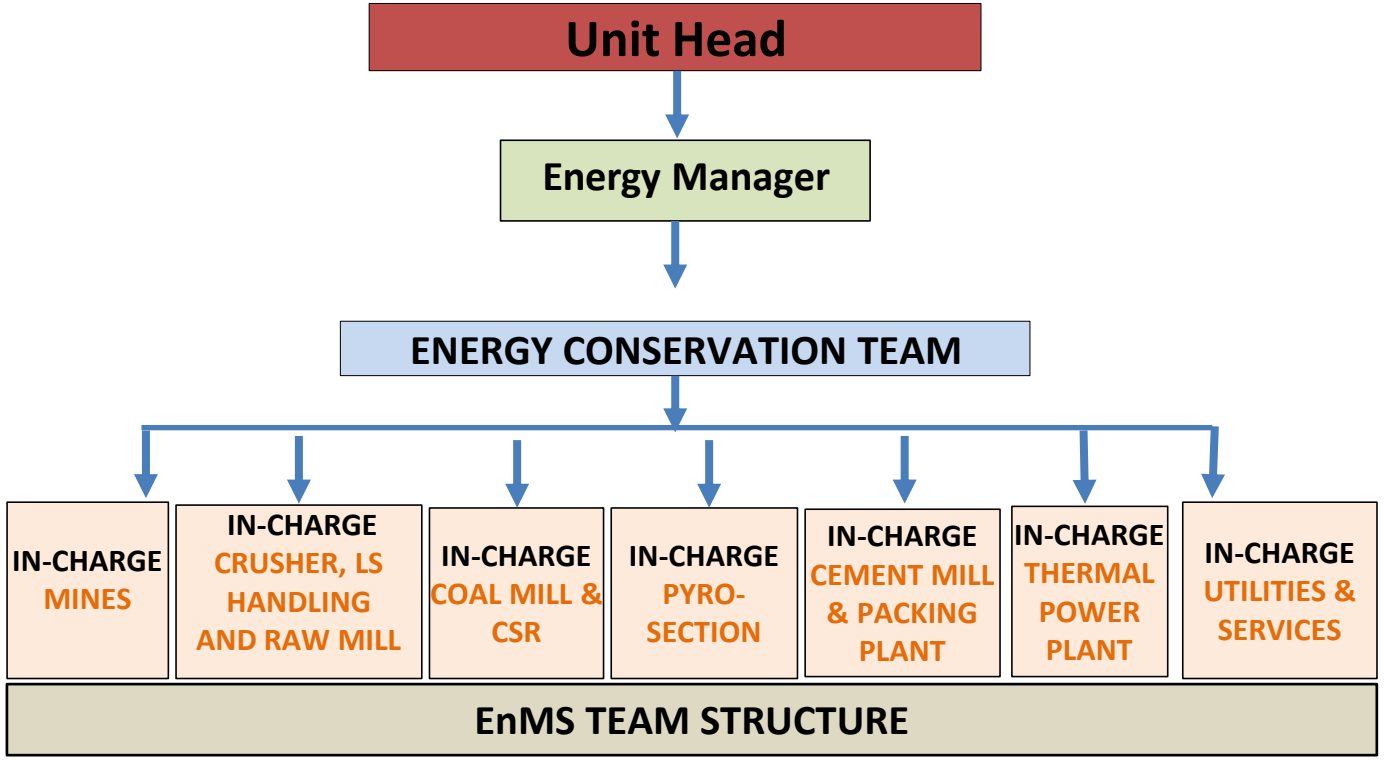
2022-23	
INTER-UNIT CLINKER TRANSPORT THROUGH RAIL	448938 Tons (92% of total Clinker transport)
CEMENT TRANSPORT THROUGH RAIL & BULKERS	806304 Tons (30% of total Cement Dispatch)
CEMENT DISPATCH THROUGH JUMBO BAGS	20361 Tons

INTER-UNIT CLINKER TRANSPORT BY RAIL

CEMENT TRANSPORT BY RAIL



EMS SYSTEM & OTHER REQUIREMENTS



ENERGY REVIEW MEETING – CHAIRED BY UNIT HEAD

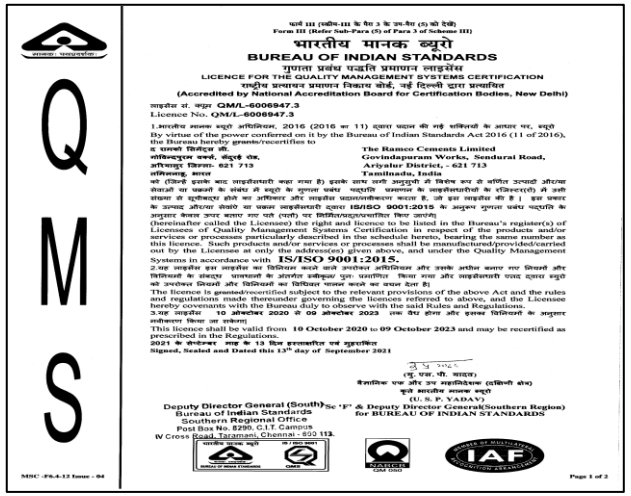
ENERGY CONSERVATION TEAM – WEEKLY REVIEW MEETING

EXISTING ENERGY MANAGEMENT SYSTEM:

- Daily monitoring of plant energy consumption and addressing of deviations
- Weekly Energy Conservation Meeting
- Monthly meeting with technical team – Section-wise Energy KPI
- Weekly EnMS core team members of each section

ISO CERTIFICATIONS FOR RAMCO - ARIYALUR

ISO 9001:2015



फार्म III (स्कीम-III के पैरा 3 के उप-पैरा (5) को देखें)
Form III (Refer Sub-Para (5) of Para 3 of Scheme III)

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

गुणता प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE QUALITY MANAGEMENT SYSTEMS CERTIFICATION
राष्ट्रीय प्रत्यायन प्रमाणन निकाय बोर्ड, नई दिल्ली द्वारा प्रत्यायित
(Accredited by National Accreditation Board for Certification Bodies, New Delhi)

लाइसेंस सं. क्यूएम/एल-6006947.3
Licence No. QM/L-6006947.3

1. भारतीय मानक ब्यूरो अधिनियम, 2016 (2016 का 11) द्वारा प्रदान की गई शक्तियों के आधार पर, ब्यूरो
By virtue of the power conferred on it by the Bureau of Indian Standards Act 2016 (11 of 2016), the Bureau hereby grants/recertifies to

द रामको सिमेंट्स लि.	The Ramco Cements Limited
गोविन्दपुरम वर्क्स, सेंदुरई रोड,	Govindapuram Works, Sendurai Road,
अरियालुर जिल्ला- 621 713	Ariyalur District, - 621 713
तमिलनाडु, भारत	Tamilnadu, India

की (जिन्हें इसके बाद लाइसेंसधारी कहा गया है) इसके साथ लगी अनुसूची में विशेष रूप से वर्णित उत्पादों और/या सेवाओं या प्रक्रमों के संबंध में ब्यूरो के गुणता प्रबंध पद्धति प्रमाणन के लाइसेंसधारियों के रजिस्टर(रों) में उसी संख्या से सूचीबद्ध होने का अधिकार और लाइसेंस प्रदान/नवीकरण करता है, जो इस लाइसेंस की है। इस प्रकार के उत्पाद और/या सेवाएं या प्रक्रम लाइसेंसधारी द्वारा IS/ISO 9001:2015 के अनुरूप गुणता प्रबंध पद्धति के अनुसार केवल ऊपर बताए गए पते (पतों) पर निर्मित/पदत्त/प्रचालित किए जाएंगे।
(hereinafter called the Licensee) the right and licence to be listed in the Bureau's register(s) of Licensees of Quality Management Systems Certification in respect of the products and/or services or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products and/or services or processes shall be manufactured/provided/carried out by the Licensee at only the address(es) given above, and under the Quality Management Systems in accordance with IS/ISO 9001:2015.

2. यह लाइसेंस इस लाइसेंस का विनियम करने वाले उपरोक्त अधिनियम और उसके अधीन बनाए गए नियमों और विनियमों के संबंध प्रावधानों के अंतर्गत स्वीकृत/ पुनः प्रमाणित किया गया और लाइसेंसधारी एतद द्वारा ब्यूरो को उपरोक्त नियमों और विनियमों का विधिवत पालन करने का वचन देता है।
The licence is granted/recertified subject to the relevant provisions of the above Act and the rules and regulations made thereunder governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

3. यह लाइसेंस 10 अक्टोबर 2020 से 09 अक्टोबर 2023 तक वैध होगा और इसका विनियमों के अनुसार नवीकरण किया जा सकेगा।
This licence shall be valid from 10 October 2020 to 09 October 2023 and may be renewed as prescribed in the Regulations.

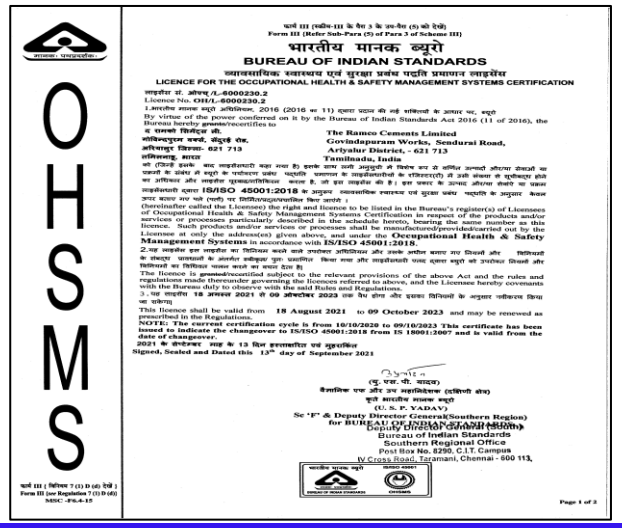
2021 के सेप्टेम्बर माह के 13 दिन हस्ताक्षरित एवं मुहरांकित
Signed, Sealed and Dated this 13th day of September 2021

(यु. एस. पी. यादव)
वैज्ञानिक एफ और उप महानिदेशक (दक्षिणी क्षेत्र)
कृते भारतीय मानक ब्यूरो
(U. S. P. YADAV)
Sc 'F' & Deputy Director General(Southern Region)
for BUREAU OF INDIAN STANDARDS
Deputy Director General (South)
Bureau of Indian Standards
Southern Regional Office
Post Box No. 8290, C.I.T. Campus
IV Cross Road, Taramani, Chennai - 600 113.

MSC -F6.4-12 Issue - 04

Page 1 of 2

ISO 45001:2018



फार्म III (स्कीम-III के पैरा 3 के उप-पैरा (5) को देखें)
Form III (Refer Sub-Para (5) of Para 3 of Scheme III)

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

व्यावसायिक स्वास्थ्य एवं सुरक्षा प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEMS CERTIFICATION

लाइसेंस सं. ओएच/एल-6000230.2
Licence No. OH/L-6000230.2

1. भारतीय मानक ब्यूरो अधिनियम, 2016 (2016 का 11) द्वारा प्रदान की गई शक्तियों के आधार पर, ब्यूरो
By virtue of the power conferred on it by the Bureau of Indian Standards Act 2016 (11 of 2016), the Bureau hereby grants/recertifies to

द रामको सिमेंट्स लि.	The Ramco Cements Limited
गोविन्दपुरम वर्क्स, सेंदुरई रोड,	Govindapuram Works, Sendurai Road,
अरियालुर जिल्ला- 621 713	Ariyalur District, - 621 713
तमिलनाडु, भारत	Tamilnadu, India

की (जिन्हें इसके बाद लाइसेंसधारी कहा गया है) इसके साथ लगी अनुसूची में विशेष रूप से वर्णित उत्पादों और/या सेवाओं या प्रक्रमों के संबंध में ब्यूरो के पर्यावरण प्रबंध पद्धति प्रमाणन के लाइसेंसधारियों के रजिस्टर(रों) में उसी संख्या से सूचीबद्ध होने का अधिकार और लाइसेंस प्रदान/नवीकरण करता है, जो इस लाइसेंस की है। इस प्रकार के उत्पाद और/या सेवाएं या प्रक्रम लाइसेंसधारी द्वारा IS/ISO 45001:2018 के अनुरूप व्यावसायिक स्वास्थ्य एवं सुरक्षा प्रबंध पद्धति के अनुसार केवल ऊपर बताए गए पते (पतों) पर निर्मित/पदत्त/प्रचालित किए जाएंगे।
(hereinafter called the Licensee) the right and licence to be listed in the Bureau's register(s) of Licensees of Occupational Health & Safety Management Systems Certification in respect of the products and/or services or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products and/or services or processes shall be manufactured/provided/carried out by the Licensee at only the address(es) given above, and under the Occupational Health & Safety Management Systems in accordance with IS/ISO 45001:2018.

2. यह लाइसेंस इस लाइसेंस का विनियम करने वाले उपरोक्त अधिनियम और उसके अधीन बनाए गए नियमों और विनियमों के संबंध प्रावधानों के अंतर्गत स्वीकृत/ पुनः प्रमाणित किया गया और लाइसेंसधारी एतद द्वारा ब्यूरो को उपरोक्त नियमों और विनियमों का विधिवत पालन करने का वचन देता है।
The licence is granted/recertified subject to the relevant provisions of the above Act and the rules and regulations made thereunder governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

3. यह लाइसेंस 18 अगस्त 2021 से 09 अक्टोबर 2023 तक वैध होगा और इसका विनियमों के अनुसार नवीकरण किया जा सकेगा।
This licence shall be valid from 18 August 2021 to 09 October 2023 and may be renewed as prescribed in the Regulations.

NOTE: The current certification cycle is from 10/10/2020 to 09/10/2023 This certificate has been issued to indicate the changeover to IS/ISO 45001:2018 from IS 18001:2007 and is valid from the date of changeover.

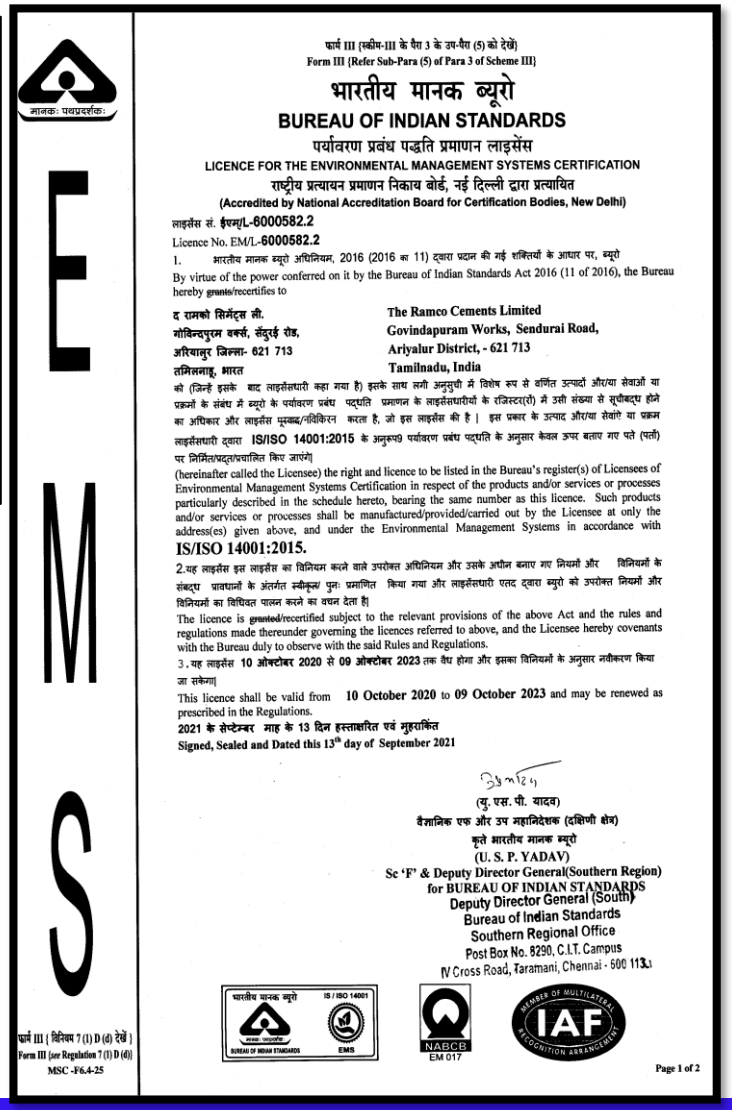
2021 के सेप्टेम्बर माह के 13 दिन हस्ताक्षरित एवं मुहरांकित
Signed, Sealed and Dated this 13th day of September 2021

(यु. एस. पी. यादव)
वैज्ञानिक एफ और उप महानिदेशक (दक्षिणी क्षेत्र)
कृते भारतीय मानक ब्यूरो
(U. S. P. YADAV)
Sc 'F' & Deputy Director General(Southern Region)
for BUREAU OF INDIAN STANDARDS
Deputy Director General (South)
Bureau of Indian Standards
Southern Regional Office
Post Box No. 8290, C.I.T. Campus
IV Cross Road, Taramani, Chennai - 600 113.

फार्म III (विनियम 7 (1) D (d) देखें)
Form III (see Regulation 7 (1) D (d))
MSC -F6.4-15

Page 1 of 2

ISO 14001:2015



फार्म III (स्कीम-III के पैरा 3 के उप-पैरा (5) को देखें)
Form III (Refer Sub-Para (5) of Para 3 of Scheme III)

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

पर्यावरण प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE ENVIRONMENTAL MANAGEMENT SYSTEMS CERTIFICATION
राष्ट्रीय प्रत्यायन प्रमाणन निकाय बोर्ड, नई दिल्ली द्वारा प्रत्यायित
(Accredited by National Accreditation Board for Certification Bodies, New Delhi)

लाइसेंस सं. ईएम्/एल-6000582.2
Licence No. EM/L-6000582.2

1. भारतीय मानक ब्यूरो अधिनियम, 2016 (2016 का 11) द्वारा प्रदान की गई शक्तियों के आधार पर, ब्यूरो
By virtue of the power conferred on it by the Bureau of Indian Standards Act 2016 (11 of 2016), the Bureau hereby grants/recertifies to

द रामको सिमेंट्स लि.	The Ramco Cements Limited
गोविन्दपुरम वर्क्स, सेंदुरई रोड,	Govindapuram Works, Sendurai Road,
अरियालुर जिल्ला- 621 713	Ariyalur District, - 621 713
तमिलनाडु, भारत	Tamilnadu, India

की (जिन्हें इसके बाद लाइसेंसधारी कहा गया है) इसके साथ लगी अनुसूची में विशेष रूप से वर्णित उत्पादों और/या सेवाओं या प्रक्रमों के संबंध में ब्यूरो के पर्यावरण प्रबंध पद्धति प्रमाणन के लाइसेंसधारियों के रजिस्टर(रों) में उसी संख्या से सूचीबद्ध होने का अधिकार और लाइसेंस प्रदान/नवीकरण करता है, जो इस लाइसेंस की है। इस प्रकार के उत्पाद और/या सेवाएं या प्रक्रम लाइसेंसधारी द्वारा IS/ISO 14001:2015 के अनुरूप पर्यावरण प्रबंध पद्धति के अनुसार केवल ऊपर बताए गए पते (पतों) पर निर्मित/पदत्त/प्रचालित किए जाएंगे।
(hereinafter called the Licensee) the right and licence to be listed in the Bureau's register(s) of Licensees of Environmental Management Systems Certification in respect of the products and/or services or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products and/or services or processes shall be manufactured/provided/carried out by the Licensee at only the address(es) given above, and under the Environmental Management Systems in accordance with IS/ISO 14001:2015.

2. यह लाइसेंस इस लाइसेंस का विनियम करने वाले उपरोक्त अधिनियम और उसके अधीन बनाए गए नियमों और विनियमों के संबंध प्रावधानों के अंतर्गत स्वीकृत/ पुनः प्रमाणित किया गया और लाइसेंसधारी एतद द्वारा ब्यूरो को उपरोक्त नियमों और विनियमों का विधिवत पालन करने का वचन देता है।
The licence is granted/recertified subject to the relevant provisions of the above Act and the rules and regulations made thereunder governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

3. यह लाइसेंस 10 अक्टोबर 2020 से 09 अक्टोबर 2023 तक वैध होगा और इसका विनियमों के अनुसार नवीकरण किया जा सकेगा।
This licence shall be valid from 10 October 2020 to 09 October 2023 and may be renewed as prescribed in the Regulations.

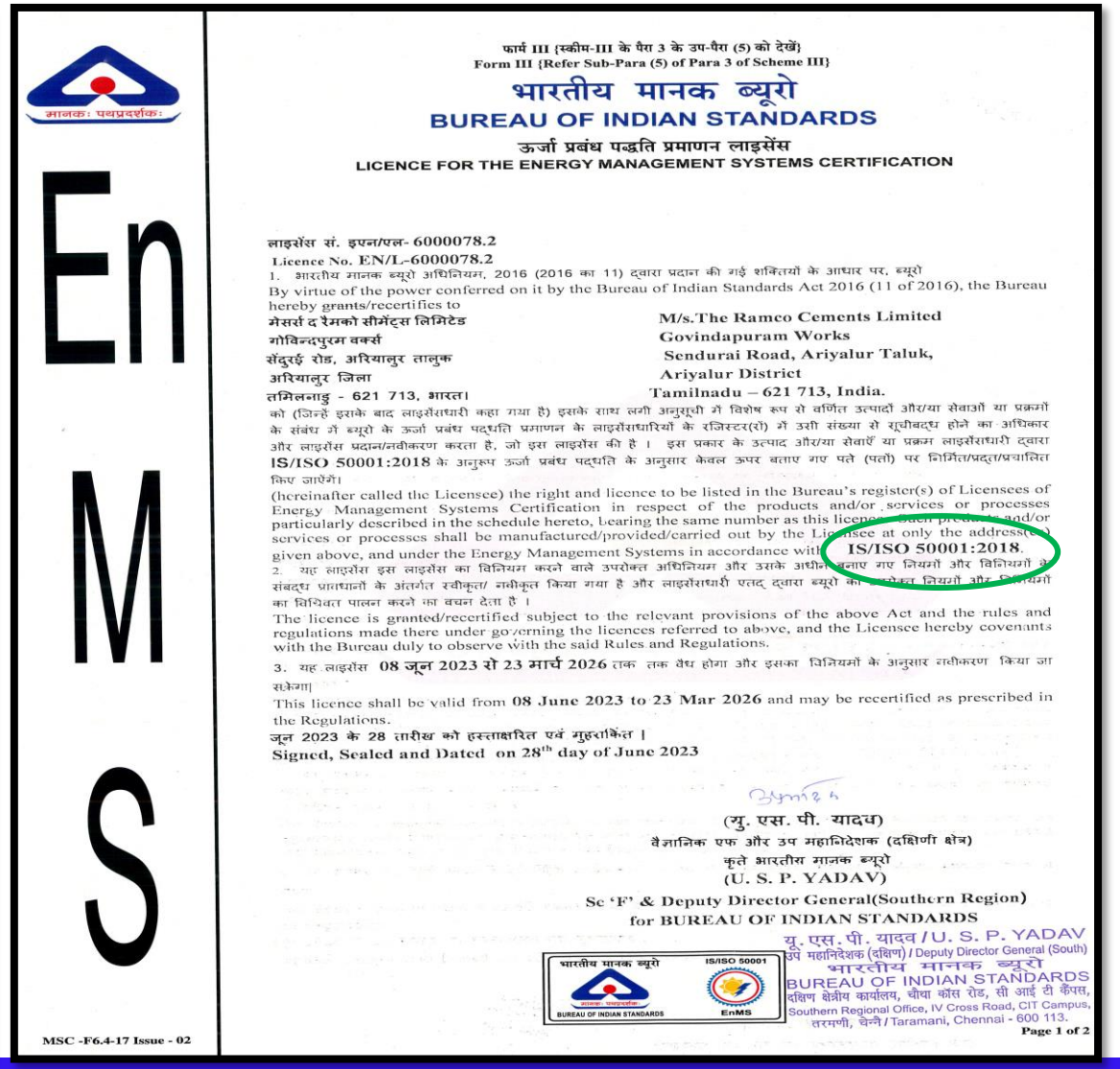
2021 के सेप्टेम्बर माह के 13 दिन हस्ताक्षरित एवं मुहरांकित
Signed, Sealed and Dated this 13th day of September 2021

(यु. एस. पी. यादव)
वैज्ञानिक एफ और उप महानिदेशक (दक्षिणी क्षेत्र)
कृते भारतीय मानक ब्यूरो
(U. S. P. YADAV)
Sc 'F' & Deputy Director General(Southern Region)
for BUREAU OF INDIAN STANDARDS
Deputy Director General (South)
Bureau of Indian Standards
Southern Regional Office
Post Box No. 8290, C.I.T. Campus
IV Cross Road, Taramani, Chennai - 600 113.

फार्म III (विनियम 7 (1) D (d) देखें)
Form III (see Regulation 7 (1) D (d))
MSC -F6.4-25

Page 1 of 2

ISO 50001:2018



फार्म III (स्कीम-III के पैरा 3 के उप-पैरा (5) को देखें)
Form III (Refer Sub-Para (5) of Para 3 of Scheme III)

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

ऊर्जा प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE ENERGY MANAGEMENT SYSTEMS CERTIFICATION

लाइसेंस सं. इएन/एल- 6000078.2
Licence No. EN/L-6000078.2

1. भारतीय मानक ब्यूरो अधिनियम, 2016 (2016 का 11) द्वारा प्रदान की गई शक्तियों के आधार पर, ब्यूरो
By virtue of the power conferred on it by the Bureau of Indian Standards Act 2016 (11 of 2016), the Bureau hereby grants/recertifies to

मेसर्स द रैमको सीमेंट्स लिमिटेड	M/s.The Ramco Cements Limited
गोविन्दपुरम वर्क्स	Govindapuram Works
सेंदुरई रोड, अरियालुर तालुक	Sendurai Road, Ariyalur Taluk,
अरियालुर जिला	Ariyalur District
तमिलनाडु - 621 713, भारत।	Tamilnadu – 621 713, India.

को (जिन्हें इसके बाद लाइसेंसधारी कहा गया है) इसके साथ लगी अनुसूची में विशेष रूप से वर्णित उत्पादों और/या सेवाओं या प्रक्रमों के संबंध में ब्यूरो के ऊर्जा प्रबंध पद्धति प्रमाणन के लाइसेंसधारियों के रजिस्टर(रों) में उसी संख्या से सूचीबद्ध होने का अधिकार और लाइसेंस प्रदान/नवीकरण करता है, जो इस लाइसेंस की है। इस प्रकार के उत्पाद और/या सेवाएँ या प्रक्रम लाइसेंसधारी द्वारा IS/ISO 50001:2018 के अनुरूप ऊर्जा प्रबंध पद्धति के अनुसार केवल ऊपर बताए गए पते (पतों) पर निर्मित/पदत्त/प्रचालित किए जाएँगे।
(hereinafter called the Licensee) the right and licence to be listed in the Bureau's register(s) of Licensees of Energy Management Systems Certification in respect of the products and/or services or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products and/or services or processes shall be manufactured/provided/carried out by the Licensee at only the address(es) given above, and under the Energy Management Systems in accordance with IS/ISO 50001:2018.

2. यह लाइसेंस इस लाइसेंस का विनियम करने वाले उपरोक्त अधिनियम और उसके अधीन बनाए गए नियमों और विनियमों के संबंध प्रावधानों के अंतर्गत स्वीकृत/ नवीकृत किया गया है और लाइसेंसधारी एतद् द्वारा ब्यूरो को उपरोक्त नियमों और विनियमों का विधिवत पालन करने का वचन देता है।
The licence is granted/recertified subject to the relevant provisions of the above Act and the rules and regulations made there under governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

3. यह लाइसेंस 08 जून 2023 से 23 मार्च 2026 तक तक वैध होगा और इसका विनियमों के अनुसार नवीकरण किया जा सकेगा।
This licence shall be valid from 08 June 2023 to 23 Mar 2026 and may be recertified as prescribed in the Regulations.

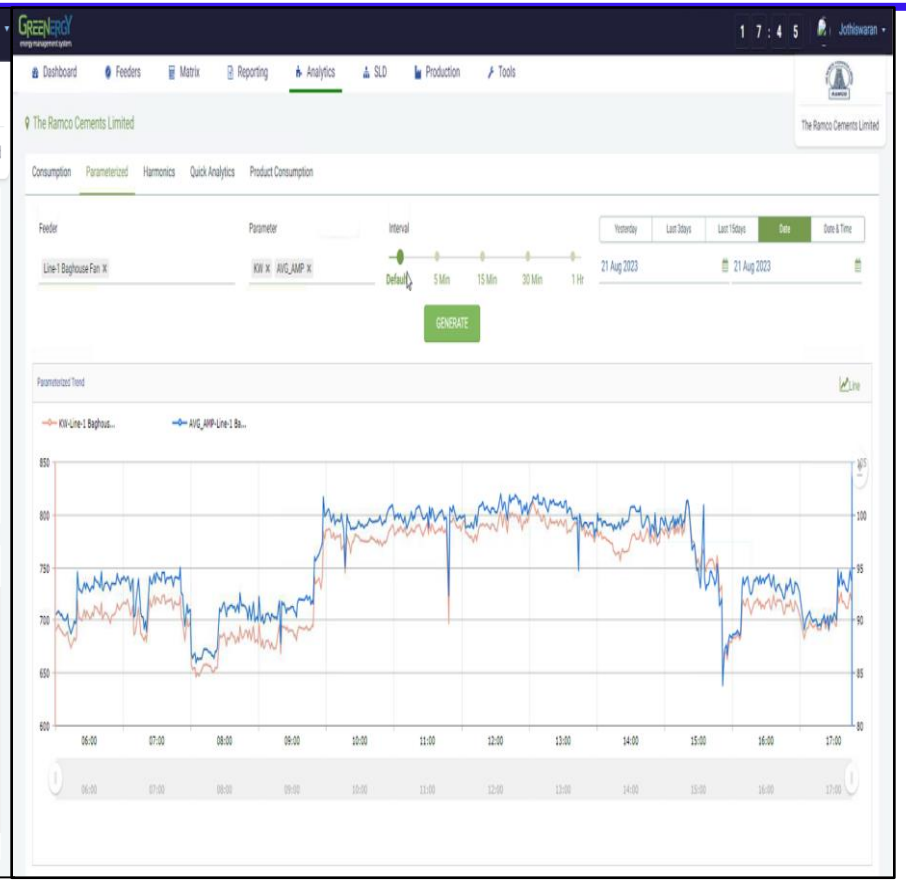
जून 2023 के 28 तारीख को हस्ताक्षरित एवं मुहरांकित।
Signed, Sealed and Dated on 28th day of June 2023

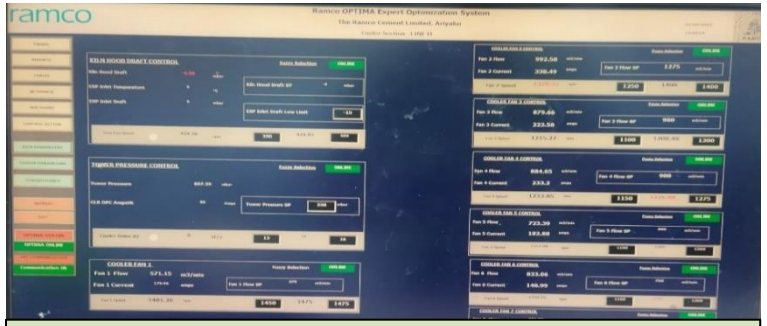
(यु. एस. पी. यादव)
वैज्ञानिक एफ और उप महानिदेशक (दक्षिणी क्षेत्र)
कृते भारतीय मानक ब्यूरो
(U. S. P. YADAV)
Sc 'F' & Deputy Director General(Southern Region)
for BUREAU OF INDIAN STANDARDS
यू. एस. पी. यादव / U. S. P. YADAV
उप महानिदेशक (दक्षिण) / Deputy Director General (South)
भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
दक्षिण क्षेत्रीय कार्यालय, चौथा क्रॉस रोड, सी आई टी कैंपस,
Southern Regional Office, IV Cross Road, CIT Campus,
तरमणी, चेन्नै / Taramani, Chennai - 600 113.

MSC -F6.4-17 Issue - 02

Page 1 of 2

REAL TIME ENERGY MONITORING SYSTEM





RAMCO OPTIMA EXPERT OPTIMIZER

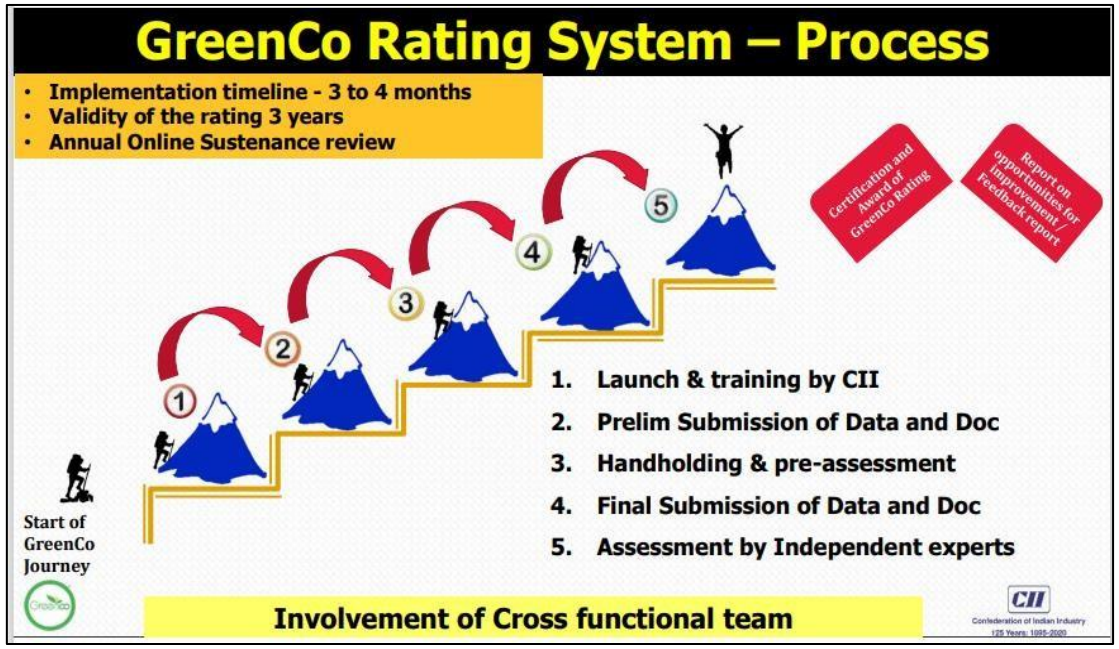
RAMCO OPTIMA BLENDING CONTROL SYSTEM - BLENDX

- **Dedicated Energy monitoring system designed by Greenergy to monitor section-wise energy consumption, load distribution pattern, critical electrical parameters,** generation of daily power report and section-wise idle run hours monitoring.
- **Continuous monitoring of KPIs like Specific Power and Heat Consumption**
- Energy efficient plant operation with RAMCO OPTIMA EXPERT OPTIMIZATOIN SYSTEM and OPTIMA BLENDING CONTROL SYSTEM (BLENDX) for Quality Control

EMS SYSTEM & OTHER REQUIREMENTS

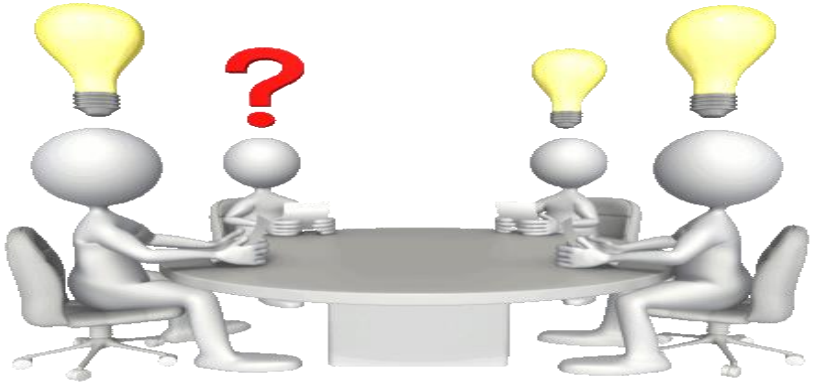
GREEN-CO CERTIFICATION:

- RAMCO-ARIYALUR unit has submitted the required details and pre-assessment is to done



LEARNINGS FROM CII AWARD PROGRAM:

- Latest trends in the cement industry
- Inspiration to achieve excellence in Energy Efficiency
- Technical Knowledge sharing among the peers
- Innovative ideas shared by the participants are encouraging us to develop new ideas
- Implementation of ENCON projects presented in CII by other companies which has potential of improvement in our unit



NET ZERO COMMITMENT – RAMCO SUSTAINABILITY TIMELINE

GOAL

Commitment to transition to Low Carbon Growth by investing in innovative technological solutions

Activities	Year 1	Year 2	Year 3	Year 4
Net Zero Carbon emissions	• Explore opportunities to replace coal with biomass in Thermal Power Plant (TPP) • Open access (PPA)/Group Captive option in Kolaghat and Vizag Grinding Units • Establish Scope 3 emission baseline (Scope 3 accounting) • Options for utilizing biofuels in process or utilities to be explored • Tie up with NGO/ agricultural communities to take back agro waste that can be utilized as alternate fuels	• Energy optimization initiatives as planned in integrated units • Reduce scope 3 emissions by 5% (e.g. switch to biodiesel in logistics, route optimization, green logistics policy etc.)	• Adoption of Energy efficiency initiatives in TPP and use of advanced automation system in the process (Alathiyur and RR Nagar) • Reduce scope 3 emission by 10%	• Adoption of Energy efficiency initiatives in TPP and use of advanced automation system in the process (Ariyalur and Jayantipuram) • Reduce scope 3 emission by 15% • Alignment to SBTi & TCFD • Carbon offsets - installation of solar lanterns, fuel efficient cook stoke, LED Street lights etc to communities

RAMCO – ARIYALUR ENERGY SAVING MEASURES

- Electric vehicle for site visit by employees
- Employee commute from township to factory in bicycle
- Battery operated Forklift inside the stores building
- Electric vehicle for material shifting purpose

WASTE TO WEALTH MANAGEMENT

THE RAMCO CEMENTS LIMITED, ARIYALUR

Material Conservation & Waste Management Policy

The Ramco Cements Limited, Govindapuram places highest values for environmental protection and by incorporating principles of sustainable development in our activities towards material conservation, green supply chain and waste management by striving to achieve: -

- Effective Limestone management to conserve natural resources thereby increase mining life.
- Conservation of our natural resources and minimizing environmental impacts, thereby motivating the suppliers towards green supply chain.
- Encouraging our critical vendors / suppliers to adopt green supply chain practice.
- Increased usage of industrial wastes in cement manufacturing.
- Utilization of alternate fuels and raw materials.
- Reduction in packaged cement by promoting bulk cement.
- Adopting technology to increase the life of the consumables.
- Train and develop skill in all employees related to conservation & use.

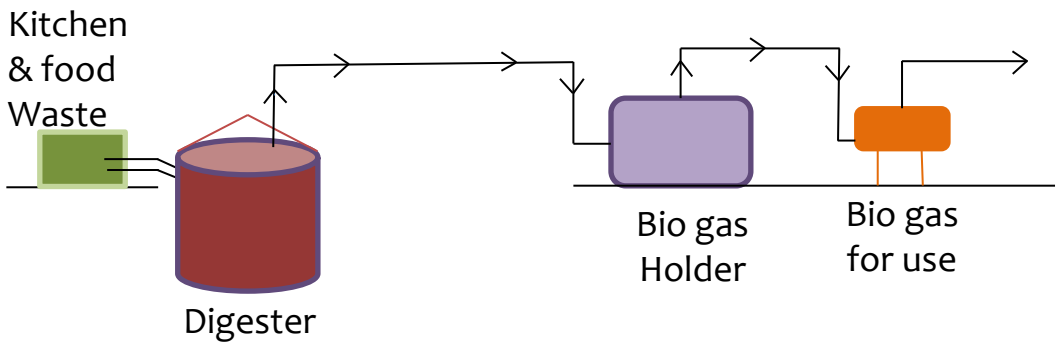
Date: 12.05.2022

Unit Head
Madhusudan Kulkarni

WASTE MANAGEMENT & MATERIAL CONSERVATION POLICY

COLONY SOLID WASTE MANAGEMENT

- Collection of waste from colony
- Segregation of colony waste at shed
- Collection of municipality waste followed by segregation
- Transfer of segregated waste to AFR feeding area
- Feeding of segregated colony waste to shredder
- Utilization of colony waste in AFR



BIOGAS FROM FOOD WASTE

- Kitchen and Food wastes from colony & canteen are segregated. In colony block to block collections are being done.
- The collected waste are being used in the bio gas plant. It has an installed capacity of 400 kg/day to convert waste to bio gas.

Food waste utilized in biogas plant- FY : 31.82 MT

EMPLOYEE INVOLVEMENT - RAMCO-ARIYALUR

THE RAMCO CEMENTS LIMITED, ARIYALUR COMMITMENT TOWARDS EMPLOYEE INVOLVEMENT, COMPLETE SAFETY AND OVERALL HOLISTIC DEVELOPMENT	
KAIZEN PROJECTS IMPLEMENTED (2022-23)	65
QUALITY CIRCLE PROJECTS IMPLEMENTED (2022-23)	12
SUGGESTIONS RECEIVED IN OUR UNIT SUGGESTION SCHEME (2022-23)	332
SUGGESTIONS IMPLEMENTED (2022-23)	275
SAFETY CAMPAIGNS CONDUCTED	7
BEST SAFETY PERFORMER AWARDS	3
SAFE MAN HOURS ACHIEVED TILL MARCH-2023	27 Million Man Hours

EMPLOYEE INVOLVEMENT – FEW OF OUR KAIZEN PROJECTS

KAIZEN THEME	IDEA/COUNTER MEASURE	PROBLEM	BEFORE	AFTER
Elimination of fine material spillage from apron feeder	Installation of conveyor belt around the pan plate	❖While material feeding through the apron feeder, material got spillage throughout the equipment. ❖Daily basis we need to clean the spillage material with 2 manpower's/day. ❖Also fire hazard occurred in that place.		
To ensure safe work for LSR-2 chute cleaning	Movable and removable type hand rails arrangements provided.	▪ During in LSR operation, discharge chute getting jam and needs to cleaning. ▪ Discharge chute in open condition without hand rails. ▪ It has created unsafe condition.		
ELIMINATION OF FIRE HAZARD IN LINE-2 AFR	PROVINING NRV WITH RECEIVER TANK IN SHUTOFF GATE	If power failure happened, shutoff gate not closed properly due to compressed air pressure low. So fire hazards has occurred.		

EMPLOYEE INVOLVEMENT - FEW OF OUR KAIZEN PROJECTS

KAIZEN THEME	IDEA/COUNTER MEASURE	PROBLEM	BEFORE	AFTER
Elimination of 125BC10 discharge chute jam	Installation of air blaster in discharge chute	❖125bc10 belt conveyor feeding the limestone to raw material hopper from LSR. ❖If lime stone discharge on the belt conveyor, material got jammed & material has spilled in discharge chute of the belt conveyor.		
Reduction of breakdown hours in raw mill-2 chain elevator	Installation of flange in bolt fixing portion and back side plate replacement.	❖Line-2 raw mill reject chain elevator bucket bolt locking area plate getting damage. ❖While bucket damage, reject hopper got jammed and bucket has damaged the other buckets and boot level switch.		
REDUCTION OF GEAR BOX LEADING TIME	Fabricated structure with roller arrangement	During replacement of main gear box, leading time has taken high and also more man power required for operating the chain blocks.		
Reduction of maintenance time for raw mill table internals inspection work	Installation of new small size door.	❖In Every maintenance we need to inspect the mill table inside bolts condition ❖So we required to open the large size door. ❖It will take more time to open & close the same.		

AWARDS & ACCOLADES FOR RAMCO – ARIYALUR UNIT

Green Champion Award for the year 2021 for Ariyalur district.

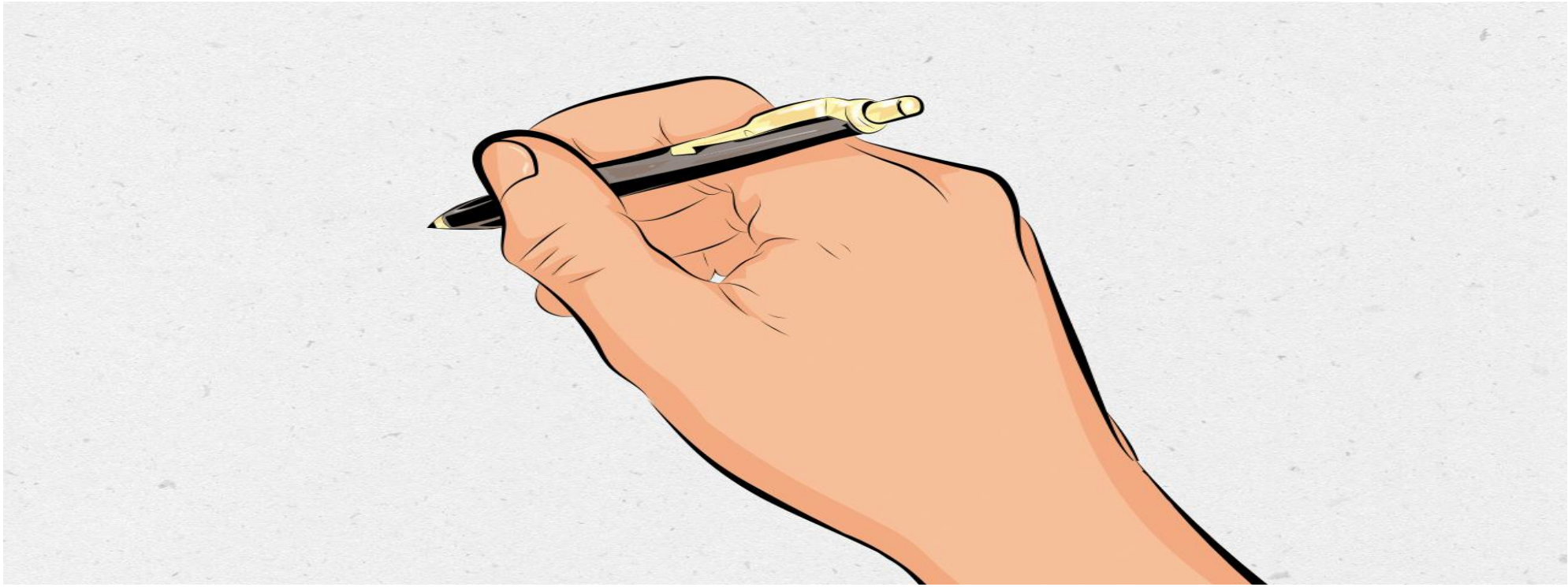
CII EHS - SR Excellence Award

APEX INDIA FOUNDATION – PLATINUM AWARD FOR OCCUPATIONAL HEALTH AND SAFETY CATEGORY

CSRBOX award for the WASH category

Best CSR impact award -UBS forum

AWARD OF HONOR - National Safety Council, Tamilnadu Chapter



Anand Sridhar – 9043512483 – sanand@ramcocements.co.in
Chinnarasu – 9942342640 – chinnarasu@ramcocements.co.in
Munees Thangam – 9688396655 – muneesthangam@ramcocements.co.in