Chanda Cement works

Presented by – Naresh Macherla (Head Production)

Content:

Presence of Adani Cement Across India

90[#] MTPA
Cement Capacity

62.0%
Clinker Factor

18
Integrated Units

10
Captive Ships

86%
Share of Blended Cement

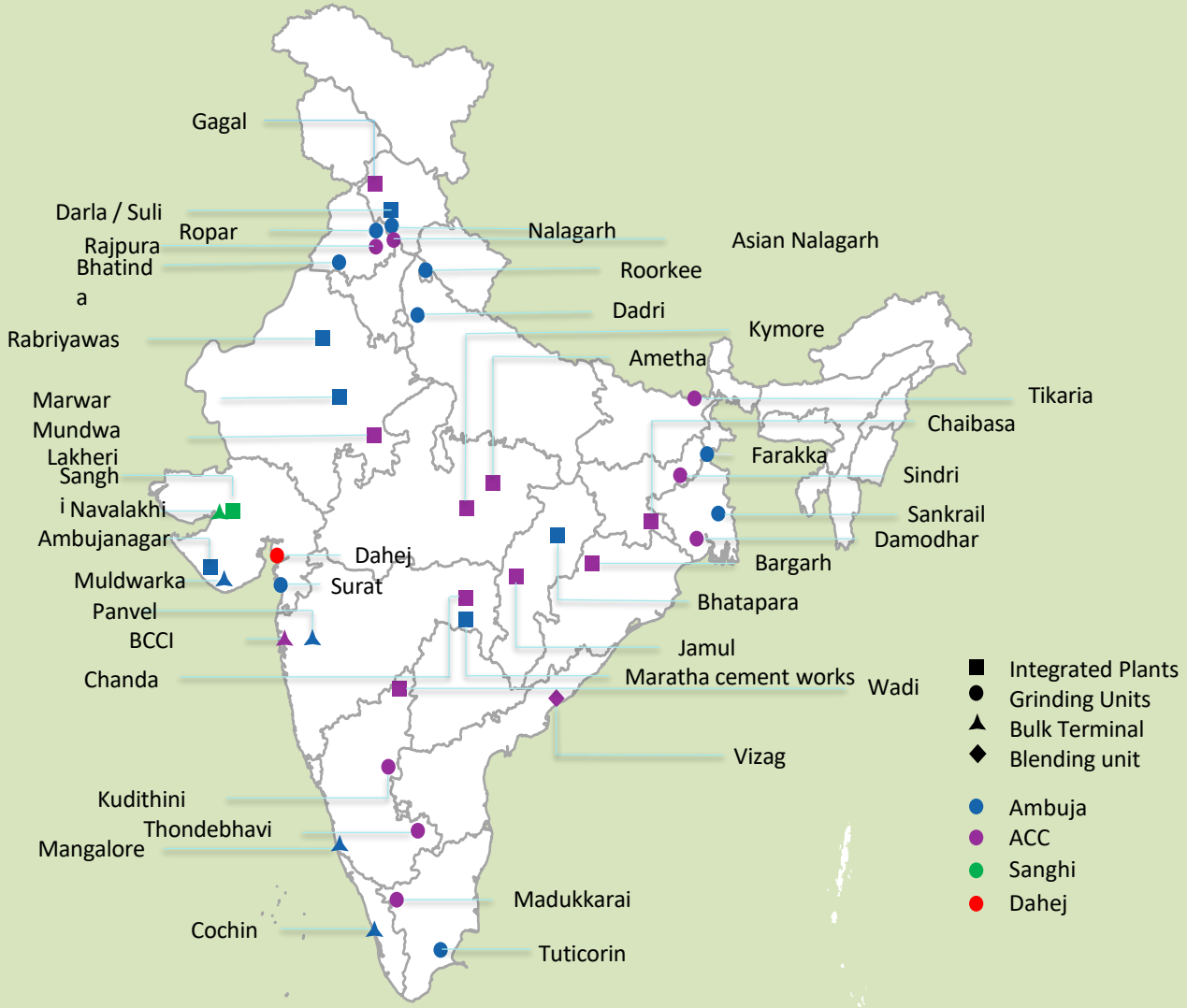
86+
Ready-Mix Concrete plants

10.6%
Thermal Substitution Rate

6
Bulk Cement Terminals

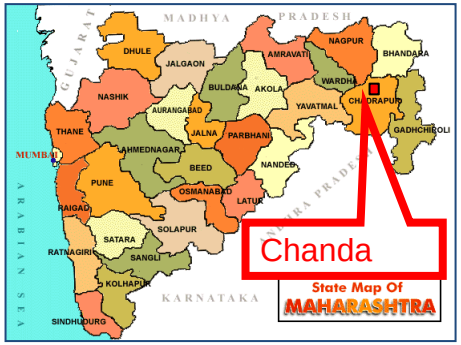
1,00,000+
Channel partners across India

23[#]
Grinding Units



1. Order placed for capacity expansion of 14 MTPA Cement incl. 8 MTPA Clinker Bhatapara & Maratha), under implementation.
2..Including Tuticorin Grinding Unit & Penna cement.

Plant Location details



- Located in Ghugus Tehsil, Chandrapur district.
- Chandrapur - 27 km / Nagpur – 165 km.
- Chanda plant got commissioned in 1970.
- Plant upgraded in 2010 to 2.318 mtpa Clinker & 3.80 mtpa cement.

- Chanda has two Limestone mines, both located in Yuvatmal district.
  - Sindola Mines -17 km from the plant
  - Govari Mines -25 km from the plant
- Captive power plant located in the factory.
  - Turbines - 1 X 15 MW and 1 X 25 MW

Chanda is the first cement plant set-up in the Maharashtra state.

“Quarry to Lorry” – Plant major equipment

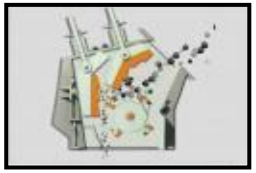
Clinkering Capacity : 2.31 mtpa

Cement Capacity : 3.80 mtpa

Quarry

- Sindola (23 mio ton, 0.6 mtpa CtO, Stripping Ratio 1:1)
- Govari (26 mio ton, 2.89 mtpa CtO, Stripping Ratio 1:2)

Crusher



- Limestone Crusher 1200 TPH impact crusher, L&T make
- OLBC – 8.5 km from Sindola to Plant

Raw Mill

- 1 VRM - 560 TPH Pfeiffer make
- 4.0% residue on 212 micron

RM Silo

- 1 X 18,000 tons CF Silo, FLS Make
- Blending efficiency 10:1

Kiln

- 1 Dry process Kiln 6 stage double string PH with ILC
- 7,000 TPD FLS make
- 5.5 m dia. X 86 m long
- Cooler: FLS 5X6 crossbar upgraded with ABC inlet

Clinker Silos

- Defunct Silo of 1 lakh ton capacity
- New Clinker Silo of 1,00,000 MT storage capacity

Coal Mill

- 75 TPH VRM FLS make
- 3 rollers

Cement Mill

- Existing: 2 Mills X 75 TPH each, ACC Babcock with VRPM
- 1 VRM X 260 TPH (PPC), Loesch make

Cement Silos

- Existing: 5 X2400 MT each
- New: 2 X 12000 MT each
- Total Capacity = 36,000 MT

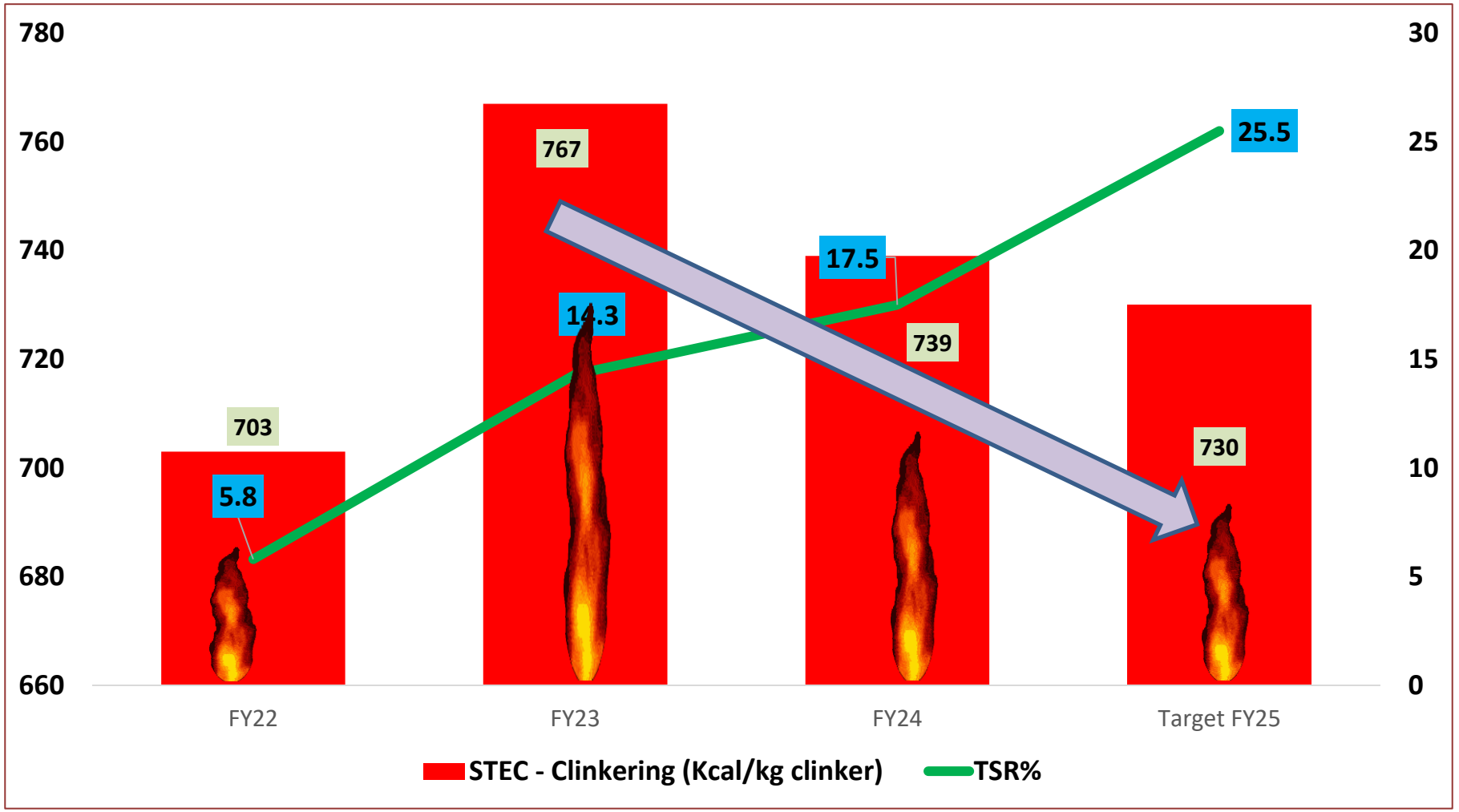
Packing house

- Existing: 3 X 120 TPH each EEL Make, Single discharge
- New: 3 X 240 TPH each EEL Make, double discharge

Dispatch

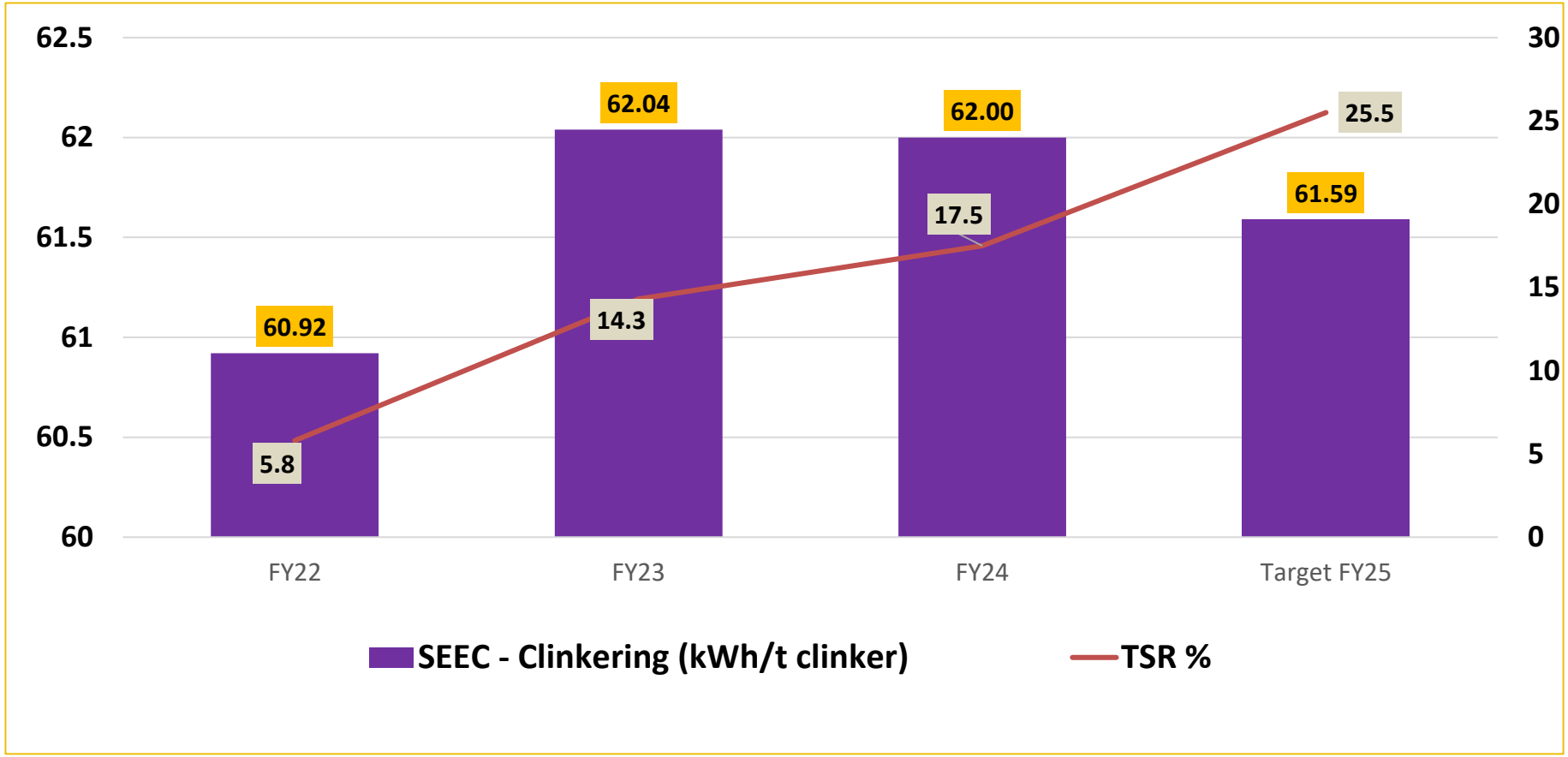
- Existing: 4 wagon and 6 truck loading machines
- New: 12 wagon and 5 truck loading machines

Specific Thermal Energy Consumption in last 3 years



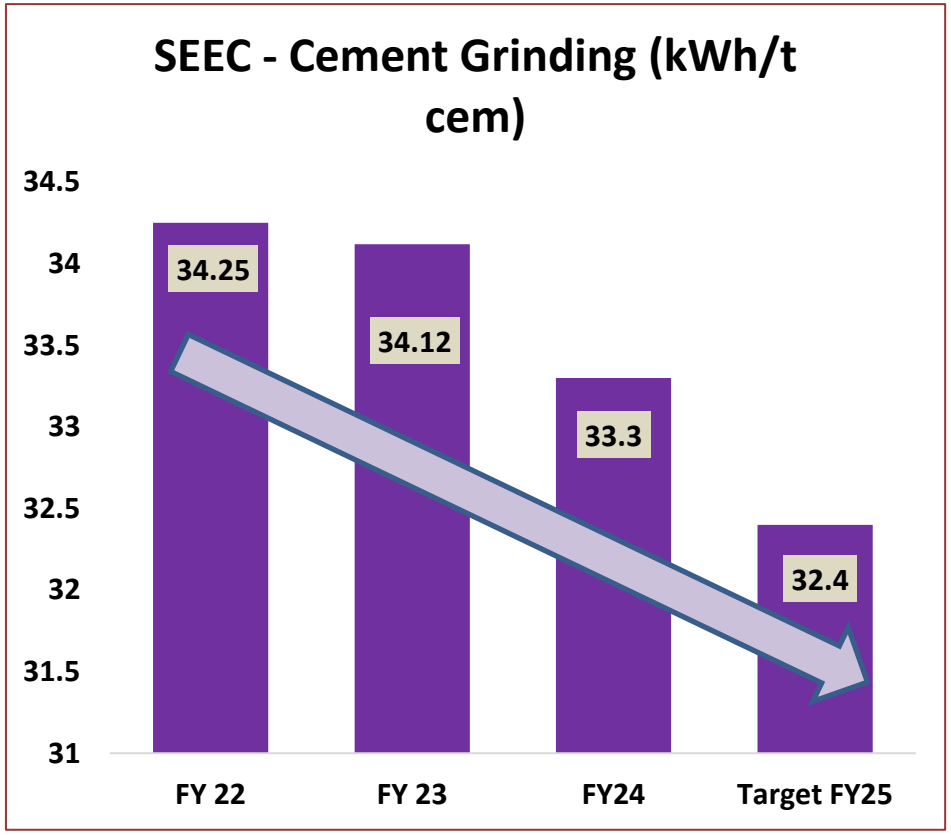
Despite of increasing TSR% we are continuously decreasing STEC consumption

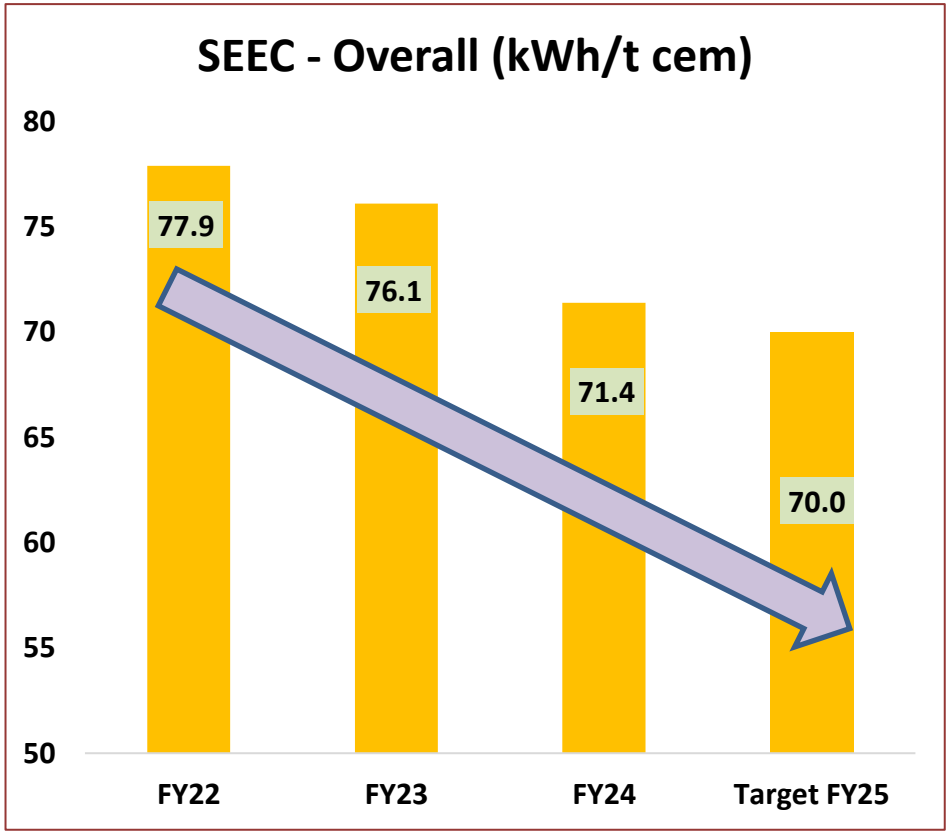
SEEC Consumption in last 3 years (Upto Clinker)



Despite of increasing TSR% we are slightly decreasing SEEC consumption

SEEC Consumption in last 3 years (Grinding & Overall)





Information on Competitors, National and Global Benchmark as per CII Benchmarking Details

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Energy Benchmarking		
Parameters	Total SEEC (kWh/T cem)	STEC (kCal/kg Clk)
ACC Cements (Unit : CD)	71.36	739
Competitor 1	69.30	735
Competitor 2	71.40	746
Competitor 3	71.65	758
National Benchmark	56.15	676
Target for 2024-25	70.00	730
Target for 2030	60.00	700

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Energy Saving Projects Implemented in last 3 Years

Year	No. of Energy Saving Projects	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Savings (Million Kcal)	Total Saving (INR Million)	Impact on SEC/SHC (Electrical kWh/MT cement or Kcal/kg cement)
FY 2021-22	9	3.0	6.84	3,600	37	2.53/1.2
FY 2022-23	7	26.7	1.87	4,485	48.7	0.88/1.7
FY 2023-24	9	102.7	1.98	31,061	69.34	0.57/8.9

List of Encon Projects implemented in FY 2021-22

Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Million)	Annual Thermal Saving (Million Kcal)	Annual Thermal Saving (Rs Million)	Total Annual Savings (Rs Million)	Investment Made (Rs Million)	Payback (Months)
1	Optimization of Raw mill DP through HLC	26,40,000	10.56	0	0	10.56	0	0
2	Replacement of T12 lamps with LED lamps	96,360	0.4	0	0	0.4	2.4	72
3	Reduction of dam ring height to improve mill output	13,20,000	5.28	0	0	5.28	0	0
4	Change in delivery setting pressure of compressors	3,37,833	1.35	0	0	1.35	0	0
5	Optimization of kiln, PC firing through Kiln Master HLC	-	0	3600	9.72	9.72	0	0
6	Reduction of Raw mill fan power by increasing GRR loading	13,20,000	5.28	0	0	5.28	0	0
7	Removal of Cement mill 3 fan damper	4,62,000	1.8	0	0	1.8	0.15	1
8	Reduction of fan power by arresting false air across coal mill circuit	4,75,200	1.9	0	0	1.9	0	0
9	Removal of dampers of separator vent fan - Cement mill 1 & 2	1,91,400	0.77	0	0	0.77	0	0

List of Encon Projects implemented in FY 2022-23

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Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Million)	Annual Thermal Saving (Million Kcal)	Annual Thermal Saving (Rs Million)	Total Annual Savings (Rs Million)	Investment Made (Rs Million)	Payback (Months)
1	Installation of downcomer duct water spray system	5,45,530	2.7	0	0	2.7	10.5	46
2	Rerouting of compressor air lines to reduce power consumption	6,27,904	3.76	0	0	3.76	0.3	0.2
3	Replacement of duoflex burner with pyrojet burner	-	0	1559	13.25	13.25	15	13.5
4	Removal of RABH fan inlet damper	2,67,191	1.6	0	0	1.6	0	0
5	Replacement of Kiln seal Inlet and Kiln Outlet lamella Seal	-	0	2090	17.77	17.77	0.4	0.27
6	Installation of Martin make air blasters in cooler inlet to improve efficiency	-	0	836	7	7	0.5	0.86
7	Improvement of separator seal with felt in cement mill 3	4,36,909	2.62	0	0	2.62	0	0

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List of Encon Projects implemented in FY 2023-24

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Sr No.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs Million)	Annual Thermal Saving (Million Kcal)	Annual Thermal Saving (Rs Million)	Total Annual Savings (Rs Million)	Investment Made (Rs Million)	Payback (Months)
1	Installation of ABC inlet in Kiln Cooler	-	0	20849	40.8	40.8	100	29.4
2	Removal of damper from cooler ESP fan	3,50,000	1.99	0	0	1.99	0.2	1.21
3	Removal of coal mill bag house fan damper	3,00,000	1.71	0	0	1.71	0.2	1.4
4	Reduction of false air across Raw mill circuit to < 15%	7,02,000	4.02	0	0	4.02	0.1	0.3
5	Application of heat resistance paint on kiln shell	-	0	3312	5.63	5.63	0.8	1.71
6	Installation of bolted type spikes for stripping wheel in AFR feeding	-	0	2400	4.08	4.08	0.2	0.59
7	PID loop for AFR weigh feeder Vs Chain conveyor to reduce fluctuations	-	0	2400	4.08	4.08	0.2	0.59
8	Usage of THERMACT PC additive to improve burnability of Coal	-	0	2100	3.57	3.57	1	3.36
9	Improvement of Raw mill output to > 550 TPH	6,30,000	3.46	0	0	3.46	0	0

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List of Encon Projects planned in FY 2024-25

Sr No.	Title of Project	Annual Electrical Saving (Million kWh)	Annual Thermal Saving (Million Kcal)	Annual Energy Saving (ToE)	Investment Made (Rs in Million)	Payback (Months)
1	Optimization of Raw mill Hydraulic pressure to improve mill output to 560 TPH	0.546	-	46.95	0.1	2
2	Installation of HLC in Raw mill	1.12	-	93.4	3	24
3	Reduction of Raw mill cyclone DP through CFD	0.4	-	34.3	2	12
4	Installation of HLC in Kiln	1	7500	835.58	3	26
5	Installation of new Kiln Inlet analyzer	-	3000	300	5	15
6	Installation of shredder to reduce AFR size	-	7500	749.5	400	48
7	reduction of coal crusher output size	0.4	-	34.3	-	-
8	Installation of VFD in unloading compressor	0.4	-	34.3	1	5.5
9	Cement mill 3 Baghouse fan impeller replacement	0.6	-	51.6	10	4

List of Encon Projects planned in FY 2024-25

Sr No.	Title of Project	Annual Electrical Saving (Million kWh)	Annual Thermal Saving (Million Kcal)	Annual Energy Saving (ToE)	Investment Made (Rs in Million)	Payback (Months)
10	Installation of mechanical conveying system in place of pneumatic system for transferring cement to old silos from new cement mill	3	-	154.7	40	29
11	Installation of High efficient low pressure compressor for Flyash unloading in old mills	0.4	-	34.3	3.5	19
12	Installation of 3 S Roller in CM3	3.77	-	324.5	270	24
13	Replacement of AFR double flap damper	0	3	0.377	0.5	2
14	Installation of additional Raw coal hopper to maintain coal ash as per Raw mix	0	4500	449.7	10	12.5

Innovative project -1: Installed PCPF block for burner

- **Frequent failure of Burner castable (3 months) due to high wear rate at the tip area.**
- **Installed PCPF block for burner for the first time in AAA to improve burner reliability**
- **PCPF block up 1.8 m length from burner tip during Feb'24 Shutdown PCPF block area observed intact after 1.5 month of operation.**

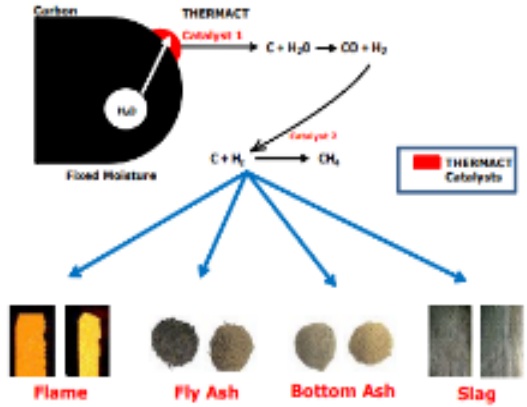
Before

After

Can be replicated in all the Cement plants

Innovative project -2: Usage of Coal Catalyst

Actions implemented – Feeding coal catalyst in kiln and PC in the ratio of 1 KG for 10 MT coal



Coal, in pulverized form, is fed into the combustion chamber of the boiler. This coal contains structural (inherent) moisture to the extent of 2 to 8%. In the combustion zone, this structural moisture is converted to superheated steam, which leaves the chimney resulting into sensible and latent heat loss.

$$\text{Moist Coal} \xrightarrow{\Delta} \text{Dry Coal} + H_2O\uparrow$$

The proprietary catalyst in THERMACT facilitates reaction between inherent moisture (H_2O) and Carbon to form syngas, which is a mixture of Carbon Monoxide and Hydrogen.

$$C + H_2O \xrightarrow[\text{THERMACT}]{\Delta} (CO + H_2)\uparrow$$

This combustible Syngas (CO & H_2) undergoes subsequent oxidation to generate heat. The Hydrogen present in Syngas combines with Carbon of coal to produce Methane, which on oxidation generates heat thereby helping in improved combustion.

$$CO + \tfrac{1}{2}O_2 \xrightarrow{\Delta} CO_2\uparrow$$
$$C + 2H_2 \xrightarrow{\Delta} CH_4\uparrow$$

Hence, due to THERMACT, the heat loss due to inherent moisture in coal is not only minimized but also utilized to generate combustible by-products in the combustion chamber. As a result, there is a increase in the heat generation in the system which can be utilized productively.

Can be replicated in all the Cement and power plants

Innovative project -3: Installation of cooler ABC inlet

Before

Heat Balance

Heat Input			Heat Loss		
Heat energy enter into the cooler	Kcal/Kg clink	383	Heat through cooler vent	Kcal/Kg clink	109
Sensible heat of cooling air	Kcal/Kg clink	16	Heat through clinker out	Kcal/Kg clink	32
Sensible heat of cooling water	Kcal/Kg clink	1.02	Radiation losses fro cooler	Kcal/Kg clink	6
			Evaporation of water	Kcal/Kg clink	29
Total		400			167

Cooler efficiency	%	57

Snowman formation in Cooler

After

Heat Balance

Heat Input			Heat Loss		
Heat energy enter into the cooler	Kcal/Kg clink	383	Heat through cooler vent	Kcal/Kg clink	109
Sensible heat of cooling air	Kcal/Kg clink	17	Heat through clinker out	Kcal/Kg clink	23
Sensible heat of cooling water	Kcal/Kg clink	0.89	Radiation losses fro cooler	Kcal/Kg clink	6
			Evaporation of water	Kcal/Kg clink	23
Total		401			155

Cooler efficiency	%	67

Can be replicated in plants which are suffering with frequent Snowman formation

Energy Saving projects initiated at Chanda Cement Works

1. Installation of Water spray system in downcomer duct

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Inconsistency in Kiln Operation eliminated by installation of Water spray system

PH false air reduced from 12% to 6%

- Down comer duct water spray @ 10m3/hr in each string, to reduce PH O/L temperature to the level of 230 ^{o}C
- Consistent AFR consumption and Kiln feed during Raw mill and Coal mill stoppages as gas temperature is maintained.
- Better control of Preheater fan and RABH Inlet Temperatures to avoid tripping of Calciner firing resulting in kiln disturbances.

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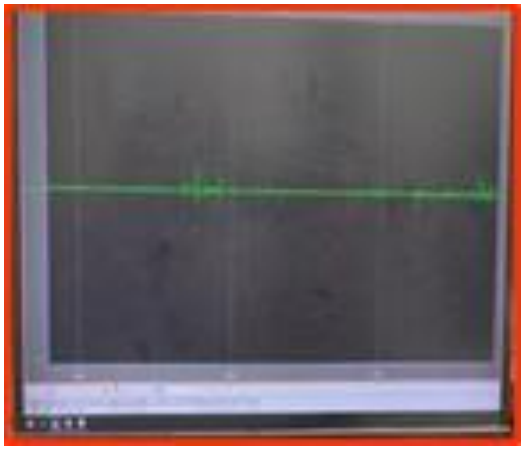
2. Synchronization of Walking floor with CBC to avoid fluctuation in AFR Feed & to control high CO in the system

- PID loop Optimization – Chain conveyor Speed Vs Weigh Feeder TPH
- Optimization of Walkie Floor forward stroke (26 Sec) divided into three intervals with delay time of 7 sec to optimize fluctuations.

AFR Feed Fluctuations

BEFORE



AFTER

Walkie Floor Stroke Optimization

3. To control high CO in the system Mixing of Biomass with RDF

Mixing of AFR – RDF:Biomass

Actions taken:

- Separate Loadall for mixing of RDF & Biomass
- Mix prepared separately

Advantages:

- Enhanced flow ability of material
- Reduction of Jamming issues, Thus eliminating CO high issue.
- Reduction of variations in Cl in AFR feed
- Minimised moisture

4. To control high CO in the system Stripping wheel spikes repaired

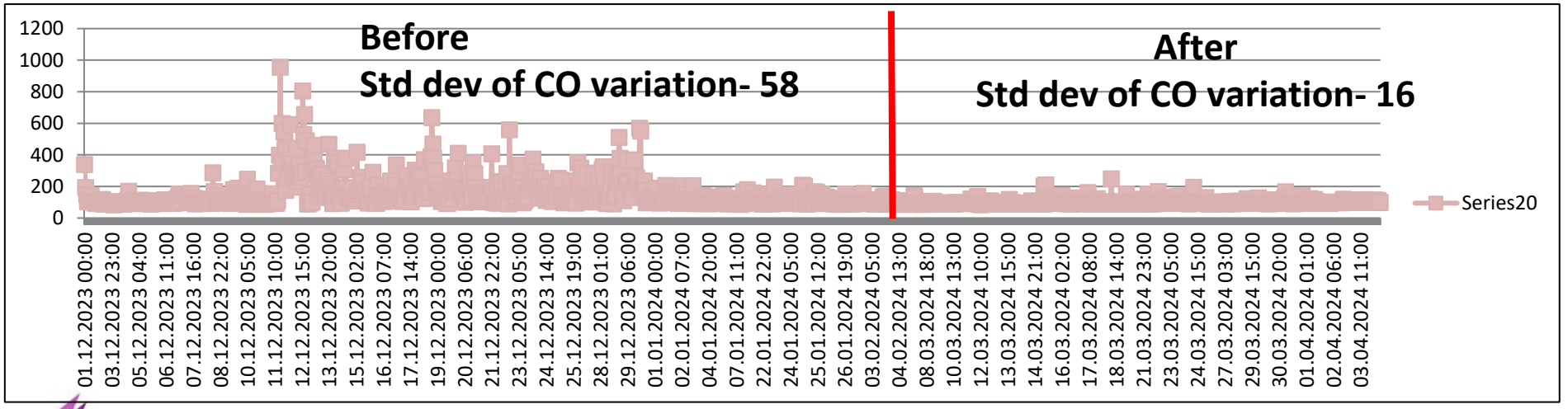
Actions implemented – To control High variation of CO in system

AFR circuit Striping wheel spikes repaired

Before

After

Standard deviation of CO peaks reduced from 58 to 16 after repairing stripping wheel after walking floor discharge to make uniform bed of the AF material.



5. Kiln Shell painting

Reduction of Kiln Shell Radiation

- To reduce Shell radiation Heat resistance paint applied on Kiln (ARREST MASTER 3001 L)
- Achieved savings of ~ 2.76 Kcals/Kg clinker

Kiln Shell Radiation Before Painting

Ambient temperature 35 o C
Clinker production 315 tph

Distance	Kiln dia.	Kiln length	Total C.S.	vg. Temp	Heat transfer cofficient (Radiation)	Heat transfer cofficient (Convection)	Radiation
mtr	mtr	mtr	m^2	°C			Kcal/kg cli.
20-25	5.5	5	86.3938	349	22.8380	6.1781	2.1448
25-30	5.5	5	86.3938	368	24.4594	6.1137	2.3962
30-35	5.5	5	86.3938	386	26.1214	6.0503	2.6616
35-40	5.5	5	86.3938	372	24.8519	6.0985	2.4582
40-45	5.5	5	86.3938	363	24.0168	6.1311	2.3268
45-50	5.5	5	86.3938	364	24.1164	6.1271	2.3424
50-55	5.5	5	86.3938	299	18.9176	6.3416	1.5684
55-60	5.5	5	86.3938	302	19.1369	6.3323	1.5994
60-65	5.5	5	86.3938	308	19.6505	6.3106	1.6727
65-70	5.5	5	86.3938	302	19.1859	6.3302	1.6064
70-75	5.5	5	86.3938	288	18.1526	6.3739	1.4613
75-80	5.5	5	86.3938	273	17.1510	6.4156	1.3237
80-86	5.5	6	103.6726	245	15.2971	6.4878	1.2924
							24.85 Kcal/kg cli.

Kiln Shell Radiation after Painting

Ambient temperature 35 o C
Clinker production 315 tph

Distance	Kiln dia.	Kiln length	Total C.S.	vg. Temp	Heat transfer cofficient (Radiation)	Heat transfer cofficient (Convection)	Radiation
mtr	mtr	mtr	m^2	°C			Kcal/kg cli.
20-25	5.5	5	86.3938	310	19.7610	6.3059	1.6886
25-30	5.5	5	86.3938	326	21.0008	6.2537	1.8690
30-35	5.5	5	86.3938	355	23.3720	6.1567	2.2268
35-40	5.5	5	86.3938	361	23.8715	6.1368	2.3042
40-45	5.5	5	86.3938	355	23.3826	6.1562	2.2284
45-50	5.5	5	86.3938	345	22.5473	6.1899	2.1005
50-55	5.5	5	86.3938	284	17.8704	6.3858	1.4222
55-60	5.5	5	86.3938	289	18.2368	6.3704	1.4730
60-65	5.5	5	86.3938	295	18.6356	6.3535	1.5287
65-70	5.5	5	86.3938	285	17.9520	6.3823	1.4335
70-75	5.5	5	86.3938	277	17.4038	6.4052	1.3581
75-80	5.5	5	86.3938	265	16.5608	6.4395	1.2440
80-86	5.5	6	103.6726	237	14.8120	6.5046	1.2170
							22.09 Kcal/kg cli

Saving in STEC **2.76** kCal/kgclk

6. Reduction of Limestone feed size

Actions implemented - Limestone feed size reduced in stacking pile.

BEFORE

•Feed size has wide variations, stones up to 250 x 150 x 100 mm were observed in the Limestone pile.

AFTER

•After reduce feed size below 65 mm and mill feed increased .
•Lime stone feed size maintain below 65 mm.

SIEVE ANALYSIS OF LIMESTONE
Sample Collected from BC6 Belt on dated 21/11/2022 at 10:15 hrs.

SIEVE ANALYSIS OF LIMESTONE					REQUIREMENT	
Sr.No	Sieve Size(MM)	Sample wt.(KG)	Ind. %	Cumm. %	Test data	Norms
1	100	2.15	2.13	2.13	2.13	0 %
2	80	3.92	3.88	6.01		
3	65	7.01	6.94	12.95	12.95	10 %
4	50	6.02	5.96	18.91		
5	40.0	7.10	7.03	25.94		
6	31.5	7.80	7.72	33.65		
7	25.0	7.19	7.12	40.77		
8	20.0	8.62	8.53	49.30	84.92	90 %
9	16.0	8.58	8.49	57.80		
10	10.0	6.96	6.89	64.69		
11	-10.0	35.68	35.31	100.00		
		101.03	100.00			

SIEVE ANALYSIS OF LIMESTONE
Sample Collected from BC6 Belt on dated 12/10/2023 at 10:00 hrs.

SIEVE ANALYSIS OF LIMESTONE					REQUIREMENT	
Sr.No	Sieve Size(MM)	Sample wt.(KG)	Ind. %	Cumm. %	Test data	Norms
1	100	0.00	0.00	0.00	0.00	0%
2	80	2.67	2.07	2.07		
3	65	6.18	4.89	7.06	7.06	10%
4	50	3.10	2.50	9.56		
5	40.0	6.72	5.42	14.98		
6	31.5	8.30	6.70	21.68		
7	25.0	7.85	6.33	28.01		
8	20.0	9.48	7.63	35.64	92.94	90%
9	16.0	9.28	7.49	43.13		
10	10.0	17.09	13.78	56.91		
11	-10.0	53.41	43.09	100.00		
		123.96	100.00			

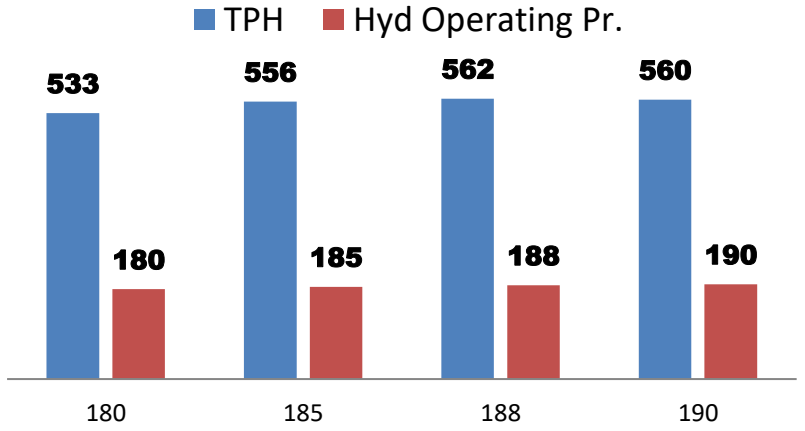
Limestone pile wise Sieve analysis

Limestone 65 mm sieve size reduced 5.89 %

7. Raw mill hydraulic pressure increased from 180 to 185 Bar

Optimisation of Grinding Pressure :

- Mill was operating 180 bar @ 532 tph.
- Leakages in Hydraulic cylinders arrested.
- Hydraulic cylinder No 2 replaced.
- Trial taken by increasing Grinding pressure step by step from 180 to 185 and then upto 190 bar.



Trial time process parameters by hourly basis

Date Time	TPH	Hyd Operating	Hyd Lifting	Cylinder Posn	I/L Temp	O/L Temp	I/L Draft	O/L Draft	MD KW	Mill DP	Fan KW	Sep Speed	Sep Load	Sep Vibn 1	Sep Vibn 2	Rej. Elev Load	Reject Belt	MD Vibn	Silo Elev M1 Load	Silo Elev M2 Load	LSF_AVG	R212_AVG	Mill Water
	t/h	bar	bar	MM	ï½°C	ï½°C	mbar	mmWC	kW	mbar	kW	1/min	A	mv/g	mm/s	kW	t/h	mm/s	A	A	#	%	m3/hr
23.06.2023 04:00	527	177	5	133	148.44	92.45	-12.84	-812	4620.07	38.52	3348.04	64.41	193.32	11.95	3.59	2.35	33.77	0.58	158.49	153.95			10.24
23.06.2023 05:00	542	177	5	144	165.01	94.28	-13.32	-858.96	4879.09	42.41	3299.24	64.41	202.24	9.47	2.81	2.59	51.57	0.5	165.83	161.51	101.86	3.6	10.22
23.06.2023 06:00	543	177	5	148	157.49	93.37	-12.91	-863.42	4937.87	43.2	3298.07	64.4	199.24	9.37	3.03	2.66	60.69	0.5	155.32	150.53			10.26
23.06.2023 07:00	536	177	5	143	154.97	94.39	-13.24	-838.31	4810.25	40.78	3302.73	64.39	193	9.74	3.33	2.54	50.3	0.56	153	148.73	69.96	2.5	10.27
23.06.2023 08:00	537	177	5	153	147.52	89.88	-12.35	-861.94	5046.37	42.96	3297	64.18	199.83	8.45	2.42	2.64	60.89	0.48	165.24	160.75	113.83	3.2	10.3
23.06.2023 09:00	538	177	5	145	151.74	89.22	-13.5	-854.33	4890.15	41.96	3323.78	63.29	189.86	9.55	3.18	2.56	53.4	0.51	167.9	163.31	104.05	2.27	10.32
	Raw mill Trial 185 Bar on 23.06.2023 @ 10:30 AM																						
23.06.2023 11:00	563	182	5	147	172.57	92.77	-13.67	-883.5	5025.37	44.02	3297.5	61.96	188.92	9.8	3.42	2.65	63.43	0.52	171.7	168.11	102.85	2.87	10.36
23.06.2023 12:00	556	182	5	149	181.68	93.54	-13.08	-888.33	5066.72	44.86	3280.25	62.33	192.82	9.3	3.06	2.68	66.38	0.51	169.85	166.06			10.37
23.06.2023 13:00	555	183	5	144	180.17	91.97	-14.03	-862.51	4943.45	43.02	3313.04	62.33	186.88	9.97	3.51	2.58	57.23	0.54	166.23	162.23	102.66	2.48	10.37
23.06.2023 14:00	557	182	5	143	170.45	90.79	-13.37	-858.92	4944.47	43.49	3324.93	62.33	188.98	10.61	3.49	2.58	56.83	0.54	158.66	154.78			10.37
23.06.2023 15:00	556	182	5	145	163.75	89.1	-12.91	-858.91	4970.66	43.17	3333.57	62.33	189.18	10.41	3.52	2.58	56.74	0.53	160.78	156.49	68.81	2.83	10.39
23.06.2023 16:00	563	183	5	143	169.55	91.3	-13.59	-857.35	4943.44	42.99	3325.42	62.57	190.44	10.57	3.48	2.53	53.3	0.55	166.78	162.84	53.64	4	10.4
23.06.2023 17:00	563	176	65	171	145.01	92.91	-10.51	-482.58	5088.22	21.88	3301.21	55.42	156.13	5.22	2.04	1.41	30.83	0.26	122.29	119.09	103.36	4.13	5.07
23.06.2023 19:00	503	180	57	181	133.53	86.29	-13.9	-665.72	4150.96	31.04	3203.34	56.84	164.72	7.39	2.3	2.12	40.47	0.36	131.49	127.64	99.58	2.25	6.26
23.06.2023 20:00	552	182	5	146	170.57	91.24	-14.15	-879.08	5002.15	43.28	3324.58	63.31	193.77	10.22	3.09	2.67	57.59	0.53	166.41	161.52	108.85	4	10.25
23.06.2023 21:00	556	182	5	147	179.06	94.2	-14.31	-890.44	5032.4	44.29	3304.78	63.3	195.39	10.38	3.43	2.7	64.1	0.54	160.87	156.7	103.27	3.3	10.21
23.06.2023 22:00	562	186	5	142	175.96	92.73	-15.38	-887.64	5006.33	42.95	3325.15	62.63	192.87	11.36	3.61	2.66	58.92	0.57	161.79	157.53			10.24

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Hum Karke Dikhate Hain

Ambuja Cement | ACC

8. Installation of rod gate in raw mill inlet duct

Actions implemented -

Modification of mill inlet hot air duct

- Installation of air blasters
- Installation of rod gate inside hot air duct

BEFORE

AFTER

Waste Utilization & Management




- AFR material stored in a covered shed with proper ventilation
- AFR shredder project (~Rs 41 Cr.) is ongoing, expected to complete by March 2025, after which we can reach the TSR value up-to 25.5%.

	Waste as fuel	Quantity (MT)	GCV (kCal/Kg)	TSR (%)
FY22	RDF/ Biomass	39,537	2485	5.8
FY23		96,375	2364	14.3
FY24		1,48,985	2058	17.5
Target FY25		2,15,370	2232	25.5

Saving of natural resources

Coal Saving due to AFR usage : 71591 MT

Waste Utilization & Management

	Waste as Raw material	Quantity (MT)	Replaced material	Waste as percentage of raw material
FY22	Red mud	16853	Iron Ore	0.5
FY23		19293		0.7
FY24		21396		0.7
FY22	Wet Slag	0	Bauxite	0
FY23		9980		0.35
FY24		6167		0.2
FY23	Limestone Sludge	1034		0.04

Saving of natural resources

Coal Saving due to AFR usage : 71591 MT

IMS Certificates

Our plant is IMS certified for Environment, Energy and Quality.

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
ऊर्जा प्रबंधन पद्धति प्रमाणन अनुसूचि
LICENCE FOR THE ENERGY MANAGEMENT SYSTEMS CERTIFICATION

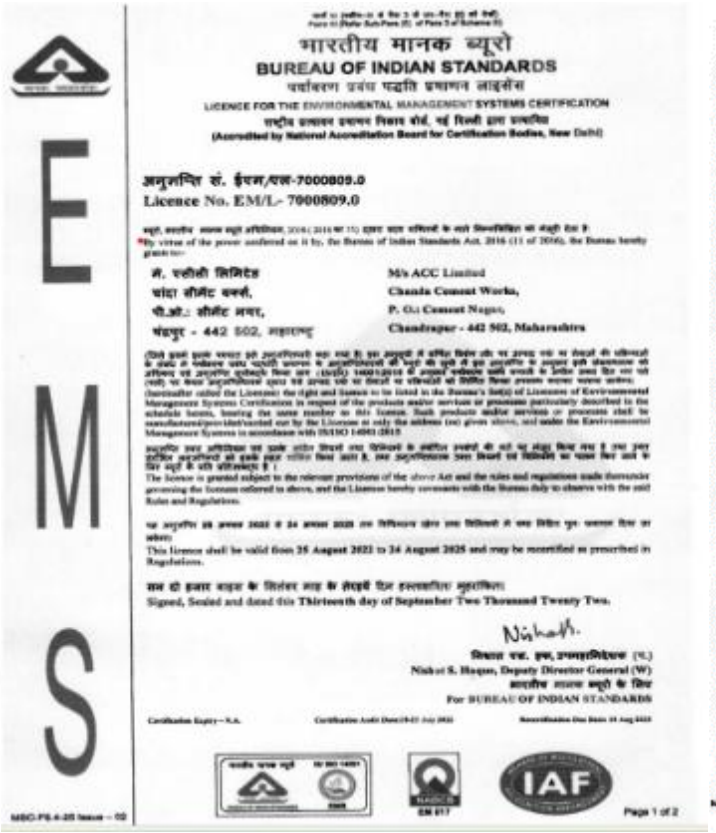
अनुज्ञप्ति सं. ईएनएम/एल-7000094.0
Licence No. EnM/L- 7000094.0

मे. एसीसी लिमिटेड	M/s ACC Limited
चांदा सीमेंट वर्क्स,	Chanda Cement Works,
पी.ओ.: सीमेंट नगर,	P. O.: Cement Nagar,
चंद्रपुर - 442 502, महाराष्ट्र	Chandrapur - 442 502, Maharashtra

This licence shall be valid from 14 November 2022 to 24 August 2025 and may be recertified as prescribed in Regulations.

Signed, Sealed and dated this Seventh day of August Two Thousand Twenty Three.

संजय गोयनका, उपमहानिदेशक (प.)
Sanjay Goenka, Deputy Director General (W)
कृते भारतीय मानक ब्यूरो
For BUREAU OF INDIAN STANDARDS



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
पर्यावरण प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE ENVIRONMENTAL MANAGEMENT SYSTEMS CERTIFICATION

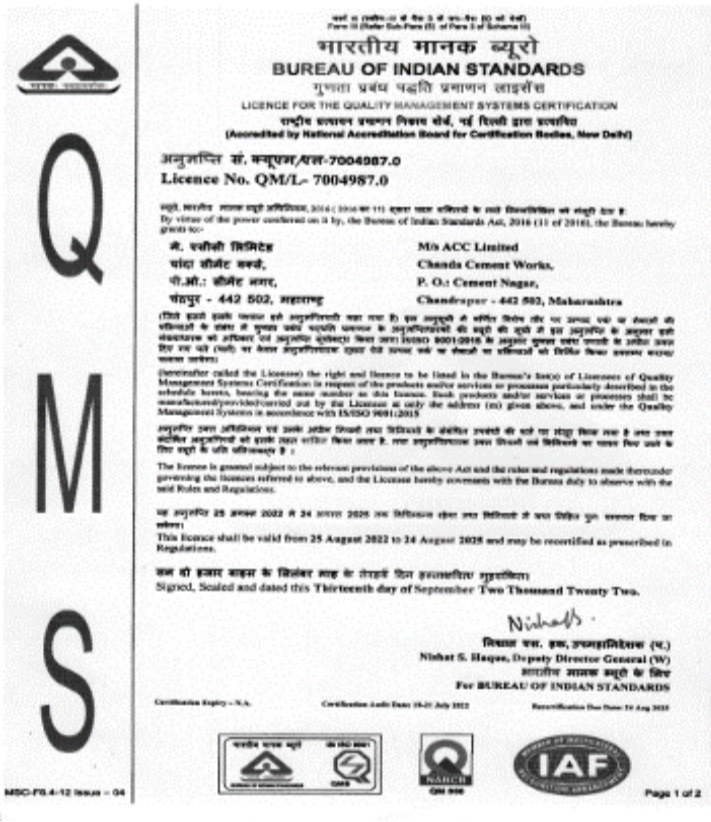
अनुज्ञप्ति सं. ईएम/एल-7000809.0
Licence No. EM/L- 7000809.0

मे. एसीसी लिमिटेड	M/s ACC Limited
चांदा सीमेंट वर्क्स,	Chanda Cement Works,
पी.ओ.: सीमेंट नगर,	P. O.: Cement Nagar,
चंद्रपुर - 442 502, महाराष्ट्र	Chandrapur - 442 502, Maharashtra

This licence shall be valid from 25 August 2022 to 24 August 2025 and may be recertified as prescribed in Regulations.

Signed, Sealed and dated this Thirteenth day of September Two Thousand Twenty Two.

Nishath.
निशात एस. हक़, उपमहानिदेशक (प.)
Nishat S. Haque, Deputy Director General (W)
कृते भारतीय मानक ब्यूरो
For BUREAU OF INDIAN STANDARDS



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
गुणता प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE QUALITY MANAGEMENT SYSTEMS CERTIFICATION

अनुज्ञप्ति सं. क्यूएम/एल-7004987.0
Licence No. QM/L- 7004987.0

मे. एसीसी लिमिटेड	M/s ACC Limited
चांदा सीमेंट वर्क्स,	Chanda Cement Works,
पी.ओ.: सीमेंट नगर,	P. O.: Cement Nagar,
चंद्रपुर - 442 502, महाराष्ट्र	Chandrapur - 442 502, Maharashtra

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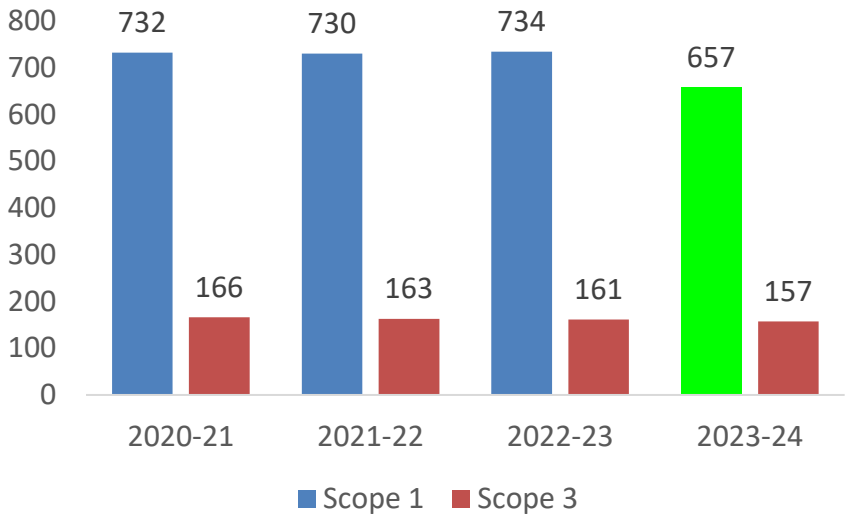
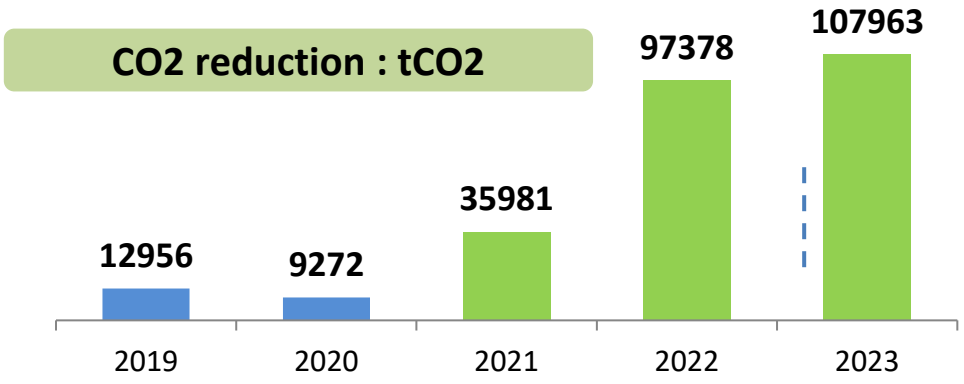
कृते भारतीय मानक ब्यूरो
For BUREAU OF INDIAN STANDARDS

Reduction in GHG





Chanda has taken CO2 emission intensity reduction measures such as

- Clinker factor reduction
- Improving Thermal Substitution Rate (TSR)
- Installing Waste Heat Recovery System (WHRS)
- Reducing Thermal & Electrical Energy intensities
- Increasing renewable energy consumption
- Adoption of new technologies

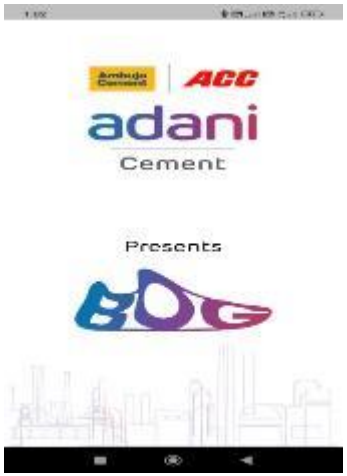
Traditional Fuel Replaced 64677 MT

SD 2030

SUSTAINABILITY PILLARS	CLIMATE AND ENERGY	CIRCULAR ECONOMY	ENVIRONMENT	PEOPLE AND COMMUNITY
Lead Metrics	CO_2 emitted (kg/t cementitious material)	Waste re-used (Million tonnes)	Water Positivity Index (No. of times)	No. of new beneficiaries (Million new beneficiaries)
Objectives	Reduction of CO_2 emissions	Enhanced reuse of waste derived resources	Creating a positive impact on environment	Creation of shared value
2020 Actual	493	9.3	1.1#	0.4
2030 Target	400*	30	5	0.9

Technology Adoption

Technology	Remarks
Cooler hot air recirculation, for increasing waste heat recovery (WHR) power generation.	Commissioned WHRS with Cooler gases, PH commissioning in progress
IoT – Industry 4.0	Implemented WBI app, BoG, TIS, HLC under digital transformation drive
Chlorine bypass system for increasing alternative fuel usage.	Study completed. Under progress
Electric vehicles for raw materials/ products transportation	Trial done with electric vehicle for cement loading



Moments of Glory

- **Platinum award in 1st Half Yearly Udaaan Championship** for increasing TSR from 9.3 to 20%.
- **3rd National Sustainability Awards** on Cement and RMC by QCFI for Excellence in AFR .
- **IconSWM-CE award** for "Highest TSR & Best Volumes of AFR" at the 13TH International Conference on Sustainable Waste Management and Circular Economy for the year 2023.
- **IBM Awards :** Chanda received 2nd Prize for Environmental Monitoring, Publicity and Propaganda and 3rd Prize for Reclamation BIS has honored **"Outstanding performance in Quality"** to ACC Chanda for achieving zero failures in Cement Quality in the last two years.
- Chanda Cement Works received **Best performer award in AFR excellence category in 1st International Cement conclave** organised by QCFI Madurai and Ahmedabad Chapter.

1st Half Yearly Udaaan Championship

(Naresh Macherla, Swaroop Gudimitla, Arbind Chaudary, Tukaram Khamankar, Jojo Augustine, Hemraj Dahiya, Jyoti Chandel & Rup Jyoti)

Platinum Champion – Chanda plant

Doubling AFR consumption from 9.3% to 20%

Objective

To combat the increasing cost of coal and clinker product, there was a need to increase the AFR consumption with the existing infrastructure of ready-to-feed material from the plant. Chanda team set the goal of doubling the AFR consumption from 9.3% to 20% and also significantly reducing the carbon footprint

Key levers

- Product Mix : 80% RDF (Refuse Derived Fuel) + 20% biomass
- Continuous monitoring of RDF and communicating to concern for avoiding large size and high moisture and proper mixing of RDF and biomass for optimum feeding to maximize the consumption
- Modification of calciner feeding area to avoid jamming and PID loop for chain conveyor speed with weigh feeder TPH and optimization of walkie floor stroke length

Improvements executed

- Walkie floor material leakage minimization
- Modification of AFR feed chute opening at calciner
- PID loop optimization

Results

Led to a saving of Rs. 15.4 Cr per annum

3rd National Sustainability Awards on Cement and RMC by QCFI (Excellence in AFR, ACC Chanda Cement Works)

(IconSWM-CE award)

Chanda Plant awarded for “Highest TSR & Best Volumes of AFR” at the 13TH International Conference on Sustainable Waste Management and Circular Economy for the year 2023.

IBM Awards for Chanda Cement

Chanda Cement Works received 2nd Prize for Environmental Monitoring, Publicity and Propaganda and 3rd Prize for Reclamation.

Reward from BIS to Chanda Cement Works

BIS has honored "Outstanding performance in Quality" to ACC Chanda for achieving zero failures in Cement Quality in the last two years.

Thankyou

1) 1st Plant in Adani group for highest AFR consumption more than 600 TPD (With Co- Processing facility)
2) First plant to achieve 21% TSR in Adani group.

Ambuja Cement | ACC

adani Cement

THANK YOU

udAAAn
Hum Karke Dikhate Hain