SAGAR CEMENT BAYYAVARAM

Welcome to
25th National Award for Excellence in Energy Management 2024

Sagar Cements Limited-Bayyavaram

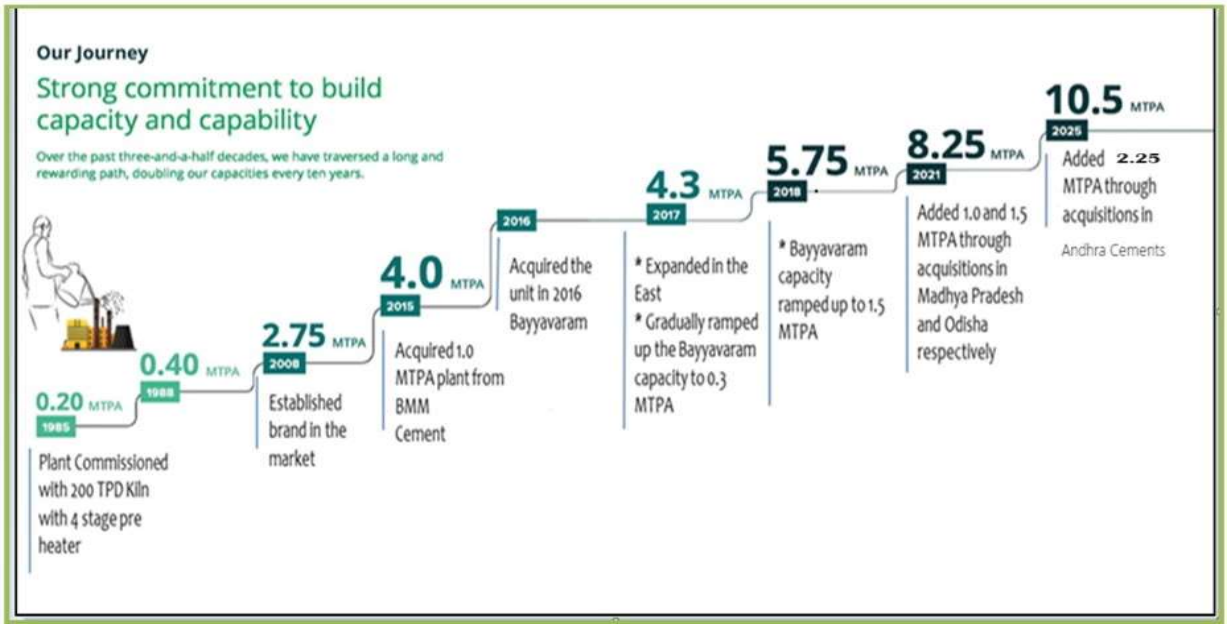
Lead Presenter

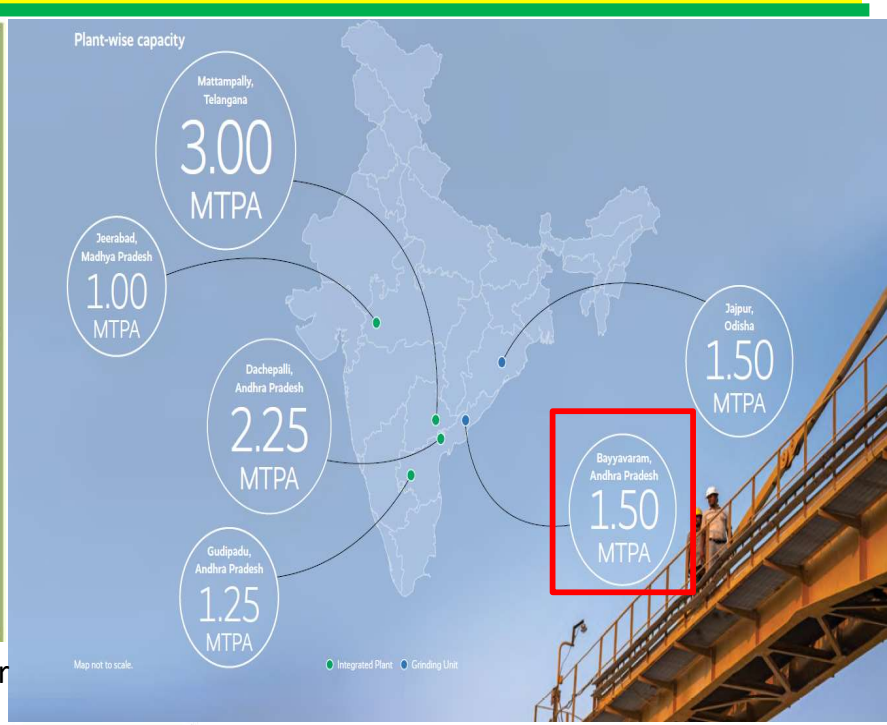
K. Srinivasa Rao
Plant Head(Sr GM)

N.Satish
Manager (E&I)

P S V S Narayana
Production In charge

1.Introduction of the Sagar Group





Founded in 1981, Sagar Cements Limited is a prominent Indian cement manufacturer with a production capacity of 10.50 MTPA, and earning the reputation of being the trusted choice in the construction industry

Our Mission

To be India's most respected and attractive company in our industry – creating value for all our stakeholders**.**

Our Vision

To provide foundations for the society's future.

GreenPro
Product certification as a mark of SUSTAINABLE PRODUCT quality

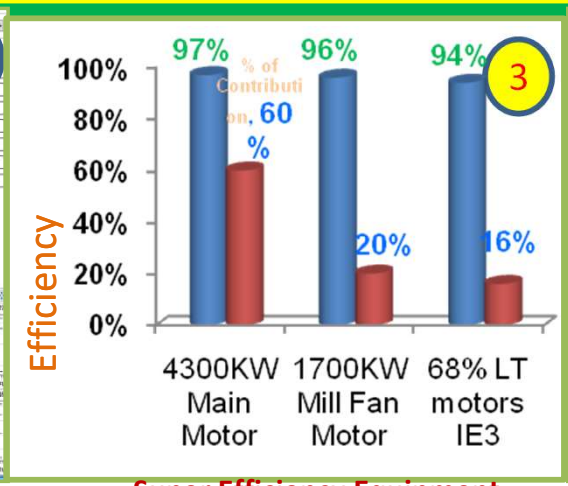
GreenCo
Plant process certification as a mark of ENVIRONMENTAL FRIENDLY manufacturing

Description of Product	Plant @ Mattampally	Plant @ Gudipadu	Plant @ Bayyavaram
GreenCo Certification	GOLD	GOLD	PLATINUM
GreenPro Certification			
PPC (Portland Pozzolana Cement)	√	√	√
Composite Cement			√
PSC (Portland Slag Cement)		√	√
GGBS (Ground Granulated Blast Furnace Slag)			√

1.Introduction of the Bayyavaram Plant

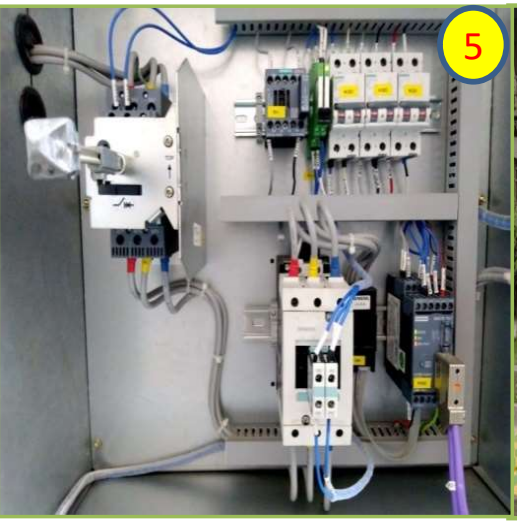
MVR 5000-C4 PFEIFFER Mill

Plant Operation with Expert-Optimiser



Super Efficiency Equipment

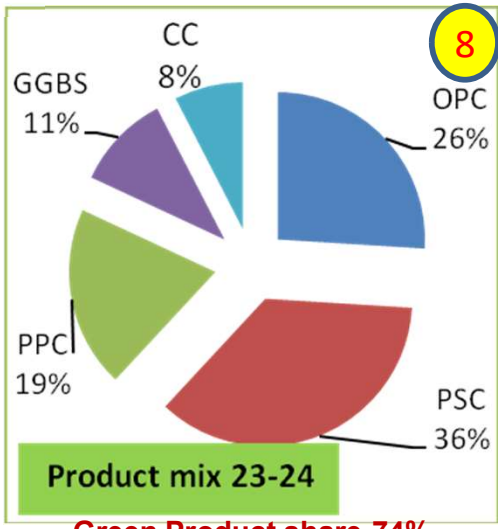
Robotic laboratory.



Intelligent MCC - Motor Feeders

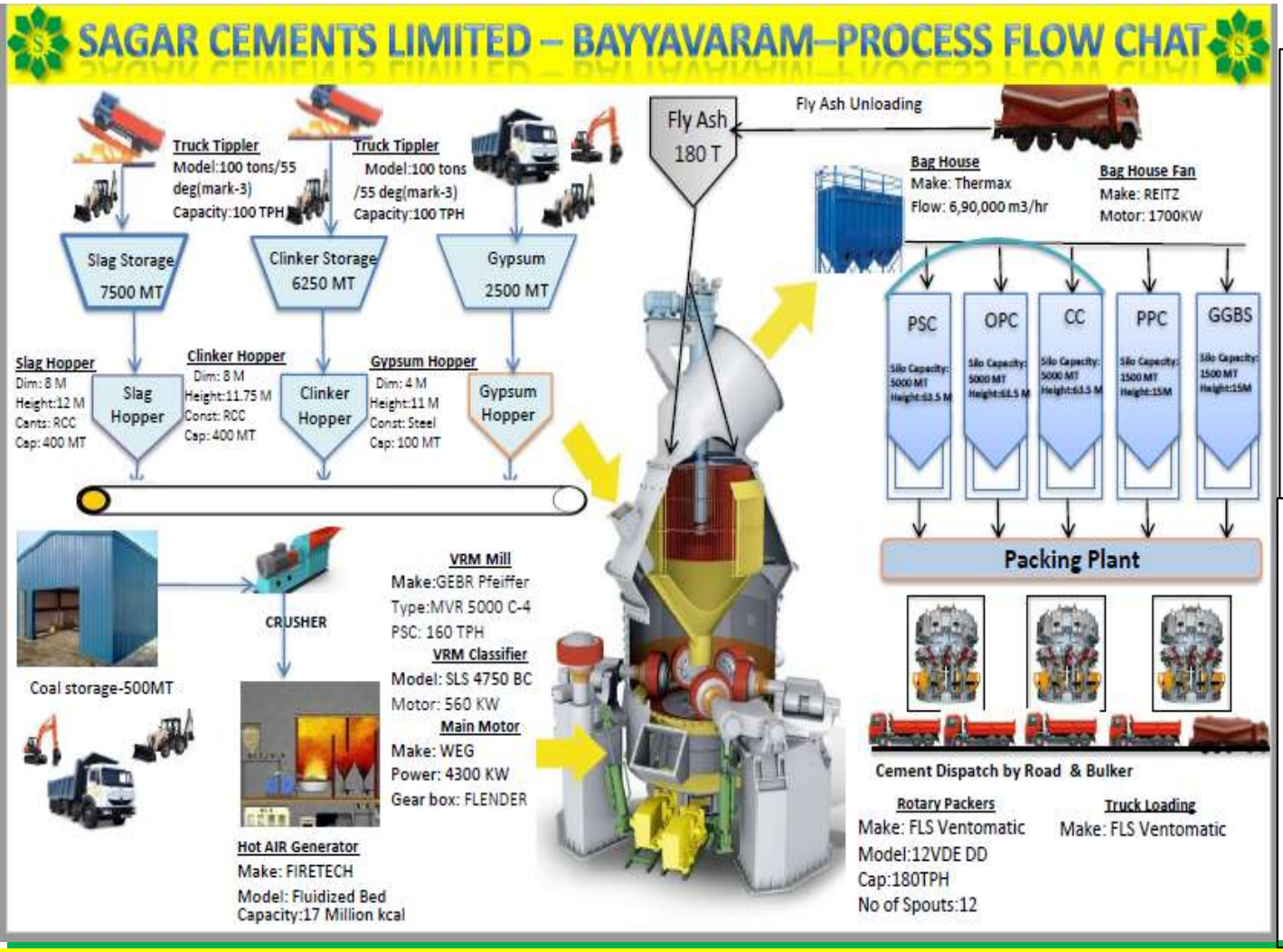
EV Vehicles for Material Transport

Roof Top Solar plant

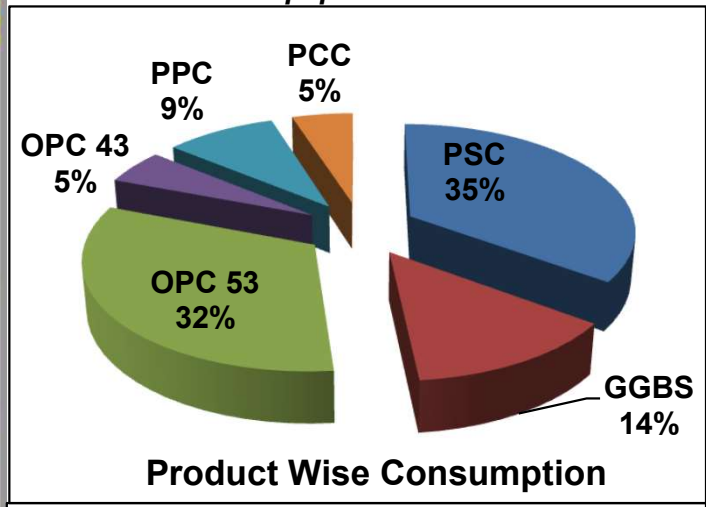


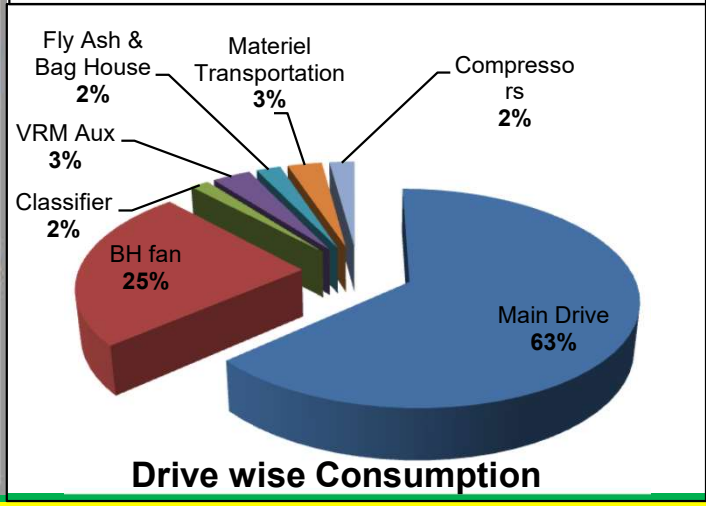
Green Product share-74%

1.Introduction of the Bayyavaram Plant



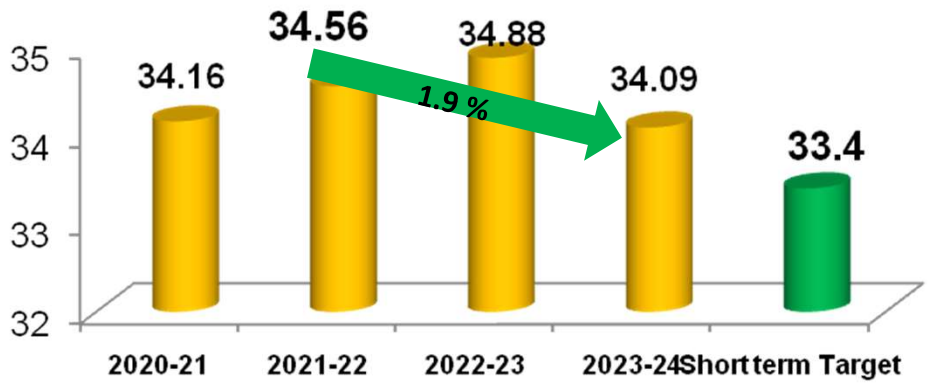
Performance Evaluation of Energy Intensive Equipment



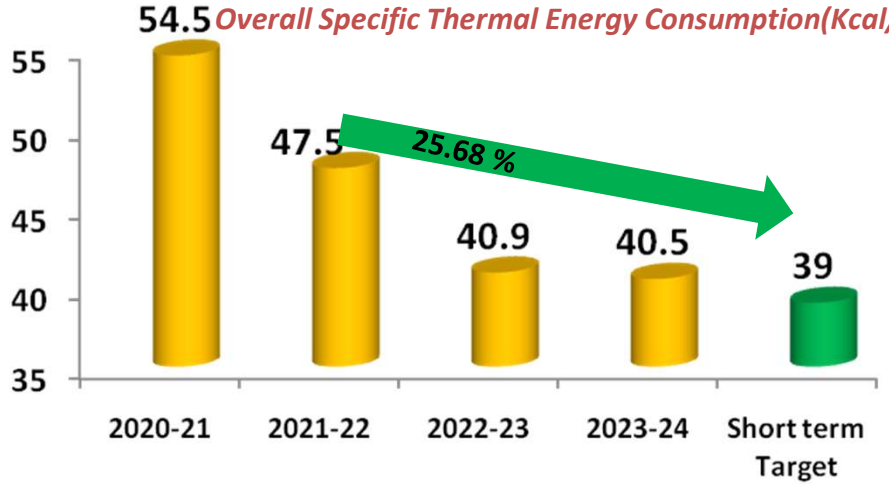


2. Sp. Energy Consumption in last 3 years (FY 2021-24)

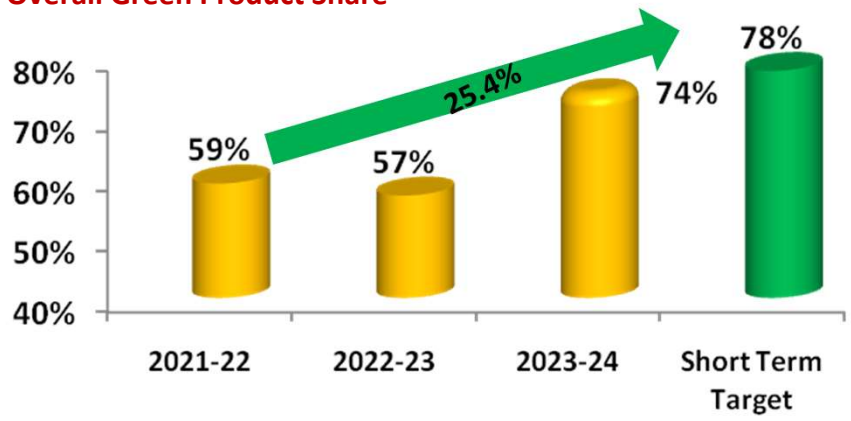
Plant Overall Specific Electrical Energy Consumption(Kwh/MT)



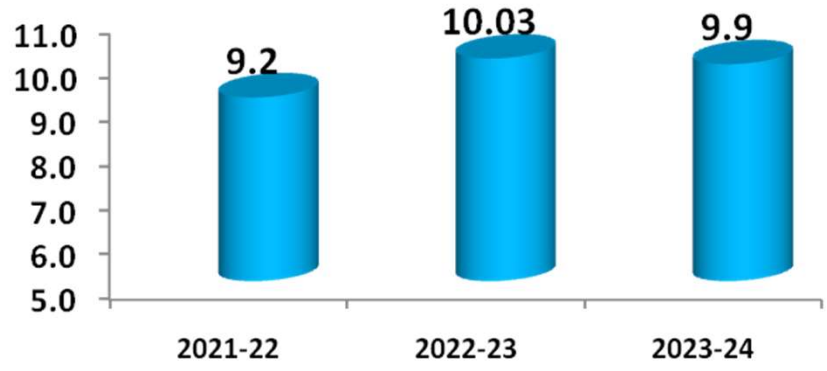
Overall Specific Thermal Energy Consumption(Kcal/kg)



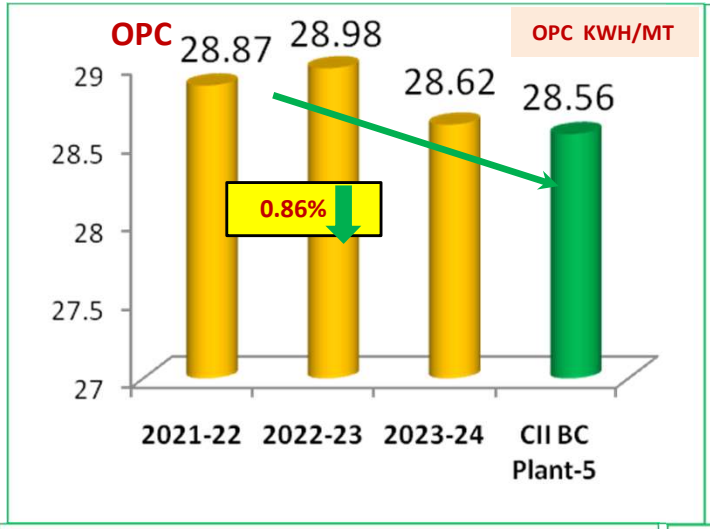
Overall Green Product Share

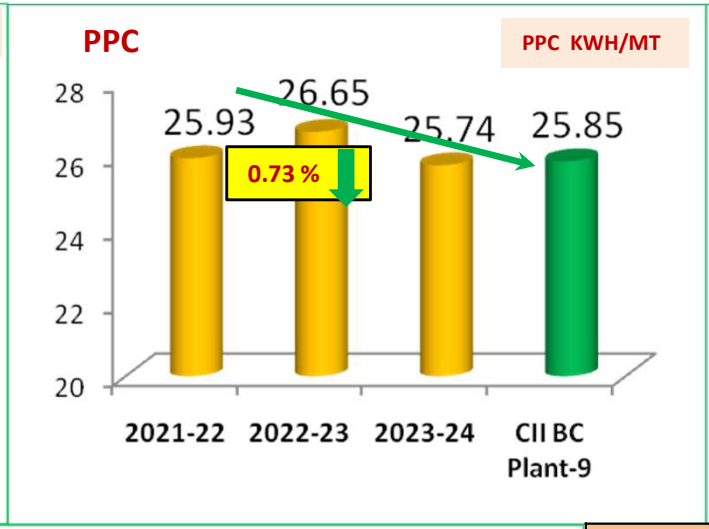


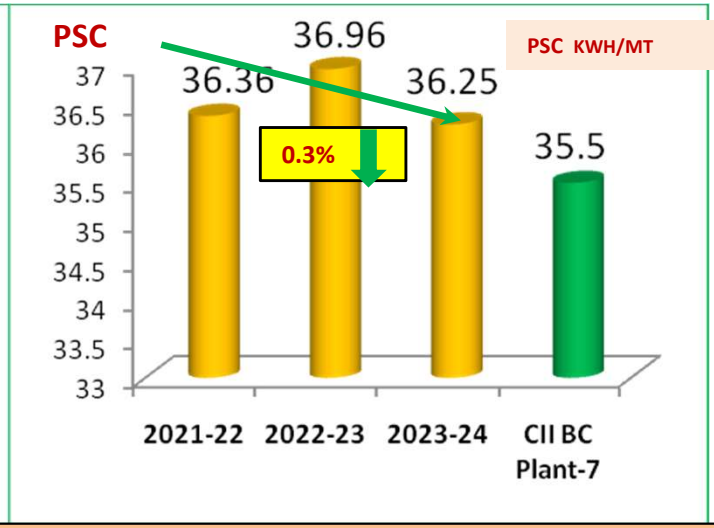
Cement Production for last three years in Lakhs

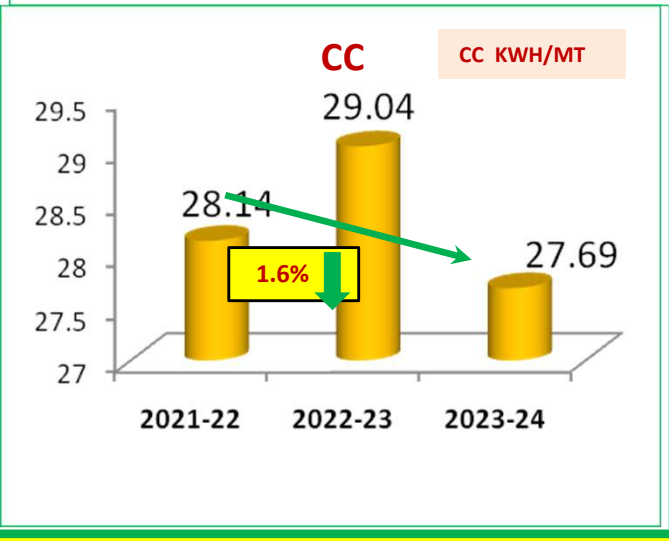


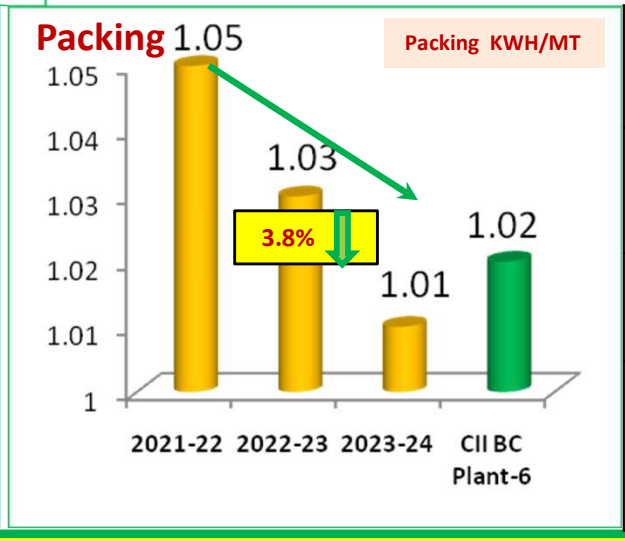
2. Sp. Energy Consumption in last 3 years (FY 2021-24)





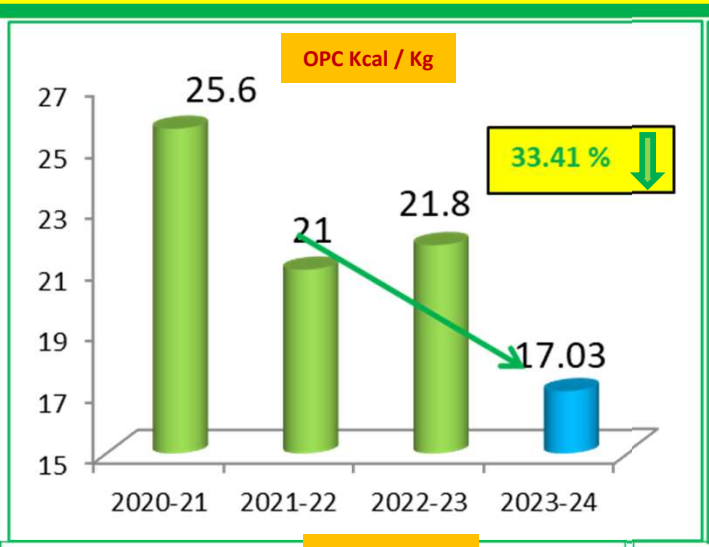


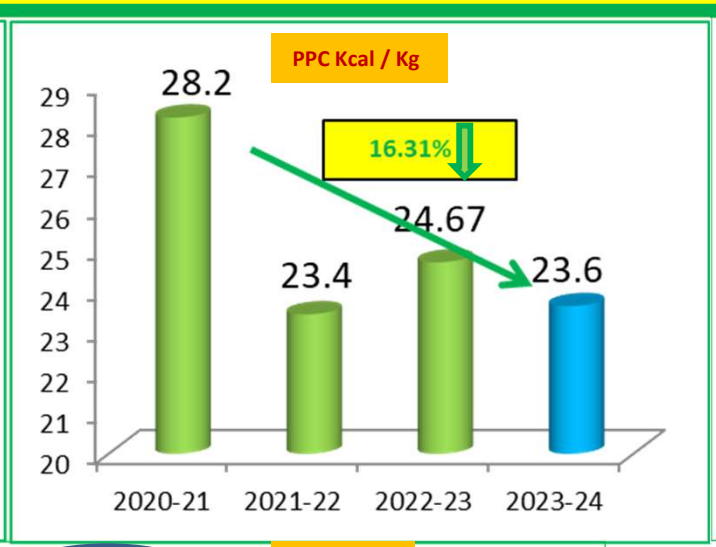


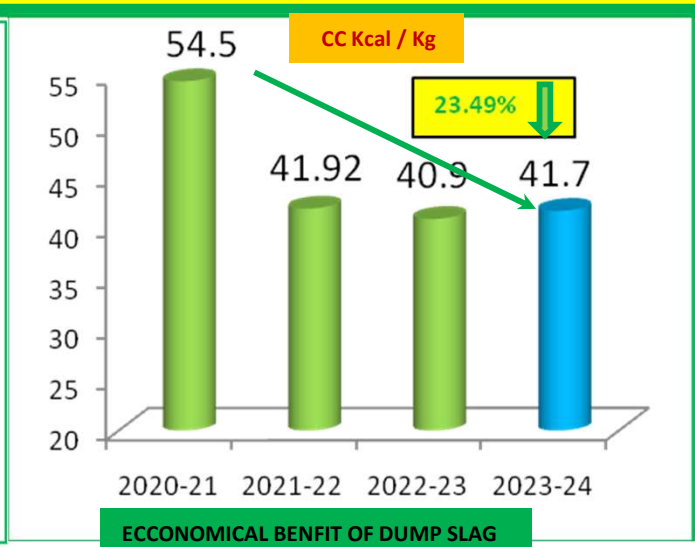


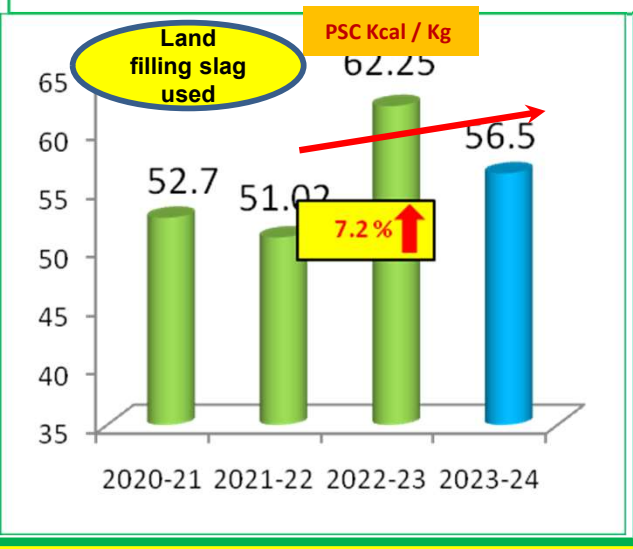
Specific Electrical Energy -Last 3 Years			
Year	2021-22	2022-23	2023-24
Production(MT)	9,14,859	10,03,298	9,90,242
Energy consumption (Million Kwh)	34.52	34.89	34.54

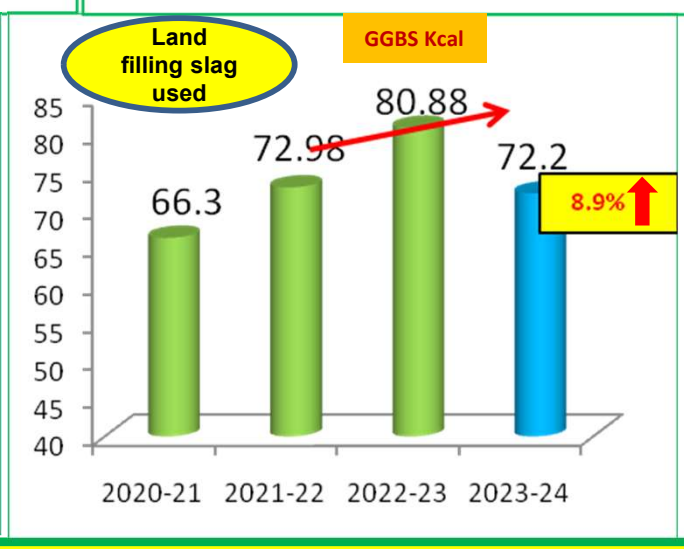
2. Sp. Thermal Energy Consumption in last 3 years (FY 2021-24)









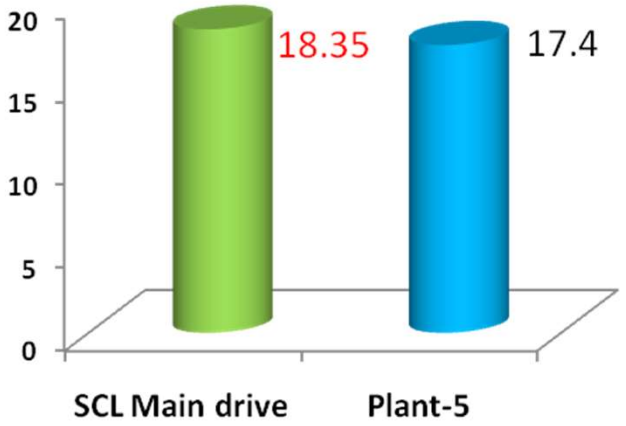


ECCONOMICAL BENFIT OF DUMP SLAG

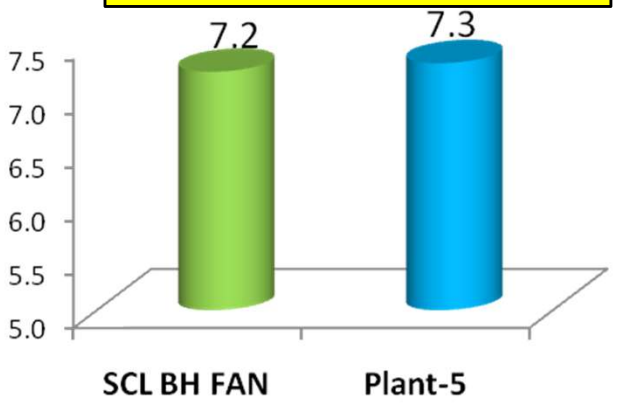
Description	Unit	BF slag	Dump slag
Basic price per ton	Rs/-	1207	955
Moisture Content	%	10%	18%
Consumption Percentage	%	50	50
Consumption in FY-2023-24	MT	381700	
Coal consumption	Kg/ton	13.5	18.5
Thermal cost increased	Rs/ton	23.2	
saving per ton-Wet base	Rs/-ton	126	
saving per Year-Wet base	Lakhs/Annum	278	

2. Sp. Energy Consumption in last 3 years (FY 2021-24)

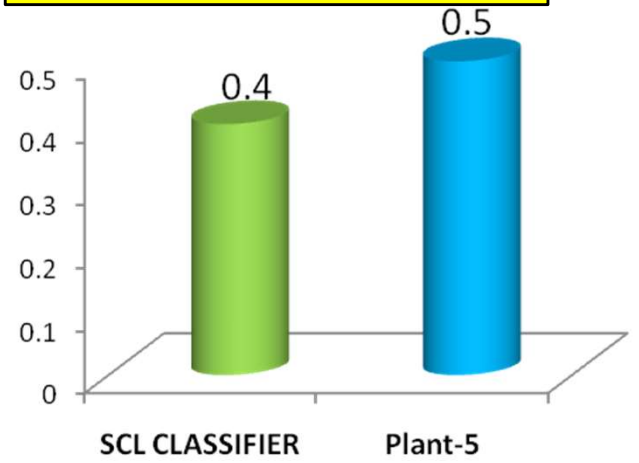
VRM MAIN DRIVE SP POWER KWH/MT



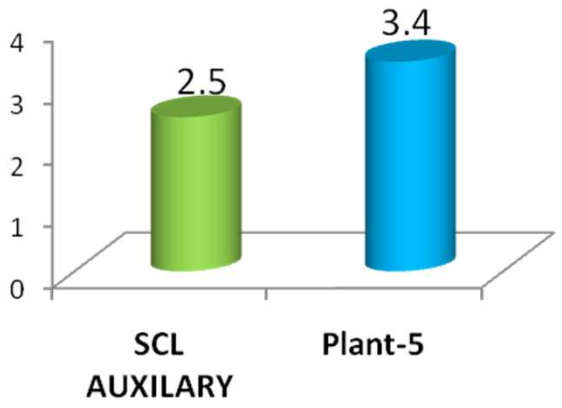
VRM Mill Fan SP POWERKWH/MT



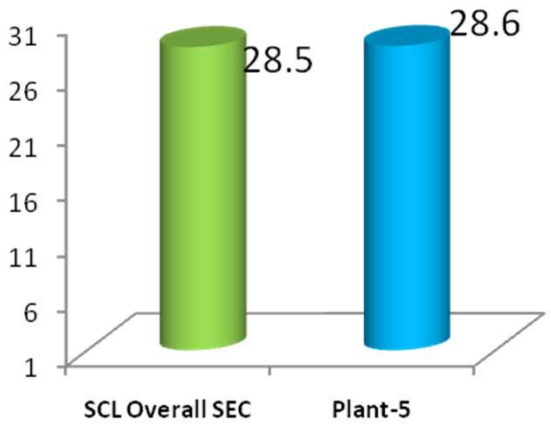
VRM CLASSIFIER SP POWER KWH/MT



Auxiliary drives SP Power KWH/MT



Overall SEC Power KWH/MT



Specific Electrical Energy

Parameter	SCL	Plant-5(MVR 6000 C6)
Main drive	18.35	17.4
Mill fan	7.2	7.3
Separator/Classifier	0.4	0.5
Auxiliary drives power	2.5	3.4
Overall SEC	28.45	28.6

3. Information on Competitors, National & Global benchmark

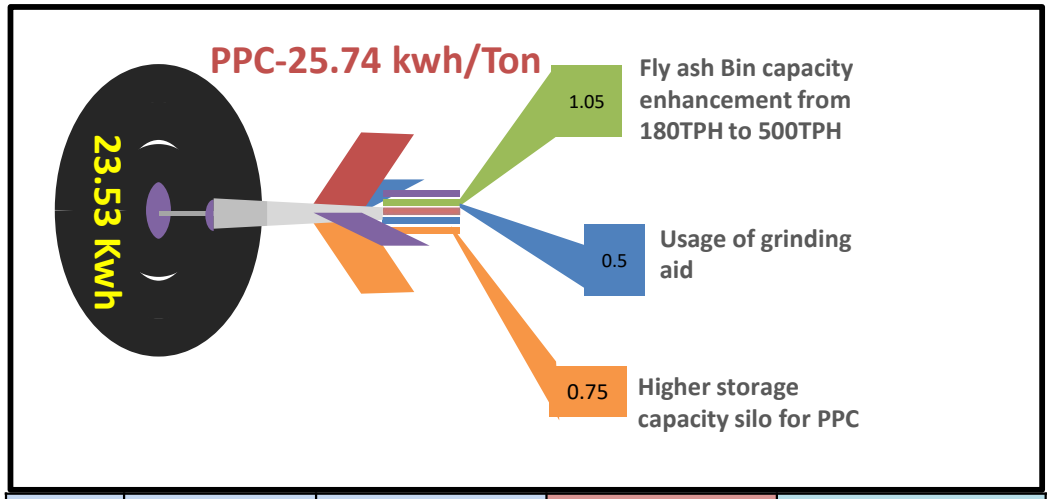
Short term/ Long term Target & National Benchmarking

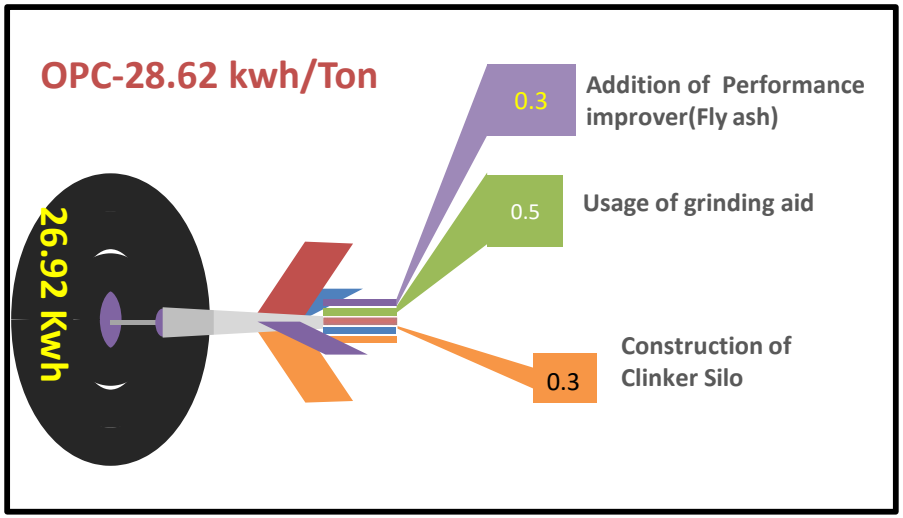
Sl. No.	Description	Specific Electrical Energy (KWH / Ton)				Bench Mark	Short Term Target	Long Term Target	Neighbour Plant
		2020-21	2021-22	2022-23	2023-24	CII *	2024-25	2026-27	2022-23
1	PPC	26.14	**25.93**	**26.65**	**25.74**	20.2	**25.2**	**24.5**	25.95
2	OPC	28.26	**28.87**	**28.98**	**28.62**	24.5	**28.0**	**27.2**	28.43
3	PSC	35.49	**36.36**	**36.96**	**36.25**	29.8	**35.5**	**34.4**	37.24
4	GGBS	38.53	**38.42**	**39.96**	**38.21**	-	**37.4**	**36.3**	39.93
5	CC	-	**28.14**	**29.04**	**27.69**	28.5	**27.1**	**26.3**	29.8
6	Packing Plant	1.26	**1.05**	**1.03**	**1.01**	0.7	**0.99**	**0.96**	1.21

*** Source : CII -Energy Benchmarking for Cement Industry version 6.0 (5.5.2-Cement Mill-VRM)**

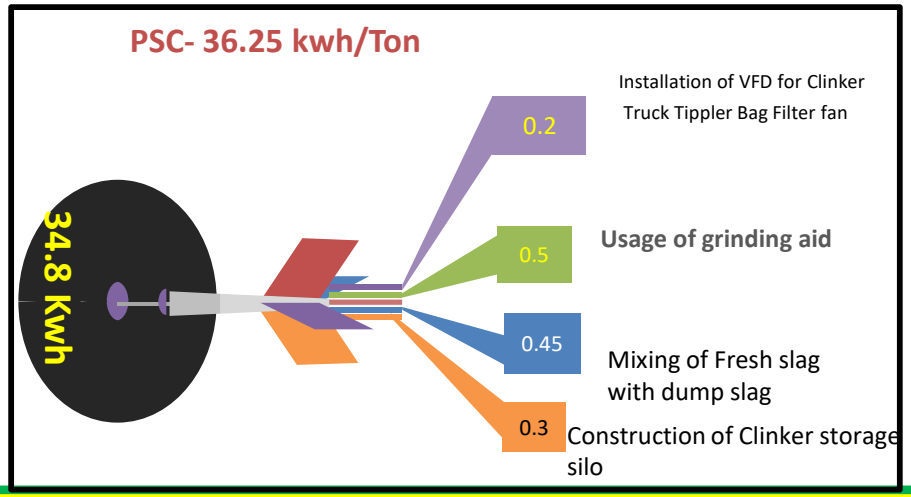
3. Information on Competitors, National & Global benchmark

Road Map to achieve national/global benchmarking





Sl. No.	Description	SE Energy (KWH / Ton)	Bench Mark	How close to CII-National
		2023-24	CII *	Where we
1	PSC	36.25	34.8	Plant-7
2	OPC	28.62	25.0	Plant-5
3	PPC	25.74	21.18	Plant-9
4	GGBS	38.21	-	No benchmark
5	CC	27.69	27.0	Plant-1(Others)
5	Packing Plant	1.01	1.02	Plant-6



* Source : CII -Energy Benchmarking for Cement Industry version 6.0 May-2023(5.5.2-Cement Mill-VRM)

3. Information on Competitors, National & Global benchmark

Road Map to achieve national/global benchmarking

Road Map: Action Plan with Target & Responsibility to reach National Bench mark

PSC	Project Description	Electrical saving KWH / Ton	Achieved 2023-24(KWH/Ton)	% of Benefit Expected	Target By	Responsibility	Reviewed By	Status
1	Mixing of Fresh slag with dump slag	0.45	36.25	1.24%	24-Dec	Mr.Gopi Reddy	Plant Head	Project under execution
2	Installation of VFD for Clinker Truck Tippler Bag Filter fan	0.2		0.55%	24-Dec	Mr.N Satish	Plant Head	Approval Stage
3	Usage of grinding aid	0.5		1.38%	25-Nov	Mr.Gopi Reddy	Plant Head	SIMCO-G-5411 usaing and acheveing good results
4	Construction of Clinker storage silo	0.3		0.83%	25-Apr	Plant Head	G.P	Civil work under progress
	Total	1.45	34.8	**4.00%**				
PPC	Project Description			%	Target By	Responsibility		Status
1	Usage of Grinding aid	0.5	25.83	1.94%	25-Nov	Mr. Gopi reddy	Plant Head	Material received at site and waiting for Plant stoppage
2	Fly ash Bin capacity enhancement from 180TPH to 500TPH	1.05		4.07%	25-Nov	Mr. Gopi reddy	Plant Head	SIMCO-G-5411 usaing and acheveing good results
3	Higher storage capacity silo for PPC	0.75		2.90%	25-Mar	Plant Head	Plant Head	Drawings approved, Waiting for material.
	Total	2.3	23.53	**8.90%**				
OPC	Project Description			%	Target By	Responsibility		Status
1	Addition of Performance improver(Fly ash)	0.3	28.02	1.07%	25-Dec	Mr.Gopi Reddy	Plant Head	Approval Stage
2	Usage of grinding aid	0.5		1.78%	25-Nov	Mr.Gopi Reddy	Plant Head	SIMCO-G-5411 using and achieving good results
3	Construction of Clinker Silo	0.3		1.07%	25-Apr	Plant Head	G.P	Civil work under progress
	Total	1.1	26.92	**3.93%**				

4. Energy Saving projects implemented in last three years

Energy Conservation Projects Completed in last Three years FY 2021-2024

Year	No of Energy Saving Projects	Investments (In Millions)	Electrical Savings (In Million Kwh)	Total Savings (INR Million)	Impact on SEC (Electrical KWH / MT Cement)
2021-22	11	2.9	0.36	8.18	0.427
2022-23	11	8.8	0.618	5.125	0.664
2023-24	10	6.03	0.983	14.99	1.18
FY 2021-24	**32**	**17.73**	**1.961**	**28.295**	**2.271**

3. Information on Competitors, National & Global benchmark

Energy Conservation Projects –Planned FY 2024-25

S.No.	Year	Title of Project	Annual Electrical savings (Million kwh)	Annual thermal Saving (million Kcals)	Total Annual savings (Rs Lakhs)	Investment (Rs million)
1	2024-25	Mill feed RAL Over load tripping avoided by reverse function enabled in VFD drive.	0.00738	0	0.52	0
2	2024-25	Auxiliary bag filter RAL operation optimization with Bag filter Hopper level sensor	0.011	0	0.78	0.1
3	2024-25	Slag feeding belt feeder replaced with chute	0.11988	0	8.39	0
4	2024-25	Capacity enhancement of Fly ash bin from 180 Ton to 500 Tons	0.1035	0	7.25	5
5	2024-25	Bag filter Optimization in Material handling by usage of Dry slag	0.1188	0	8.32	0
6	2024-25	Construction of Clinker silo 15,000 MT to avoid clinker hopper empty.	0.0596	0	4.17	100
7	2024-25	Material Handling section Bag Filter fans operation with VFD-2X37KW	0.0732	0	5.12	0.6
8	2024-25	Upgradation of HAG from 2nd generation to 3rd generation by removing Ash hoppers	0.0	30	0.0	0.2
9	2024-25	Installation of Solid flow meter for Performance improver in OPC product	0.6	0.00028	42	0.25
10	2024-25	Stack chimney inlet duct connection to HAG outlet	0	6804	8.84	0.15
		TOTAL	1.09	6804	85.39	106.3

4. Energy Saving projects implemented in last three years

Energy Conservation Projects -Last 3 Years

S.No.	Year	Title of Project	Total Annual savings (Rs Lakhs)	Annual Electrical savings (Million kwh)	Annual thermal Saving (Rs Lakhs)	Impact on SEC/ SHC	Investment (Rs Million)
1	FY 2021-22	Old Packing Plant Packer capacity enhancement from 54tph to 90 tph by increasing elevator buckets volume.	0.32	0.045	0	0.05	0
2	FY 2021-22	Installation of LP Compressor in place of 55 GA Compressor for flay ash unloading from tanker to Bin	0.382	0.054	0	0.06	1.5
3	FY 2021-22	Usage of waste wood for firing in place of disel for HAG restarting.	2.8.	0	28.6		0
4	FY 2021-22	Optimization of bag house fan flow by removing orifice in bag house outlet duct.	1.814	0.025	0	0.03	0
5	FY 2021-22	Packer-1 &2 Bag filter(30KW) operation with VFD in place of DOL	0.52	0.074	0	0.09	0.5
6	FY 2021-22	Increasing of reject vibrating screen height to avoid the refalling of reject material.	0.413	0.005	0	0.007	0
7	FY 2021-22	Provided Insulation of Load Center outside AC duct to avoid condensation	1.210	0.017	0	0.02	0.3
8	FY 2021-22	Installation of IE3 motors in place of IE1 Motors	1.890	0.027	0	0.03	0.5
9	FY 2021-22	Reject RAL drive (3.7KW) stopped by connecting chute to mill feed path.	1.134	0.016	0	0.09	0
10	FY 2021-22	Silo bucket elevator load optimized by changing the bag house purging sequence	0.5	0.071	0	0.02	0
11	FY 2021-22	Installation of Auto MRP and Bag Counting system by integration with ERP	1.97	0.026	0	0.03	0.1
Sub Total			**8.183**	**0.36**	**28.6**	**0.427**	**2.9**

4. Energy Saving projects implemented in last three years

Energy Conservation Projects -Last 3 Years

S.No	Year	Title of Project	Total Annual savings (Rs Miilons)	Annual Electrical savings (Million kwh)	Annual thermal Saving (Rs Million)	Impact on SEC/ SHC	Investment (Rs Million)
1	FY 2022-23	Classifier efficiency improved by providing ring at wear ring	1.28	0.183	0	0.20	0
2	FY 2022-23	Bag house air slide optimization by connecting one air slide blower for 2 air slides	0.34	0.048	0	0.054	0.0
3	FY 2022-23	Additional truck loading machine installation for old packer to maximize packer operation	0.315	0.045	0	0.05	0.50
4	FY 2022-23	Old packer truck loading machine trolley length extension to minimize loading time of truck.	0.42	0.060	0	0.06	0
5	FY 2022-23	Reduce the heat loss through HAG doors by arrest the false air by using transparent glass	0.058	0.000	0.005	0	0.3
6	FY 2022-23	Use of 3KW water pump instead of 7.5KW pump for process water for mill operation.	0.8	0.011	0	0.01	0
7	FY 2022-23	37 KW VFD installed for VRM auxiliary bag filter fan	0.542	0.074	0	0.09	0.5
8	FY 2022-23	Reject bucket elevator inclination changed and vibration level increase for free material increase	0.42	0.060	0	0.06	0
9	FY 2022-23	Compressors optimization by installing IFC at compressor line	0.72	0.104	0	0.11	6.0
10	FY 2022-23	Installation of magnetic separator on clinker and slag unloading conveyor	0.12	0.018	0	0.02	1.5
11	FY 2022-23	Installation of Belt conveyor in place of screw conveyor at Clinker circuit	0.11	0.015	0	0.01	0
Sub Total			5.125	0.618	0.005	0.664	8.8

4. Energy Saving projects implemented in last three years

Energy Conservation Projects -Last 3 Years

SNO	Year	Name of Energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Impact on SEC/ SHC (Electrical kWh /MT cement Kcal/Kg cement)
1	2023-24	Mill fan damper removed to avoid damper losses and Energy conservation	0.2	0.162	0	1.30	0.18
2	2023-24	Bio fuel usage in place of Coal by- 55% TSR		0.082		7.952	0.10
3	2023-24	Arresting of false air entry at Roller sealing area	1	0.16425	0	1.14	0.167
4	2023-24	GGBS bucket elevator load enhancement	3.5	0.13505	0	1.08	0.18
5	2023-24	Optimization of Power factor from 0.98 to 0.995	0	0.3	0	2.4	0.37
6	2023-24	30KW blower installed in place of 37kw blower for fly ash feeding	0.38	0.00438	0	0.035	0.04
7	2023-24	Packing Plant truck loading machine tilting conveyor chute installation	0.1	0.027	0	0.216	0.03
8	2023-24	VFD installation for clinker surface feeder(120SF01)	0.75	0.0144	0	0.115	0.02
9	2023-24	Bulk loading system optimization to avoid idle running of blowers	0.1	0.0324	0	0.2592	0.04
10	2023-24	Mill feed VFD BF speed optimized	0	0.062	0	0.497	0.05
		Total	**6.03**	**0.983632**		**14.99**	**1.18**

5.Innovative Projects implemented

Project -1: Usage of Biofuels in Hot Air generator - Category -1

Understanding:

SCL group commitment net zero by 2050 and by 30% reduction by 2030.

By taking this group theme we are inculcating to use alternate bio fuels(Sawdust ,Wood chips) in Hot air generator to replace fossil fuels.

Hot Air Generator is installed for generation of hot gas for the Drying of Wet Materials (eg.Slag, Gypsum).

We are using Fluidized bed type Hot air generator in our plant which is having three burners.

Actual Problem :

Initially we have started with 5% saw dust along with coal and we have not observed any abnormality but after 15% we are facing two issues.

Problem -1: We are facing frequent jamming of Coal crusher due to small wood chips struck in the crusher screen(Screen size-6mm to 8mm).

It was taking more than 4 hours to complete the job and it was hampering the plant operation.

Problem-2: We are using screw conveyor to feed coal into hot air generator along with Saw dust .

We are not getting required temperature in HAG even after screw is running with full speed as Saw dust having low density and unable to feed required quantity.

Biofuel

Coal and Saw dust

5.Innovative Projects implemented

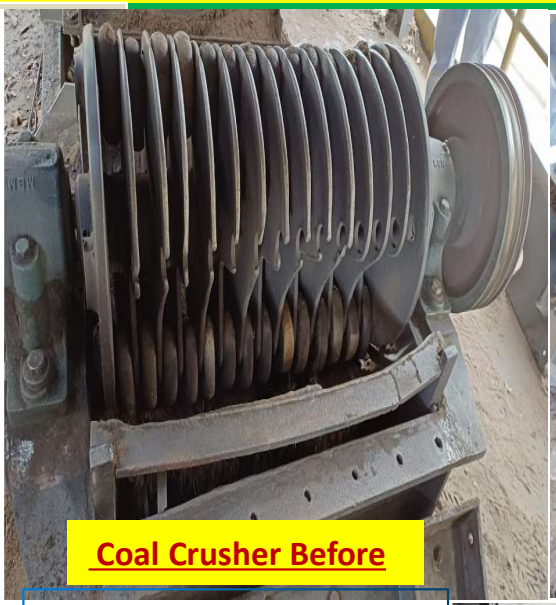
Project -1: Usage of Biofuels in Hot Air generator - Category -1

Innovative solution :

Removing of crushers from the circuit by making crusher as feed chute and procuring crushed coal(Below 6mm) .

Decreasing of Coal screw Sprockets from 50 to 24 to increase the screw speed.

TSR Increased from 5% to 55%.



Coal Crusher Before

Coal Crusher After

Results:

- TSR increased up to 55%
- Saving of Rs -7.17/- Lakhs with Sprockets modification instead of new screw purchase.
- **Scope-1 emissions reduction by 29.6%.**

CO2 emission reduction

9166 MT CO2

Savings:

BIOFUELS ECONOMIC FUEL BENFIT								
S.No	**Description**	Unit	**Base**	**Only Coal(Rs/Ton)**	**Mixing(Rs/Ton)**	Saving/ton	Production-MT	Total Saving
1	Coal/Saw dust	**Kcal/kg**	40.5	76.3	68.3	8.03	990242	79,52,289

BEFORE MODIFICATION

Motor speed: 1400 rpm

Designed GB ratio : 39.40

GB output speed:36 rpm

GB shaft sprocket teeth: 17 no

Screw sprocket teeth: 50 No

Output rpm: 12.24

AFTER MODIFICATION

Screw sprocket teeth: **24 No**

Output rpm: **25.5**

5. Innovative Projects implemented

Project -2 : Installation of In-house dryer for LP Compressor-Categoy-1

Understanding:

- We have installed Low Pressure Compressor(2.5 Bar) for Fly ash unloading from tanker, instead of high pressure compressor with in built dryer(6 bar).
- But due to high moisture formation in LP compressed air we are unable to use this compressor for Fly ash unloading.
- We have invested 25 Lakhs for LP compressor but due to moisture issue we are using 90KW compressor fr Fly ash unloading.

Actual Problem:-

- We are in coastal region with high humidity (80-95%) moisture will be high.
- Due to moisture entry nearly 2-3 tons of material is remaining in the tanker.
- Safety point of view high pressure compressor is not acceptable for Fly ash unloading.

BEFORE

5. Innovative Projects implemented

Project -2 : Installation of In-house dryer for LP Compressor-Categoy-1

OEM was unable to give proper solution with existing compressor to avoid moisture and they were suggesting to install external dryer which was costing 17.5 Lakhs.

Our team has thought innovatively made in house dryer for LP compressor with in house material(AC Coils with out door unit).

Working Principal: Compressor warm air enters the in house dryer and cooled , then moisture in the air condenses into water droplets. This water drop lets drain out through Auto drain valves.

Results:

1.Flyash is unloading with low pressure (2bar).
2.Avoid the explosion of tank accidents.
3. Fly ash unloading issues cleared like jamming
3.Direct power saving and Productivity improved.

	Make	Rated KW	Running KW	Pressure	Flow-cfm	Unloading Time
Before	Atlas	90	102	6 bar	598	0:40
After	Kaishan	55	60	2 bar	700	0:40

Saving

Saving/ Tanker-Kwh	Takers /day	takers /Year	Annual savings-Kwh	Annual savings-Lakhs	Emission reduction
42	7	2557	107394	8.6	76 MT

AFTER

Innovative Projects implemented

Project-3:HAG FLY ASH COLLECTING HOPPERS BOTTM DUMMIED -Category -1

Understanding:

- We are using Fluidized bed type Hot air Generator for Cement Mill.
- This HAG have three burners and each burner have one ash hopper to collect the ash after burning the coal.
- As per OEM design ash will be discharged through Rotary air locks and by screw conveyors it will transferred to bucket elevator to mill feed circuit.

Problem :-

- Frequent jam of Rotary air lock(RAL) and screw conveyor we have bypassed the circuit and unloading the material directly and it was creating high fugitive dust emission.
- As a regular practice we have to unload ash from HAG ash collecting hoppers on daily basis.
- This ash have temperature of 500 deg and we have to cool the ash after unloading from ash collecting hopper.
- We will use water spray to cool the temperature and then loaded into Wheel Loader and mixed with slag.
- While unloading and cooling of ash heavy dust emissions releasing into environment.

Innovative Projects implemented

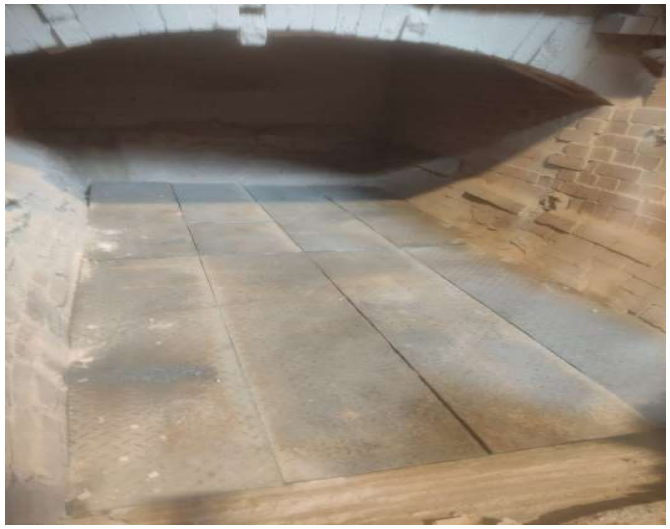
Project-3 :HAG FLY ASH COLLECTING HOPPERS BOTTM DUMMIED -Category -1

Innovative Solution:-

OEM was unable to give proper solution for handling of High temperature material and our team thought beyond OEM design.

We have closed ash hopper bottom portion with MS Plate and covered the plate with single layer of refractory bricks and observed no ash accumulation at the bottom of the hoppers.

The entire ash directly going to the mill by existing draft(-10mmwc to -15mmwc). After this modification completely avoided manual ash handling, dust emissions and safety related issues.



Results:

1.Fugutive emission avoided completely.
2.Manual intervention with high temperature was avoided and safe work environment created.
3.Temerature losses decreased.
4.Productivity improved.
Natural resource(Water consumption) avoided

Saving

S.No	Description	Kwh/Hr	Kwh/Year	Annual Saving(Rs in Lakhs)	C02 Reduction(Ton)
1	Power Saving	10.5	57488	4.6	40.8

6.Utilisation of Renewable Energy sources

SAGAR CEMENTS LIMITED

Renewable Power Allotment

SCL/ /Hyd/2024-25/01 Dt: 19.08.2024

The Sr. Vice President (Works), Mattampally,
The Asst. Vice President (Works), Gudipadu Unit,
The Senior General Manager (Works), Bayyavaram Unit.

Sub: - RE Allocation for FY 2024-25 – Reg.

Dear Sir,

During Energy Management review meeting held on 08.06.2022, the allocation of renewable power from our group companies has been decided as noted below.

S.No	Description	Installed Capacity	Expected Generation in MW	Percentage of Allocation		
				Mattampally	BVRM	Gudipadu
1	WHRS	8.80 MW	52248	100		
2	Solar Mattampally	1.25 MW	1305	100		
3	Solar HO	80 KW	120	100		
4	SCL - Hydro Power Plants	8.30 MW	32248		100	
5	SPL - Theni	1.65 MW	3116			100
6	RVC Wind Firms	2.35				100

All are requested to note the same a

Thanking You.
Yours sincerely.
For Sagar Cements Limited.
SRINIVAS REDDY SAMMIDI
Digitally signed by SRINIVAS REDDY SAMMIDI
Date: 2024.08.19 10:19:49 +05'30'
S Srinivas Reddy
VP – Power Projects

Registered Office: Plot No. 111, R
Phone No: +91 – 40 – 23351571, 23356573 Fax: +91 –
CIN: L2
cements.in

Total Group Green Power-26.43MW. 100% (8.3MW) Hydro Power allotted to Bayyavaram Plant.

Mattampally, Telangana

Capacity	3.00 MTPA
Captive power	28.23 MW
Thermal power	18.00 MW
Green energy	10.23 MW
Limestone resources	395.30 MnT
Markets	AP, TG, TN, OD, MH

Certifications: Green Co Gold, Green Pro for PPC, NABL accredited Laboratory, 5-star rating for Mines by IBM

Gudipadu, Andhra Pradesh

Capacity	1.25 MTPA
Captive power	25.00 MW
Thermal Power	25.00 MW
Limestone resources	164.81 MnT
Markets	AP, KA, TN, TG

Certifications: Green Co Gold, Green Pro for PPC and IPL

Jeerabad, Madhya Pradesh

Capacity	1.00 MTPA
Captive power	5.30 MW
Green energy	5.30 MW
Limestone resources	67.87 MnT
Markets	Western MP, GJ, RJ, MH

Dachepalli, Andhra Pradesh

Capacity	2.25 MTPA
Captive power	30.00 MW
Thermal Power	30.00 MW
Limestone resources	315.77 MnT
Markets	TG, AP, TN & KA

Bayyavaram, Andhra Pradesh

Capacity	1.50 MTPA
Captive power	8.43 MW
Green energy	8.43 MW
Markets	AP and South OD

Certifications: Green Co Platinum, Green Pro for PPC, CC, and IPL, NABL Accredited Laboratory

Jajpur, Odisha

Capacity	1.50 MTPA
Markets	OD, WB, JH

6 Utilisation of Renewable Energy sources

On site-Renewable-

Roof Top solar on office building and staff quarters top

Year	Technology	Type of Energy	On site / Off site	Installed Capacity (in MW)	Generation (in Million Kwh)	% Over all electrical energy
2021-22	PV Cell	Solar	On-Site	0.130	0.123	0.44
2022-23	PV Cell	Solar	On-Site	0.130	0.121	0.39
2023-24	PV Cell	Solar	On-Site	0.130	0.107	0.36

Off site-Renewable-

4.3 MW in Guntur ,4MW in Kurnool Hydro plants

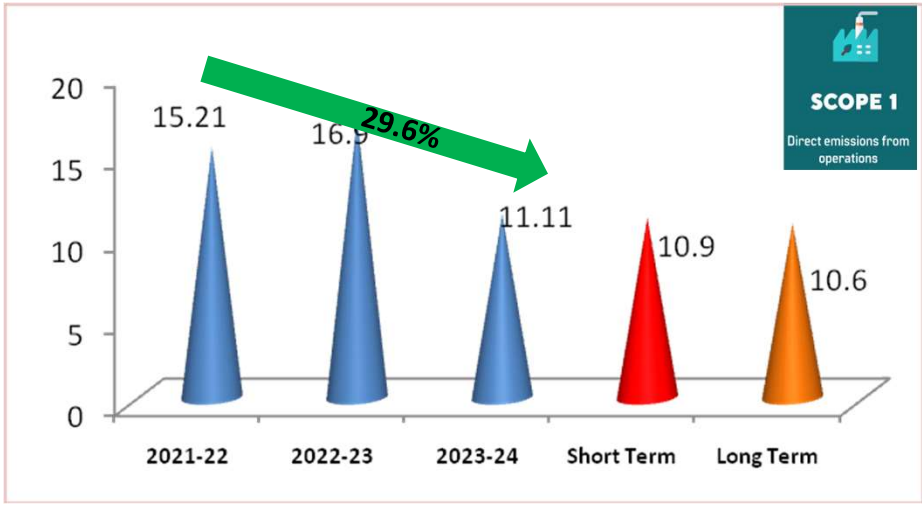
Year	Technology	Type of Energy	On site / Off site	Installed Capacity (in MW)	Generation (in Million Kwh)	% Over all electrical energy
2021-22	PV Cell	Hydro	Off-Site	8.3	27.70	88.34
2022-23	PV Cell	Hydro	Off-Site	8.3	32.24	75.37
2023-24	PV Cell	Hydro	Off-Site	8.3	4.99	14.54

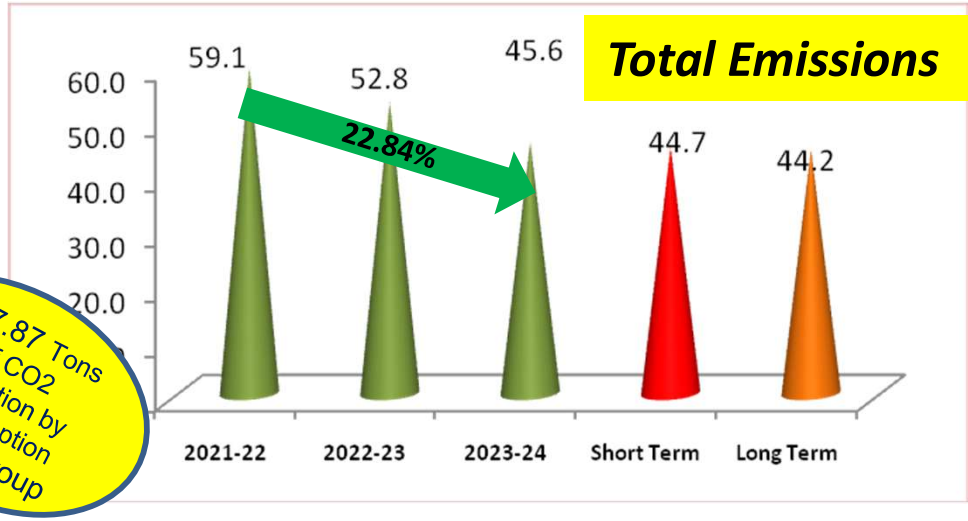
Due to Drought condition generation is low

7. GHG Inventorization

Absolute Emissions and Emissions intensity of last three years

WBCSD Cement Sustainability Initiatives						
	FY-2021-22		FY-2022-23		FY 2023-24	
Description	CO2(MT)	Kg CO2/Ton of cement	CO2(MT)	Kg CO2/Ton of cement	CO2(MT)	Kg CO2/Ton of cement
Scope-1	13917	15.21	16162	16.9	13482	11.1
Scope-2	19054	24.4	19057	24.6	24203	23.3
Scope-3	10909	12.3	10992	11.3	11307	11.2
		59.1		52.8		45.6





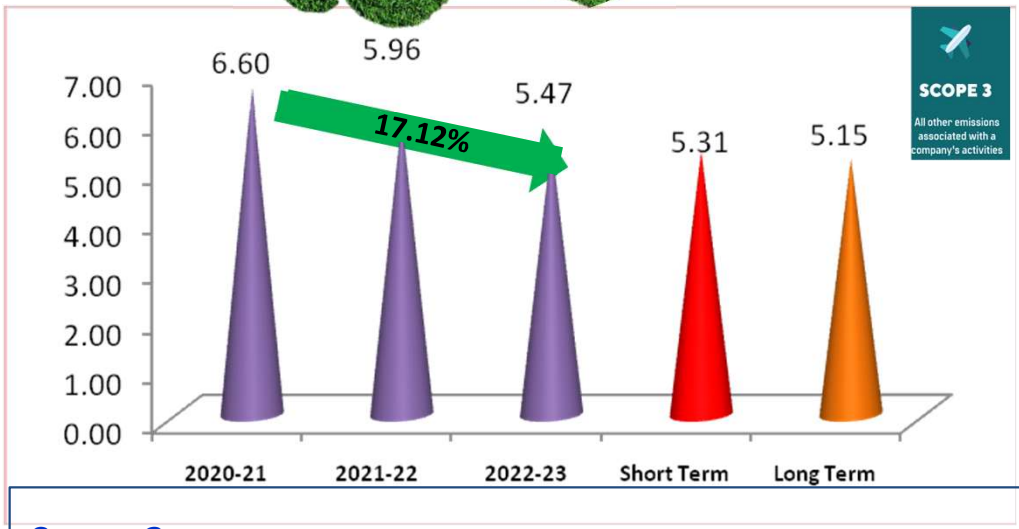
797.87 Tons of CO_2 reduction by EV adaption across group

7. GHG Inventorization

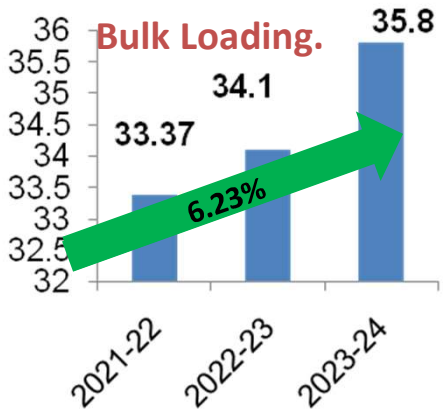
- *Target (short term/ long term) for CO2 emission reduction and action plan*

Scope -1&2

- Increase of slag addition in PSC from 57.5% to 60% on dry basis.
- Consistently maintain fly ash addition in PPC @ 35%.
- 5% addition of performance improver (fly ash/slag) in OPC.
- Cement to Clinker factor 0.55 to 0.50.
- Implementation of identified energy conservation project
- Switching to 100% Renewal Energy
- Increase of Bio fuels from 55% to 75%



Year	% Hydro / Solar	% Grid
FY:2020-21	77.81	22.19
FY:2021-22	88.34	11.66
FY:2022-23	75.37	24.63
FY:2023-24	14.9	85.1



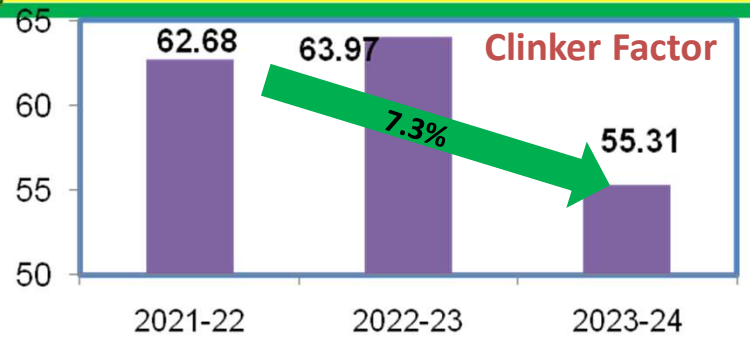
Scope-3

- Logistic management,70% of sales within 200KM range.
- Encouragement of bulk transportation from 35.8 % to 38 %.
- Improving fleet efficiency.
- **EV100 - To switching to 100% Electric Vehicles**
- **Present in beginning stage Procured 2 no's Electrical Trucks for raw material transportation and Cement dispatch.**

7. GHG Inventorization

GHG intensity of peers/competitors

	FY-2023-24		Ramco Cement	Chettinad Cement
Description	CO2(MT)	Kg CO2/Ton of Cement	Kg CO2/Ton of Cement	Kg CO2/Ton of Cement
Scope-1	13482	11.1	15.7	20.4
Scope-2	24203	23.3	24.3	26.6
Scope-3	11307	11.2	12.4	15.0



Improvement of Clinker Factor:

- ***To improve Clinker factor We are using Grinding aid (SIMCO-G-5411) IN PSC PRODUCT and reduced clinker consumption by 3%.***
- ***We have improved Green product share by 29.4% to improve Clinker factor.***

Awareness to the Transporters:

- Prohibited to use of Transport vehicles older than 15 years.
- Insisting on pollution certificates of the vehicles, practicing random checking of them.
- Not allowing loads higher than the design / permitted capacity.

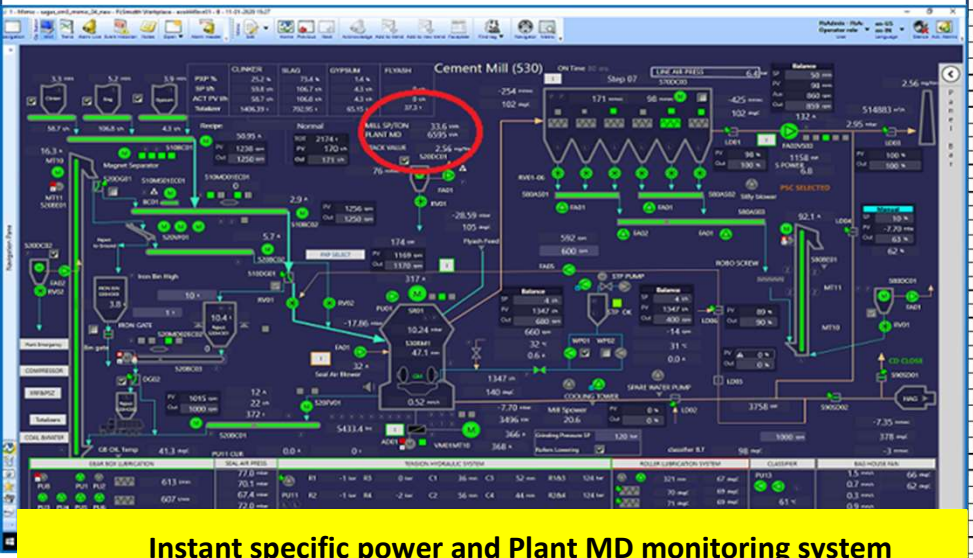
Product Sales Distance in Percentage	
Distance (KM)	2023-24
0-50	40
51-100	31
101-200	21
>200	8

Name of raw material	UOM	2023-24
Total cement production	MT	9,90,242
Slag consumption	MT	337820.86
Fly ash	MT	80002.92
Phosphor	MT	15687.82
Total Byproduct material	MT	433511.63
43.78 % raw materials are By-products/waste of other industries	%	**43.78%**

8. EMS System and other requirements

Existing Energy parameters monitoring system

Plant is having 61 Nos networked digital energy meters connected to plant DCS. All major and more than 5% energy intesive equipments have meters and connected to DCS .Day wise & Product wise Electrical, Thermal energy report is generated in the system automatically.



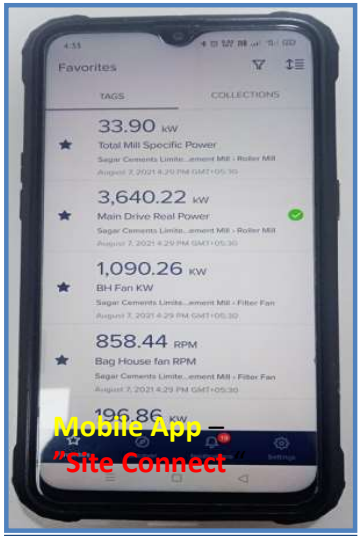
Instant specific power and Plant MD monitoring system displayed in operator screen

SAGAR CEMENTS LTD ,BAYYAVARAM

Power Consumption Report on 07-05-22

Sl.No		Consumption				
	BEDL (KVAH)	1,39,800	Day P.F	0.987	GRID CUM. KVAH	6,97,800
	BEDL (KWH)	1,39,000	Solar	436	GRID CUM. KWH	6,90,200
					1+WHR DG Total Cons. (KWH)	0 1,38,436
1	VRM Section	R.Hrs	PRO (Dry)	Units / Day	KWH	(Kwh/Ton)
	New VRM- PSC Units					
1	Main Drive (4300KW)	8.38	1354	31303	3885	23.13
2	Bag House Fan (1700KW)			9966	1126	7.36
4	Classifier (560KW)			1490	186	1.10
5	VRM Auxiliaries (MCC-2)			1192	149	0.88
6	Fly Ash & Bag House (MCC-3)	TPH-wet	171	969	121	0.72
7	Materail Transportation (MCC-1)	TPH-Dry	162	1050	113	0.78
8	Compressors- PDB	BH Fan rpm	887	630	124	0.47
	Total Units	Classifier RPM	1140	46600	5705	34.43
	New VRM- OPC Units					
1	Main Drive (4300KW)	5.52	1024	18089	[illegible]	17.66
2	Bag House Fan (1700KW)			7128	[illegible]	6.96
4	Classifier (560KW)			510	[illegible]	0.50
5	VRM Auxiliaries (MCC-2)			921	154	0.90
6	Fly Ash & Bag House (MCC-3)	TPH-wet	186	611	100	0.60
7	Materail Transportation (MCC-1)	TPH-Dry	186	757	103	0.74
8	Compressors- PDB	BH Fan rpm	904	583	135	0.57
	Total Units	Classifier RPM	825	[illegible]	5184	27.93
	New VRM- GGBS Units					
1	Main Drive (4300KW)	7.44	1178	29512	3963	25.06
2	Bag House Fan (1700KW)			8025	972	6.81
4	Classifier (560KW)			1326	173	1.13
5	VRM Auxiliaries (MCC-2)			1065	139	0.90
6	Fly Ash & Bag House (MCC-3)	TPH-wet	172	1153	151	0.98
7	Materail Transportation (MCC-1)	TPH-Dry	158	770	91	0.65
8	Compressors- PDB	BH Fan rpm	850	598	136	0.51
	Total Units	Classifier RPM	1116	42450	5747	36.05
	New VRM- PPC Units					
1	Main Drive (4300KW)	1.27	241.40	3697	2900	15.32
2	Bag House Fan (1700KW)			1585	1170	6.56
4	Classifier (560KW)			110	110	0.46
5	VRM Auxiliaries (MCC-2)			143	143	0.59
6	Fly Ash & Bag House (MCC-3)	TPH-wet	192	166	166	0.69
7	Materail Transportation (MCC-1)	TPH-Dry	190	169	155	0.70
8	Compressors- PDB	BH Fan rpm	890	102	159	0.42
	Total Units	Classifier RPM	959	5973	4803	24.74
	New VRM- PPC Units					
1	Main Drive (4300KW)	1.39	258	4723	3398	18.31
2	Bag House Fan (1700KW)			1835	1320	7.11
4	Classifier (560KW)			125	90	0.48
5	VRM Auxiliaries (MCC-2)			144	104	0.56
6	Fly Ash & Bag House (MCC-3)	TPH-wet	186	192	138	0.74
7	Materail Transportation (MCC-1)	TPH-Dry	186	65	47	0.25
8	Compressors- PDB	BH Fan rpm	890	149	107	0.58
	Total Units	Classifier RPM	#DIV/0!	7234	5204	28.04
1	Packing Plant	P.R.Hrs	Dispatch	Units / Day	TPH	(Kwh / Ton.)
2	MCC - 4 (Common Ckt)	7.03	342	601		
3	MCC - 5 (Packer- 1-OPC)	8.60	1131	363		
4	MCC – 6 (Packer- 2-PSC)	10.67	785	754		0.85
5	Old Packing Plant		369	476		
6	Compressors			420		
	Total Packing Plant		3064	2614		
	Total Compressor(Mill+RM)			2064		0.51
1	Staff Colony	PXP	CV	391	CM-3 R.HRS	24.00
2	Distribution Losses	0.6	4600	1267	CLINKER R.HRS	9.43
3	Misc(3,4th Flr AC+ wdg works+stp+wo	Restarting purpose coal -kg	12000	3307	SLAG R.HRS	11.23
		OPC	PPC	CC	PSC	GGBS
4	water consumption-Lt/Ton	22.2	24.6	8.6	0.0	0
5	coal consumption-kg/Ton	6.07	5.90	8.21	12.60	18.29
6	90KW 1+90KW 2+55KW+30KW+15KW	11.41	12.62	3.20	0.00	0.00

Daily Power Consumption Report



Mobile App – "Site Connect"

Energy Meters with real time communication to DCS.

8. EMS System and other requirements


DNV

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 10000333309-MSC-RvA-IND | Initial certification date: 02 January 2020 | Valid: 02 January 2023 – 01 January 2026

This is to certify that the management system of

Sagar Cements Limited

Bayyavaram (Village), Kasimkota (Mandal), Anakapalli, Visakhapatnam - 531031, Andhra Pradesh, India

has been found to conform to the Energy Management System standard:
ISO 50001:2018

This certificate is valid for the following scope:
Manufacture of cement

Place and date: Barendrecht, 11 November 2022

For the issuing office: DNV - Business Assurance, Zwolseweg 1, 2994 LB Barendrecht, Netherlands

Eric Koek
Management Representative

ISO 50001:2018 Certification

0.1% **investment of energy saving projects on total turnover of the company**

First Attempt
GreenCo-PLATINUM

- ✓ ISO 9001 :2015 – Quality Management Systems
- ✓ ISO 14001:2015 – Environmental Management Systems
- ✓ ISO 45001:2018 – Occupational Health & Safety Management Systems

✓ "Testing Laboratory" got "NABL accreditation" in 2019 As per ISO/IEC 17025:2017

Sl. No.	Description of meeting	Headed by	Frequency
1	Production & Performance review meeting	Plant Head	Daily
2	High Power committee meeting	Joint Managing Director / Group President	Monthly on 5th
3	Energy Review meetings	Plant Head	Quarterly

Energy Efficiency / awareness training programme

- Energy Awareness week celebrations by conducting various competitions among the employees.
- Suggestion,kaizen scheme.
- Capacity building by internal and external trainings.
- Visiting other units for sharing and gaining good practices.

8. EMS System and other requirements

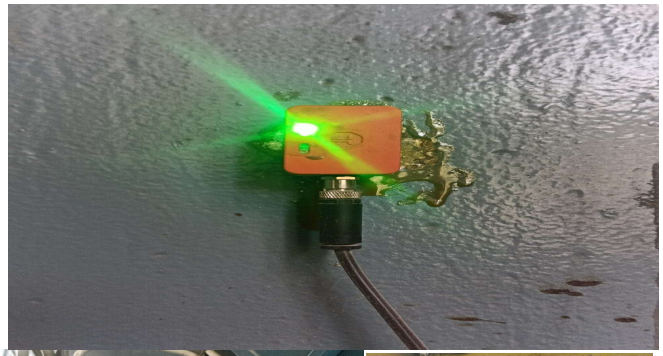
Learning from CII or any other award programs

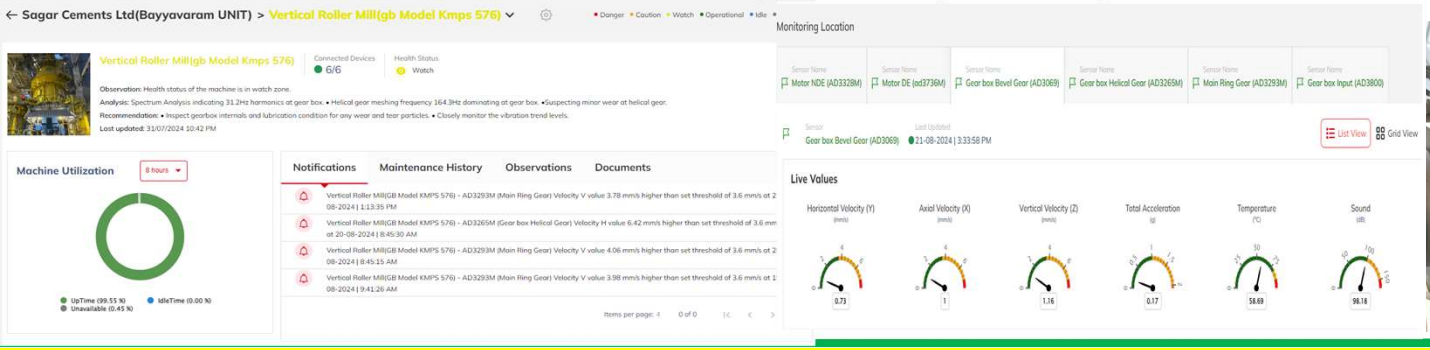
The Confederation of Indian Industry (CII) is working to facilitate Industries to Achieve World Class Levels In Energy Efficiency.
In the journey of Excellence we found CII as most enduring companion.
Various Energy saving projects implemented in our plant are replicated from Knowledge sharing programs and events by CII.
Some of these projects are as follows:

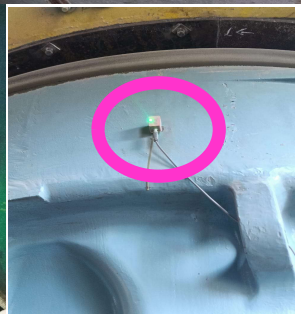
- Installation of Intelligent flow controller for Air compressor system for optimization.
- Installation of LP Compressor for Fly ash unloading system.

Monitoring of Equipment Healthiness-Installation of Intelligible Vibration, Speed & Temperature Sensor on VRM Gear Box

- Installed 6No's of Intelligible sensor, on VRM Gearbox for monitoring of vib
- ration, speed and temperature.
- Mounting Position : 1.Gear box bevel Gear. 4. Motor NDE
  2. Gear Box Helical Gear, 5. Motor DE
  3. main Ring Gear, 6. Gear Box Input
- By installing these sensor, the condition of Gear box is been monitored online for Vibration, speed and temperature through WIFI device.
- Alert notification is been sent to the maintenance team, in case of any abnormality.







9.NET Zero commitment

Targets

Net Zero
BY 2050

ALIGNED WITH
SBTi
1.5°-SCENARIO
BY 2030

INITIATE
CCS/ CCU
TO ACHIEVE NET ZERO EMISSIONS BY 2050

SCOPE 1 EMISSIONS TO BE REDUCED TO
495 Kg
Net CO_2/MT
BY 2030

SCOPE 2 EMISSIONS TO BE REDUCED TO
8 Kg
Net CO_2/MT
BY 2030

SCOPE 3 EMISSIONS TO BE REDUCED TO
15.50 Kg
Net CO_2/MT
BY 2030

Sagar Cements Limited (SGC) is dedicated to its ESG vision 2030, with a focus on achieving a positive transformation in its environmental, social, and governance practices. A robust ESG performance has become integral to SGC's strategic framework, emphasizing its commitment to adhering to a responsible and forward-thinking business approach

Roadmap for 30% reduction by 2030 and finally becoming Net Zero by year 2050

- Increased use of de-carbonated raw materials.
- Increased thermal efficiency and reduction of specific thermal consumption.
- Increased use of Alternate fuels for pyro process and drying.
- Reduction of clinker ratio in the cement.
- Increased electrical efficiency and reduction in specific electricity consumption.
- Increased ratio of Green Energy & Use of EV, Fuel cell, hybrid vehicles for material transport.

ESG Planning Activities

- Documentation for implementing ISO 26000 is completed and ready for deployment.
- Submitted commitment to SBTi to reduce CO2 emissions in line with SBTi targets of 1.5deg C. CDP (Carbon Disclosure Project)
- ESG VISION statement is developed.
- Entered agreement with M/s UNIQUS for ESG Framework development and prepare for the rating system

Public Discloser of GHG Emissions in IR Report

Plant Certification & Awards

Any other awards, acknowledgement ,Major Achievements from CII

NATIONAL ENERGY LEADER -2022

National Energy Conservation Award conducted by B.E.E
Second Place in Cement Sector-2021
Received From : Shri R.K.Singh,Hon'ble Union Minister of Power & Renewable Energy, Govt.of.India

ENERGY EFFICIENT UNIT -2023

Star Performance award received from CII on Green Co Summit

Excellent Energy Efficient Unit-2022

Excellent Energy Efficient Unit-2021

Excellent Energy Efficient Unit-2020

Excellent Energy Efficient Unit-2023

Plant Certification & Awards

Energy Excellence award Green Cementech QCFI Conclave

CII Industrial Safety Excellence-2024

CCQC-2022 - Gold award for Case study

CCQC-2023 - Gold award for Case study

CCQC-2021 - Gold award for Case study

Got Gold award Kaizen convention -2022

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Thank You