JK Cement Works Jharli

CII – 23rd National Award for Excellence in Energy Management 2022

Guided by –

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Team Member –

Mr. Rajeev Agarwal (Head – E&I)
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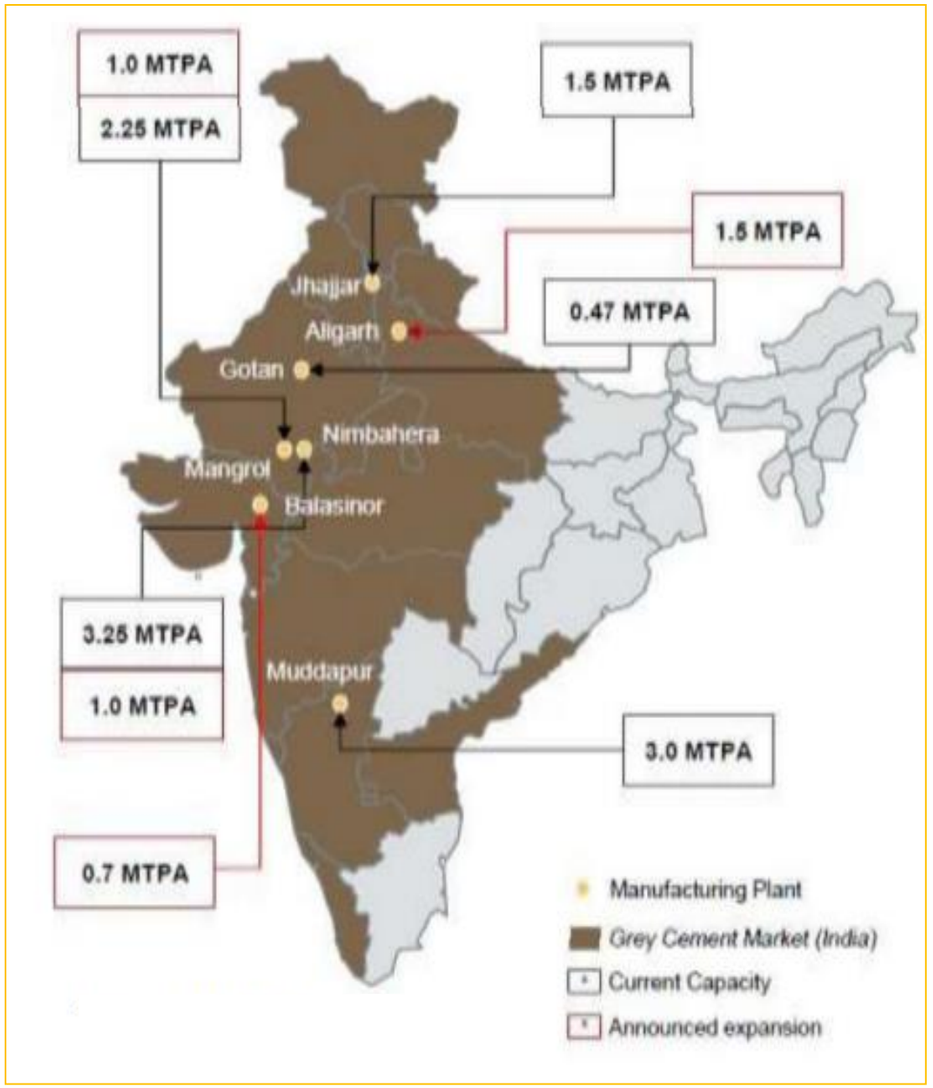
Mr. Lokesh Pancholi (Energy Manager)

About JK Cement Ltd.



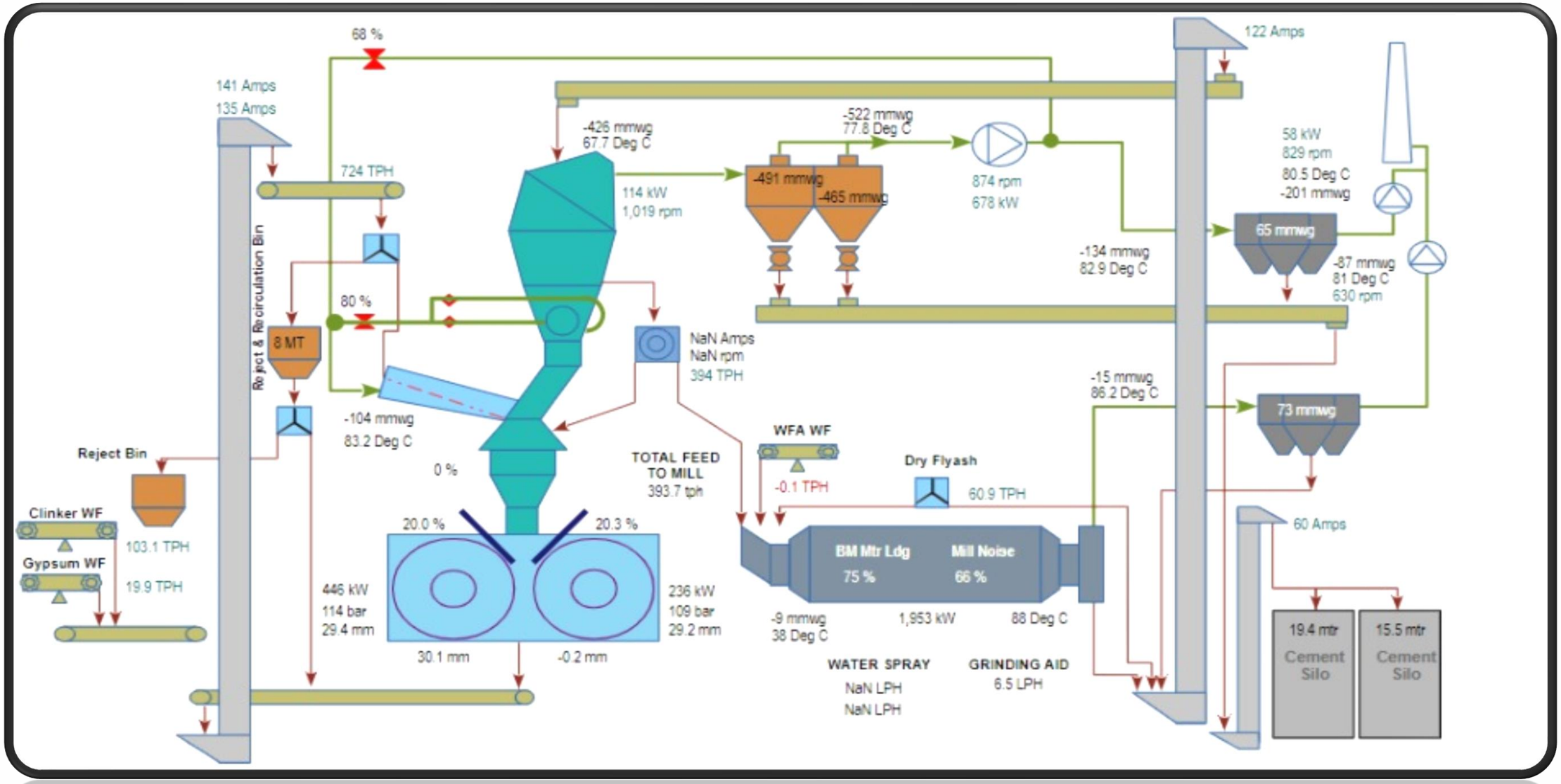
J.K. Cement Ltd. is a part of Industrial conglomerate JK Organization. The Company is promoted by Late Mr. Yadupati Singhania . The group entered the cement manufacturing business in 1975.

Grey cement capacity of 16.0 MTPA & White cement capacity of 1.2 MTPA, with expansion 20.0MTPA by end of FY-23.

JK Cement Jharli having Designed Capacity of 1.5 MTPA Cement Grinding with major section Grinding, Packing and Wagon Tippler. Solar Plant 300 KWp.

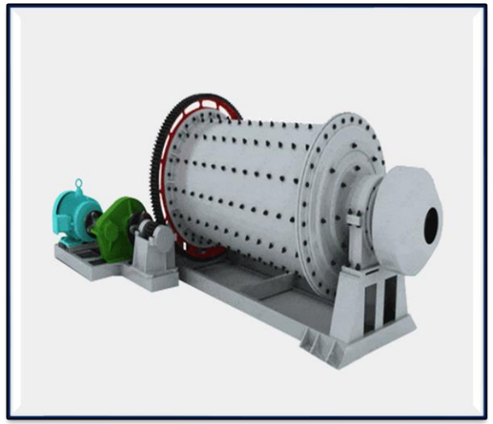
J K Cement Jharli is certified with ISO 14001, ISO 9001, ISO 45001 & ISO 50001:2018. GreenCO Gold rated Plant, Great Place to work certified company.

Process Flow



Major Equipment Specification

Cement Mill



- Type: RP+BM Combo
- Make: ThyssenKrupp Industries India
- Capacity: 240 TPH PPC @3800 Blaine
- Polycom size: D-2050/ L-1300
- Ball mill size: 4.4 m*11.0m
- Separator size: SEPOL PC 32/27-410
- Design power: 28 Kwh/Ton

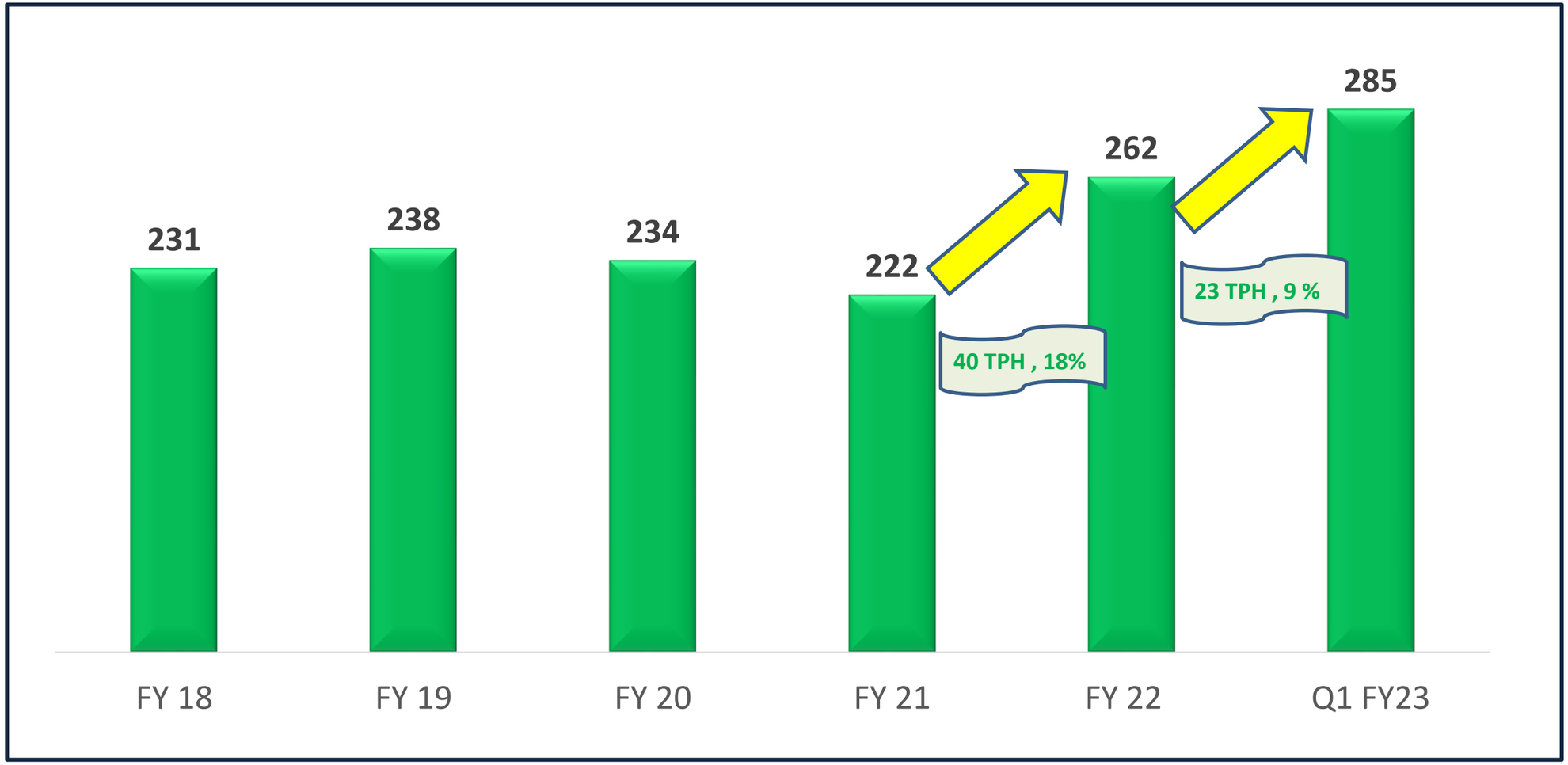
Packing Plant

- 4 Nos. FLS Gen Ventosem 8 Rotary Packer
- 8 Spout Single Discharge
- Capacity: 120 TPH
- 4 Nos. FLS TLM:1016J Manual Loader
- 1 No. FLS CDA-1020 Hanging Loader
- 1 No. Beumer Autopac Loader

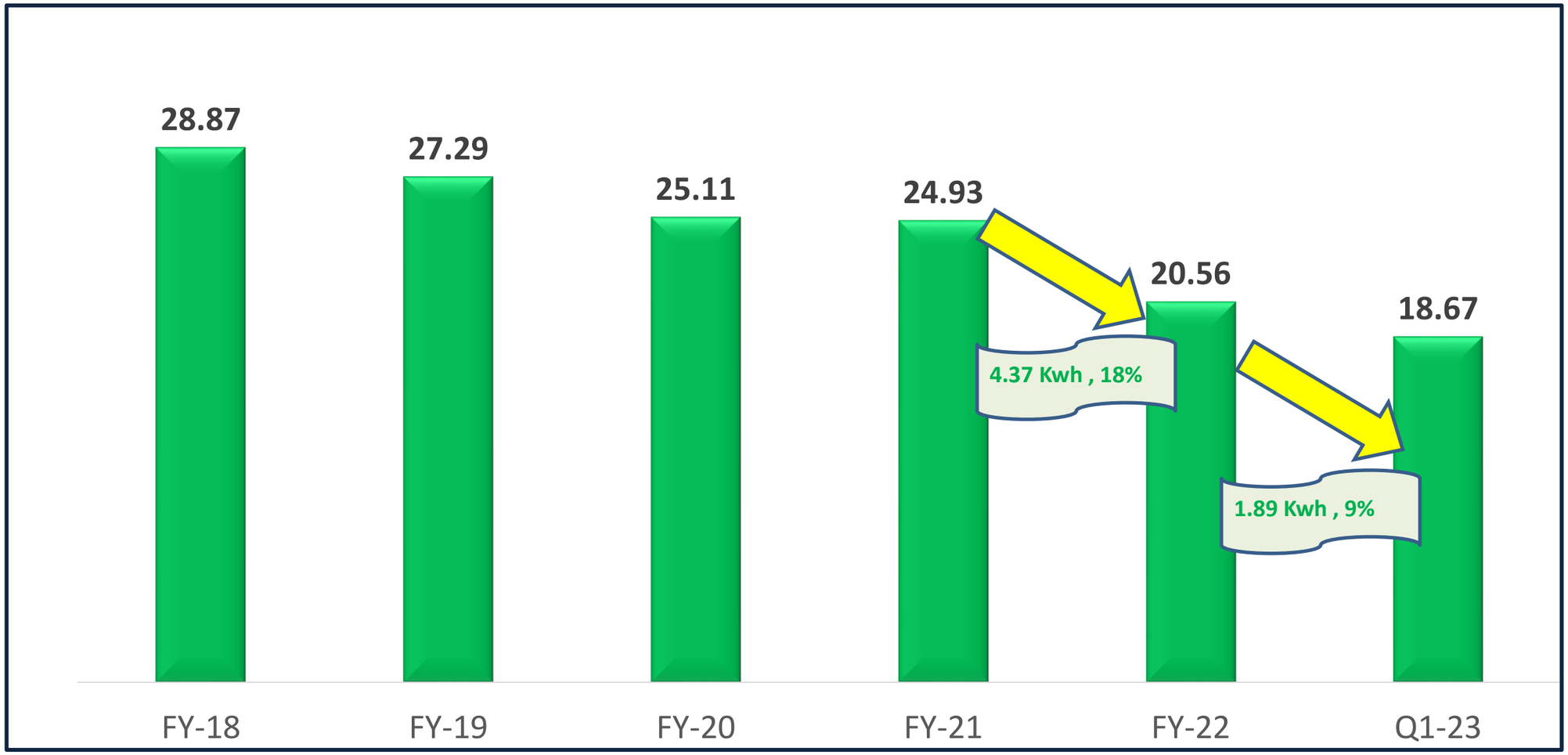
Solar Plant

- 300 KWp Ground Mounted Solar Plant
- Total Area 4650 m2

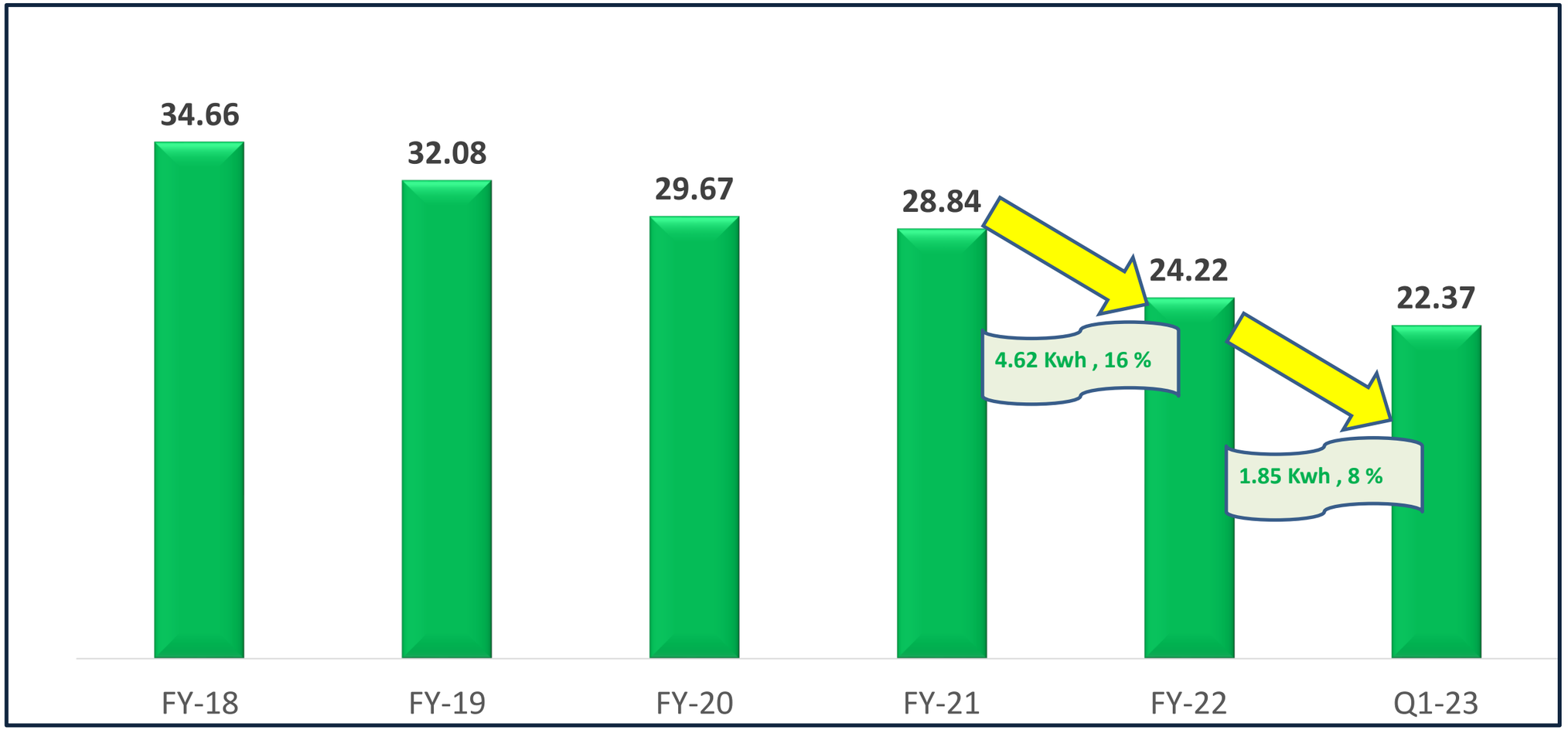
Throughput Journey TPH



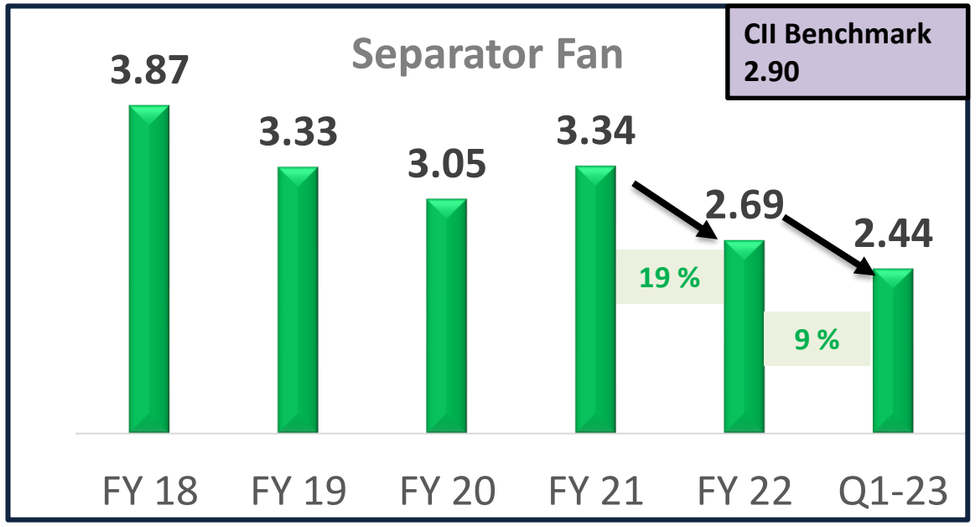
Grinding Power (KWH/T)

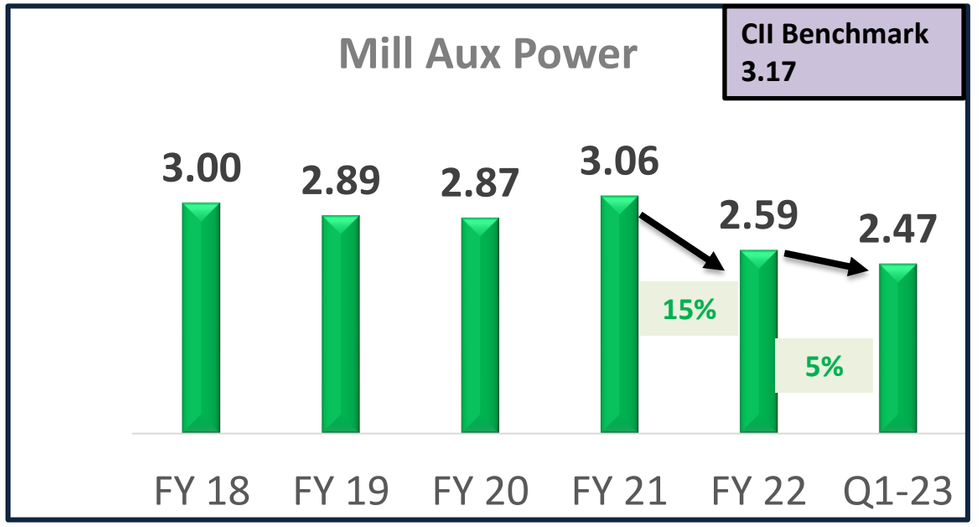


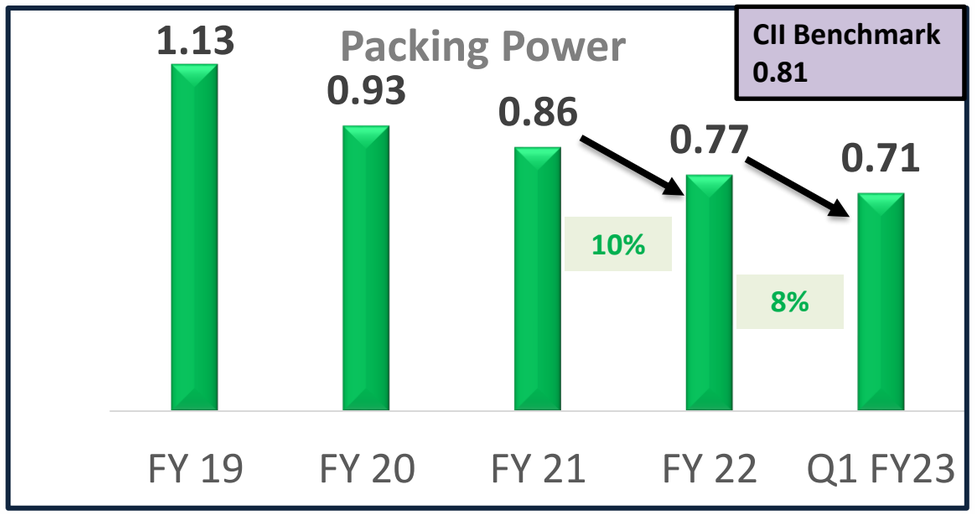
Total Plant Power (KWH/T)

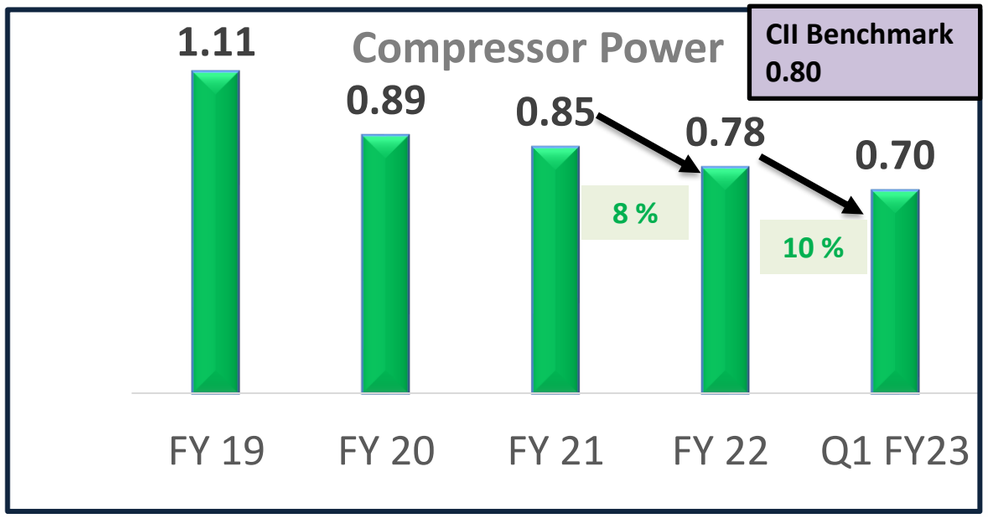


Equipment Wise Power (KWH/T)

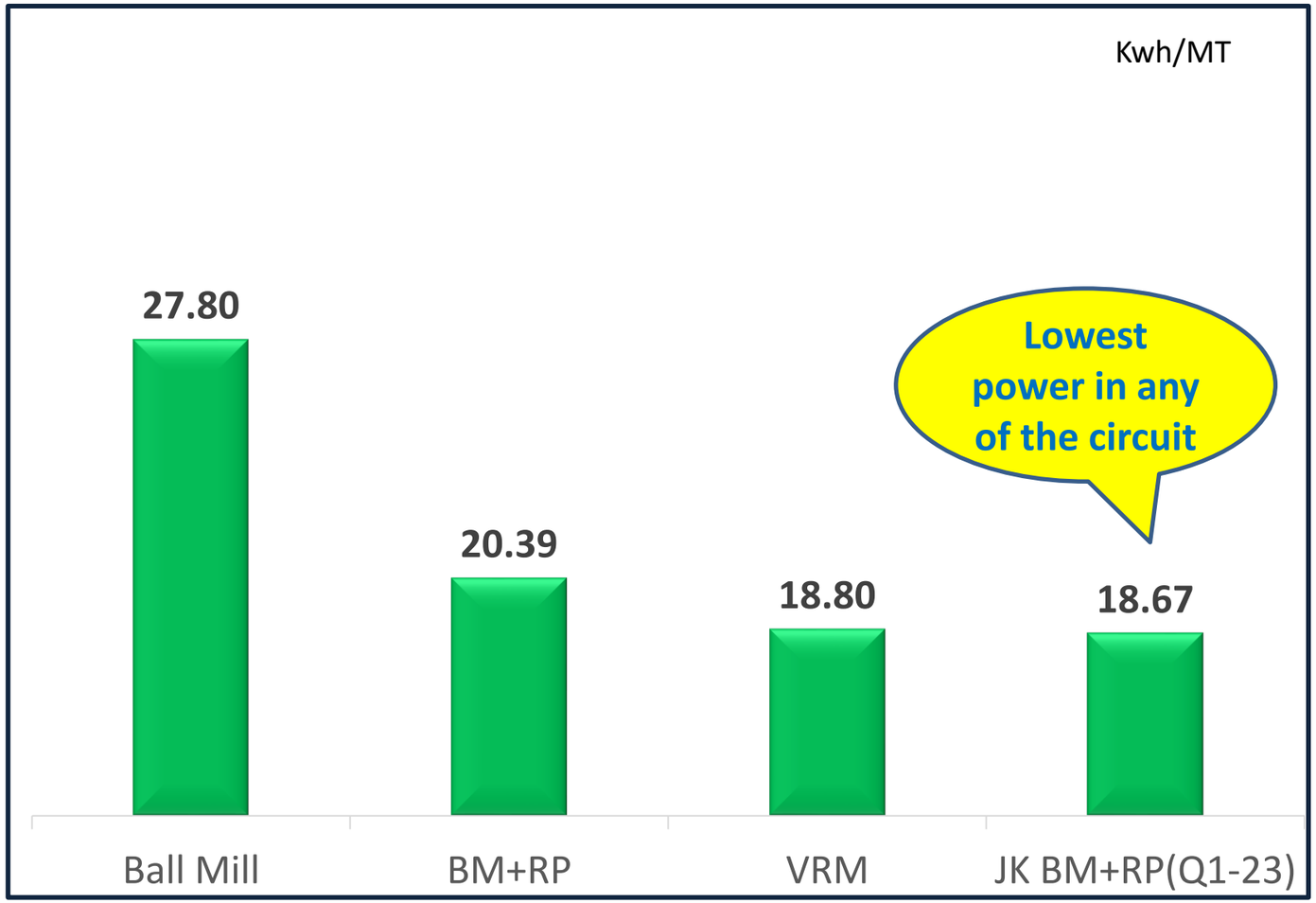








Benchmark Vs JK Cement Jharli

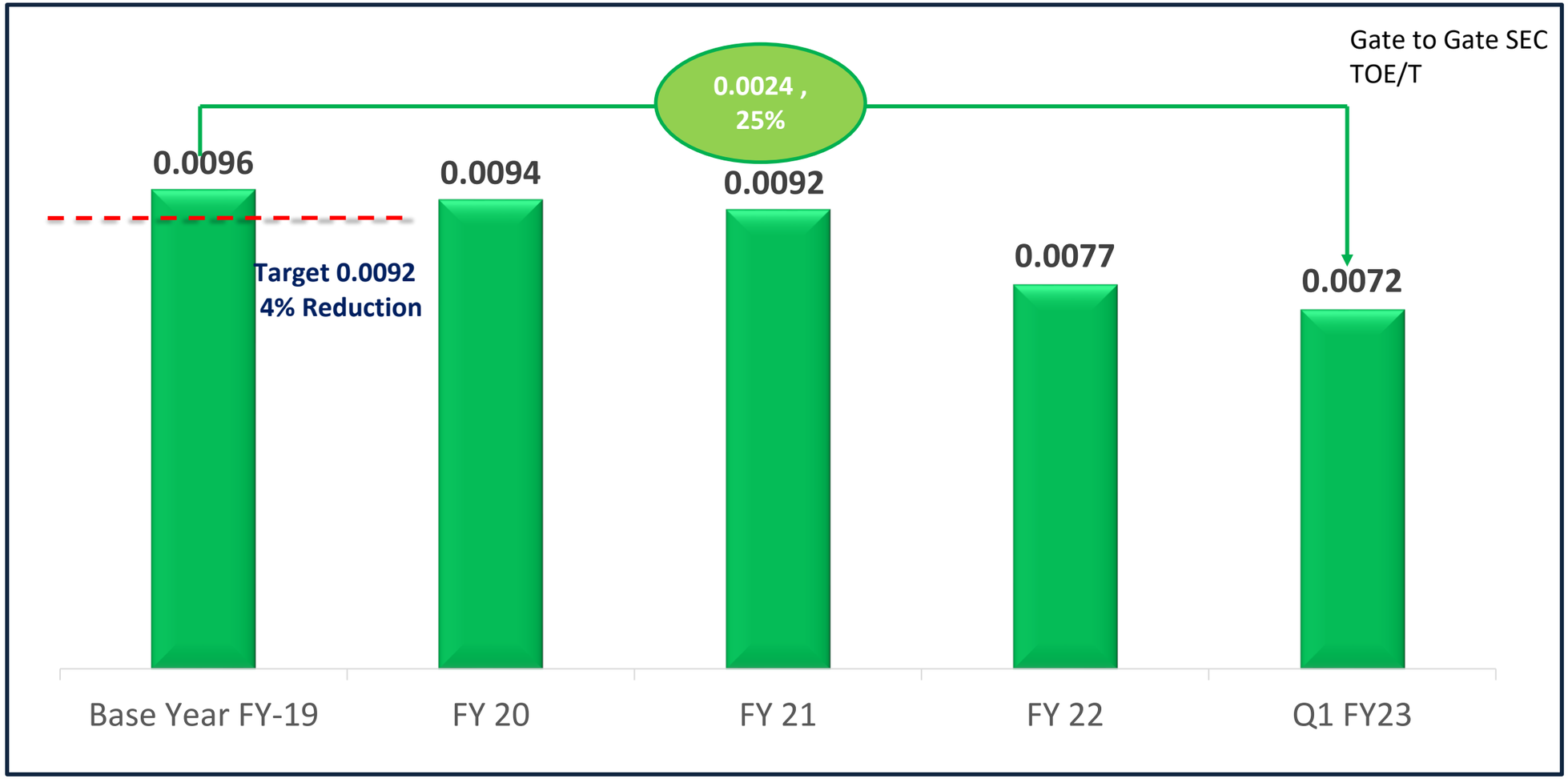


As per Energy bench mark by CII Version -5 published in May-2021

With BM+ RP combo we are getting lowest power in Q1-23 which is 18.67 Kwh/MT

We are best in combo circuit, also surpassed best power of VRM.

PAT Cycle VI Progress



Road Map to Achieve Benchmark

Indicators	FY-22	Target FY-23
Throughput	262 TPH	285 TPH
SEC-Grinding	20.56	18.50
SEC Total	24.22	22.00

Innovative Project-
- Cost Reduction
- MTBF Improvement

Kaizen-
- Improvement
- Motivation

Technology Upgradation - Plant Improvement Sustainability

Internal Benchmark-
- Goal Setting
- KPI

Brainstorming-
- Involvement
- Development

Major Encon Project planned for FY-23

Sr. No.	Project Description	Investment (Rs. In Lakh)	Estimated Energy Saving (MWH)	Estimated Saving (INR Lakh)
1.	Installation of 2MWp Solar Power plant	700	2775	87.41
2.	Reduce pressure drop across cement mill circuit (CFD study and modification of duct) potential 30-40 mmWc. Reduce the gap between vanes and casing in RAL.	10	317	23.3
3.	Replacement of plant water pumps with high efficient pumps	4.2	60	4.41
4.	Reduce Process Fluctuations Across The Plant by PID Loop Optimization	6	160	11.70
5.	Install Level Based Auto Drain Valves For Compressed Air Receiver Drain	1	5	0.37
6.	Replacement of Old AC by BLDC AC.	10	22.5	1.63

Last 3 Year Major Encon Project (2019-2022)

Year	Nos. of energy saving Project	Investment (INR Million)	Electrical Saving (Million KWH)	Saving (INR Million)	Impact on SEC (KWH/T Cement)
2019-2020	4	1.67	0.59	2.72	0.26
2020-2021	8	13.2	2.67	18.74	1.78
2021-2022	12	41.6	4.57	34.01	3.67

Last 3 Year Encon Project (2019-2022)

S. No.	Description	Saving Achieved	
		Kwh	Rs in Lacs
1	Reduction in plant Power consumption by the modification and process optimization (Mill Shell Liner Change, Roller replacement and Grinding Media pattern Change, Separator drive optimization)	4500000	330.30
2	Through Put of cement grinding increased from 220 TPH to 240 TPH and total Energy Saving achieved 1.68 unit per ton of material	2016000	131.04
3	Optimize the specific gas volume of Separator fan from the existing level of 1.29 nm3/kg of cement to 1.1 nm3/kg of cement	858000	60.06
4	Clinker through Wagon Tippler in place of Truck Tippler 1 kwh per ton for total received clinker	780000	50.70
5	Remove damper for separator fan to reduce pressure loss across fan damper	211200	14.93
6	Installation of cement Mill bag House Vent Fan VFD Power Saving (110 KW)	150000	9.75
7	Stopped 4 nos Bag Filter Fans and Extra Loading to Existing Bag Houses	125000	8.13
8	Installation of Wagon tippler bag House Vent Fan VFD Power Saving (315 KW)	97500	6.34
9	Eazy clean blower is installed for body cleaning in between loading point 1,2,3 &4	85410	0.85
10	Installation of VFD for bag Filter Fan FN337 for Power Saving (37 KW)	70000	4.55
11	Installation of VFD for bag Filter Fan 624FN112 for Power Saving	70000	4.55
12	Installation of VFD for bag Filter Fan 621FN112 for Power Saving	65000	4.23
13	Installation of VFD for bag Filter Fan 622FN112 for Power Saving	60000	3.90
14	Bag rejecter removed from packer no 1,2,3 &4	59860	0.60

Last 3 Year Encon Project (2019-2022)

S. No.	Description	Saving Achieved	
		Kwh	Rs in Lacs
15	Water cooled blower in cement silo 1 & 2 replaced with Air cooled blower	58400	0.58
16	Installation of VFD in packer-2 bag filter fan motor of 75KW for power saving.	57600	4.22
17	PLC PID Modification and Stoppage of Idle running of (5.5x 2) KW Silo ventilation Fan	50000	3.25
18	PID Modification of HT Motors Cooling Blowers (5.5 x2) KW for Power Saving	50000	3.25
19	Common Use of Aeration Blower for all Packing Plant Bin , and Saved Idle Running of Pressure Blower 7.5 KW rating	50000	3.25
20	Fan FN121 used to fluidize the air slide of packer no-1has been stop	43800	0.44
21	Installation of Timers , Indoor Lightings On/Off arrangement , Led Lights , Occupancy Sensors.	43200	2.81
22	Installed VFD for Step Angle Conveyor Power Saving (160 KW)	39000	2.53
23	Optimization of voltage in distribution Transformer to 418-420V from 427-430V to reduce losses.	33120	2.43
24	Installation of VFD for P&V system (22 KW)	31104	0.31
25	Installation of 4 nos. 1.5T, 800W BLDC split AC for power saving.	27000	1.98
26	Installation of VFD for bag Filter Fan 521FN347 for Power Saving (22 KW)	26477	0.26
27	Eazy clean blower installed for body cleaning in between loader no 5 & 6.	26280	0.26
28	Reduction in generation pressure of the compressors (Load / unload pressure setting from 6.0 to 5.5 Bar)	25920	1.90

Last 3 Year Encon Project (2019-2022)

S. No.	Description	Saving Achieved	
		Kwh	Rs in Lacs
29	Installation of Nibs Trab Blower variable Drive (11 KW)	25000	1.63
30	Installation of VFD for bag Filter Fan 521FN342 for Power Saving (22 KW)	24112	0.24
31	Load Redistribution and Switching off Transformer (TR-5)	24000	1.70
32	Load Redistribution and Switching off Transformer (TR-3)	24000	1.70
33	Installation of VFD for the bag filter fan 521FN347	22020	1.56
34	Minimize compressed air leakage in the packing plant by conducting air audit.	21600	1.59
35	Improve the Power Factor of PMCC-5	20151	1.42
36	P&V system provided in Compressor house to maintain compressor room temperature and increase efficiency of compressor.	17640	1.29
37	Reduction in Idle running by providing Interlock in auxiliary equipment operation in packing plant with packer operations	11520	0.85
38	Voltage Optimization for Bag Filter Fan 623FN112	11314	0.80
39	BAG HOUSE VFD RPM reduction Interlock and Idle Running Saved (estimated)	3250	0.21
40	Tran vector nozzle (Air pressure gun) provided in each air line at packer floor for cleaning application. It works on venturi principle and suck atmospheric air with compressed air. Thus reduce compressed air usage by 40-50%.	1800	0.13
41	Installation of AC Energy saver in split AC	829	0.06
42	Modification of TPS from diesel engine to electric motor	NA	16.00

Strategic Project

Reduction in Clinker factor

Objective:

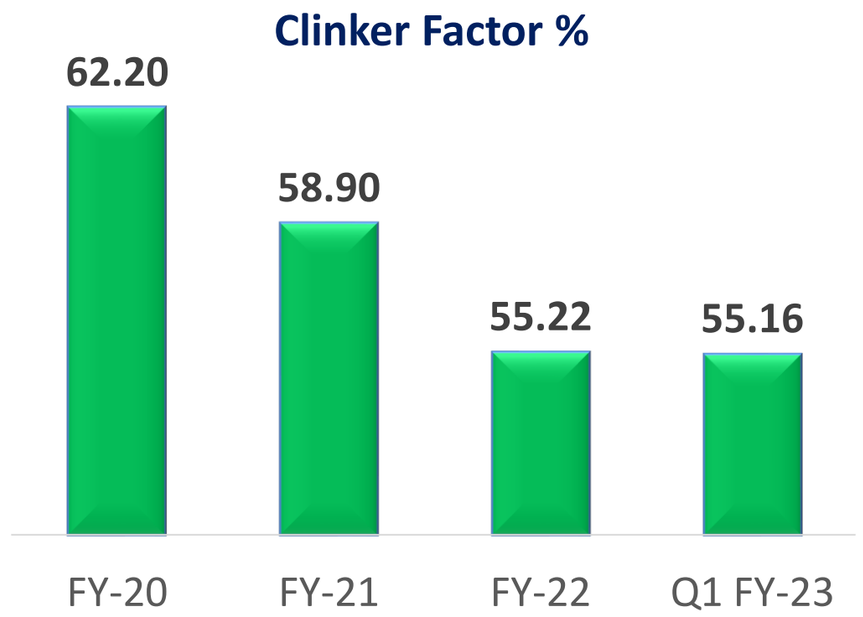
To achieve Clinker Factor @ 55%

Methodology used:

We have done various trails in phase manner for a long period of time which includes –

- Optimization in residue and blain as per requirement.
- Increase Anhydride Gypsum by adding Mould Gypsum.
- Blending of different grinding aids.
- Use of Grinding Aid Endura SAK0026 with inter blending of grinding Aid.
- Consistent Clinker quality from mother plant (min 30 Mpa).
- Improvement in Particle Size Distribution.

Result:



Innovative Project

Use of BLDC Air Conditioner

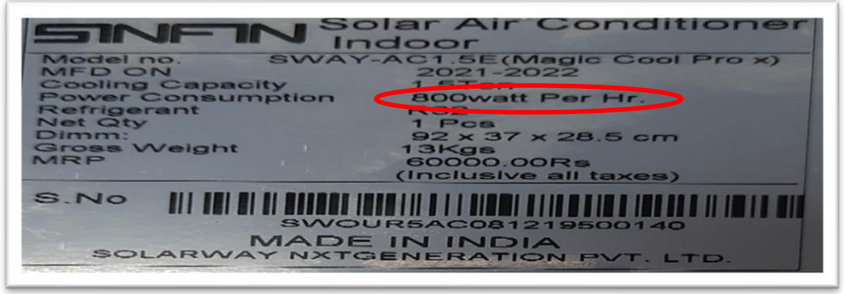
Technology Innovation:

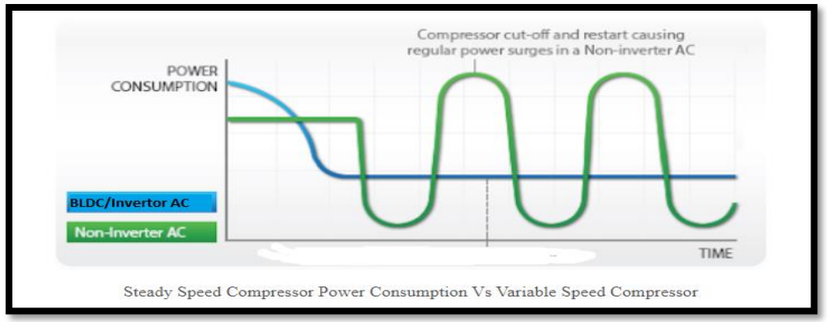
The BLDC AC consumes 800 watt Per Hrs (20 Kwh Per Day) against the conventional 1730 watt Per Hour with Saving of 15 Kwh Per Day

Payback is 14 Months (@ Power Cost of Rs 7.25 / Kwh)

Specification and Comparison

Sr. No.	Specification	Conventional AC	Invertor AC	BLDC / Solar AC
1	Capacity (Ton)	1.5	1.5	1.5
2	Max Cooling Capacity (BTU)	17500	18000	17000
3	Rated Current (Max in A)	8.2 A	6.5 A	5.5 A
4	Voltage Range (V)	230	220-240	190-250
5	Max Power Consumption (W)	1730	1290	800
6	Starting Load (W)	3500	1500	1000
7	Noise Level (db)	72	54	33
8	Supply Source required	20A	16A	6A
9	Warranty (In year)	3	10	10
10	Compressor Motor	Conventional	Variable Speed	Variable Speed with BLDC motor





Steady Speed Compressor Power Consumption Vs Variable Speed Compressor

Innovative Project

Modification of Diesel TPS Machine to Electric Motor driven Machine

Objective:

To reduce Diesel consumption under green initiative project.

Methodology used:

In-house Modification of TPS machine: Replacing Diesel Engine by 45 KW motor with required modification in base frame and provided a electric starter circuit with in house available spares. Following tools used -

- Brainstorming
- Inter Team coordination
- Kizen

Annual Saving of 24 KL Diesel
Monitory Saving Rs. 16 Lakh
Co2 Reduction 63.36 MT.

Strategic Project

Reduction in Ball Mill Power Consumption

Objective:

To reduce Ball Mill Power consumption.

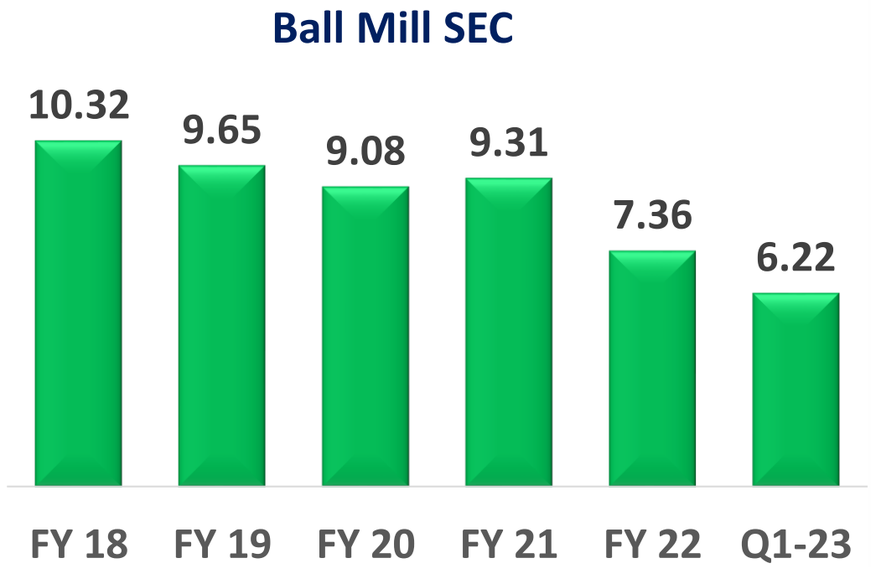
Methodology used: Grinding Media pattern optimization.

After succession of ball mill shell liner replacement by special T-shaped thin classifier liners we found opportunity to optimize Grinding Media.

- It reduce liner weight by 6%.
- Mill effective Diameter increased by 100mm.
- Increase in grinding efficiency.

We have done continuous trail with various combination of media pattern and able to reduce the Grinding media weight from 130 MT to 115 MT.

Result:



Annual Saving of 0.53 KWH/T
Monitory Saving Rs. 0.55 Cr.

Strategic Project

Reduction in RP Power Consumption

Objective:

To reduce Roller Press Power consumption.

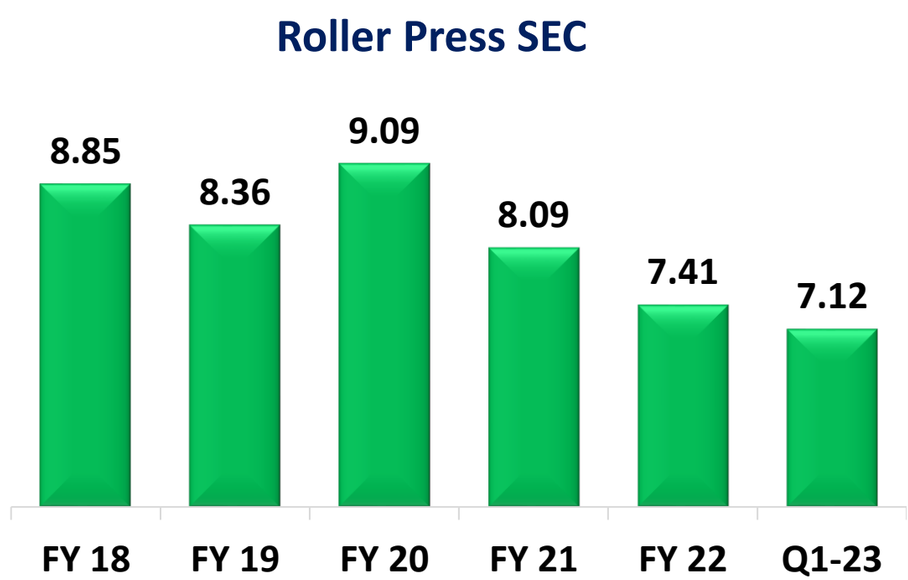
Methodology used: Roller replacement and roller gap optimization.

- Replacement of Bainite Rollers by Compound cast Rollers which has low wearing pattern.
- Continue monitoring the gap and roller profiling as per roller wearing pattern to maintain working gap.

Benefits:

- Low wear tear helped in maintaining constant gap between rollers.
- Reduction in recirculation load.
- Reduction in separator RPM.
- Increase in Throughput and reduction in Specific Power.

Result:



Annual Saving of 0.68 KWH/T
Monitory Saving Rs. 0.71 Cr.

Utilization of Renewable Energy

Year	Technology (electrical)	Generation (million kWh)	% of overall electrical energy
FY-20	Ground Mounted (PV Cell)	0.385	0.88%
FY-21		0.383	1.06%
FY-22		0.399	1.09%

Year	Power Consumption (Lacs KWH)	R.P.O (Lacs KWH)		Solar Generation (Lacs Kwh)	No of R.E.C (in Lacs)	
		Non solar	Solar		Non solar	Solar
FY-20	114.52	3.3	6.2	3.9	3.4	2.4
FY-21	181.16	5.4	12.7	3.8	5.4	8.8
FY-22	33.87	1.01	2.71	3.9	1.02	-1.3

Yearly RPO %

- Non Solar - 3% /3%/3%
- Solar - 5.5% / 7%/8%

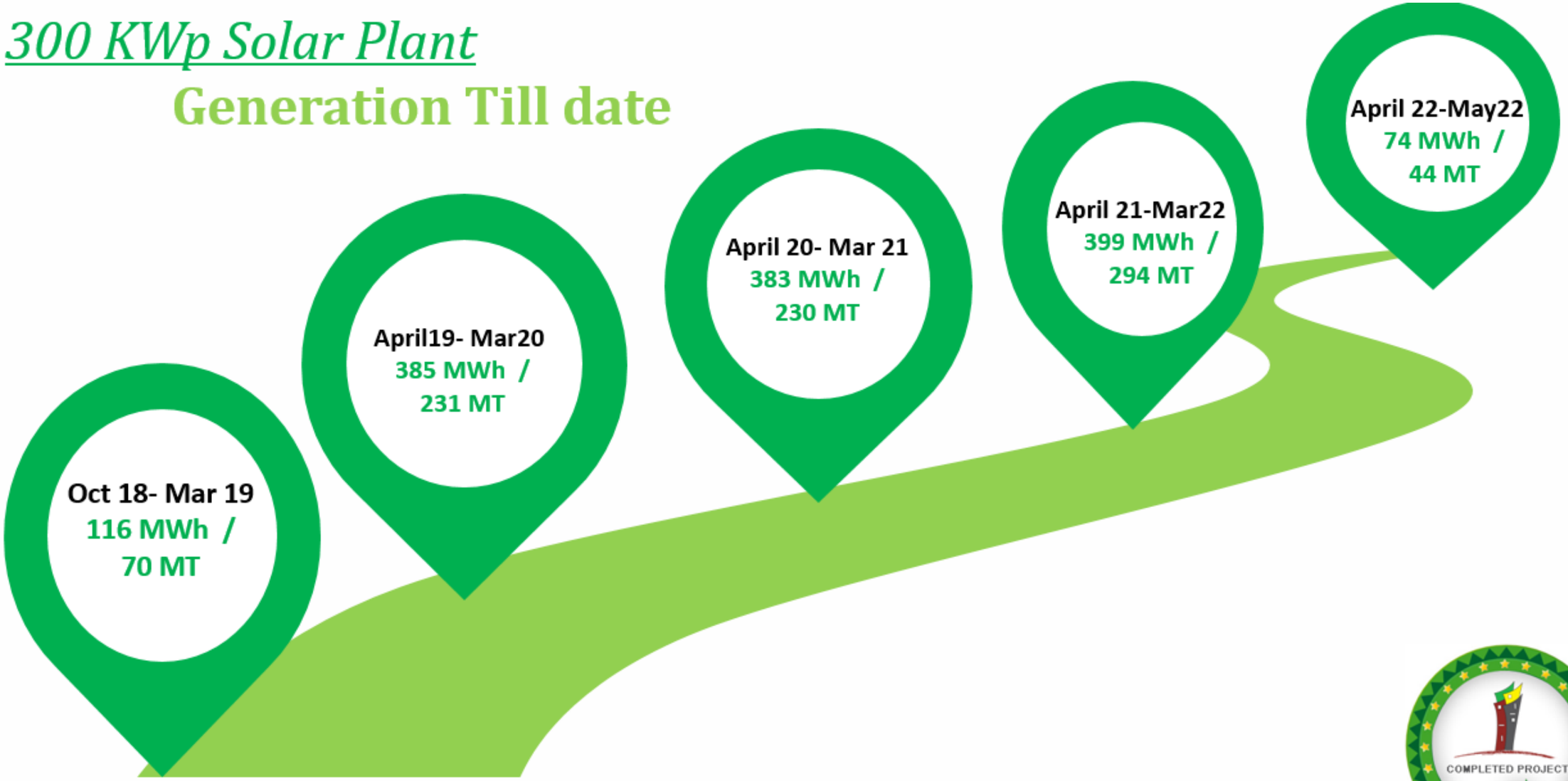
Installed Capacity of Solar 0.300 MWp (Ground Mounted PV Cell).
Investment: Rs. 14.2 Million
Total Area covered : 4650 m2.
Solar power generation start date: Oct'2018

Way Forward: Installation of 2 MWp Solar plant under Opex Model.

Utilization of Renewable Energy

300 KWp Solar Plant

Generation Till date



COMPLETED PROJECT

Generation Achieved / Co2 Reduction

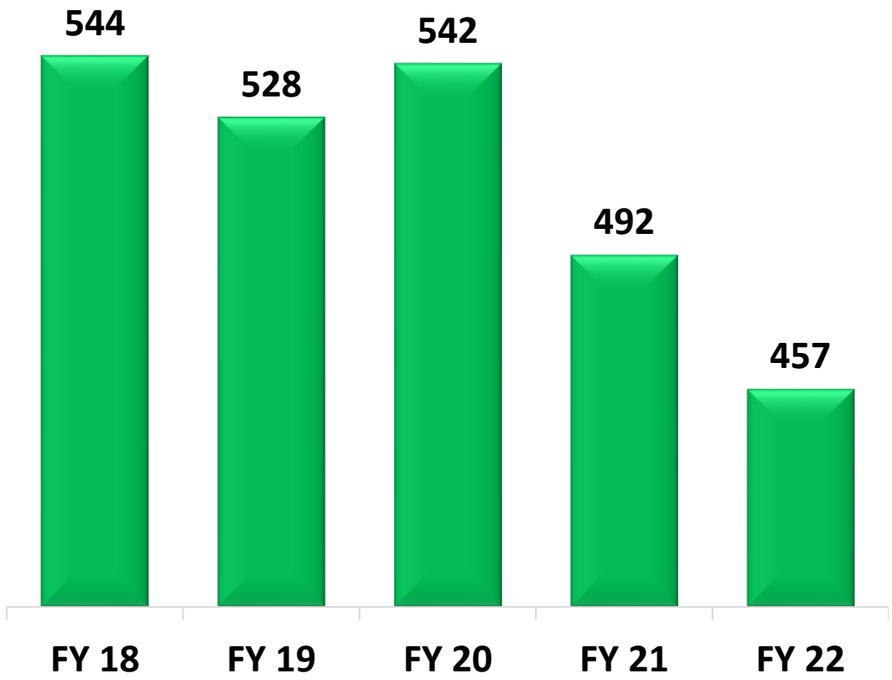
GHG Inventorization

Scope 1&2 GHG Reduction

Initiatives taken to reduce carbon foot print

- Reduction in Clinker Factor.
- Implementation of identified energy saving projects.
- Reduction in SPC of Grinding, Packing and Utility.
- Solar Power generation.
- Increase usages of FGD Gypsum.
- Reduction in Diesel consumption.
- 100% LED lighting installation in plant.
- Use of occupancy sensor in office and lobbies.
- Replacement of old vehicles by BS IV and BS VI.
- Use of CNG Trucks
- Electrification of Rail Line
- Increase in bulk loading.
- Use of GPS for Vehicle Tracking (RFID)

Scope -1&2 GHG Kg-Co2/T of Cement



GHG Inventorization

Public Disclosure

- Hazardous waste display board installed at main gate.
- Stack Emission LED display board installed at main gate.
- Digital water level recorder (Piezometer) installed.

GHG Inventorization

Development of Green Belt Area

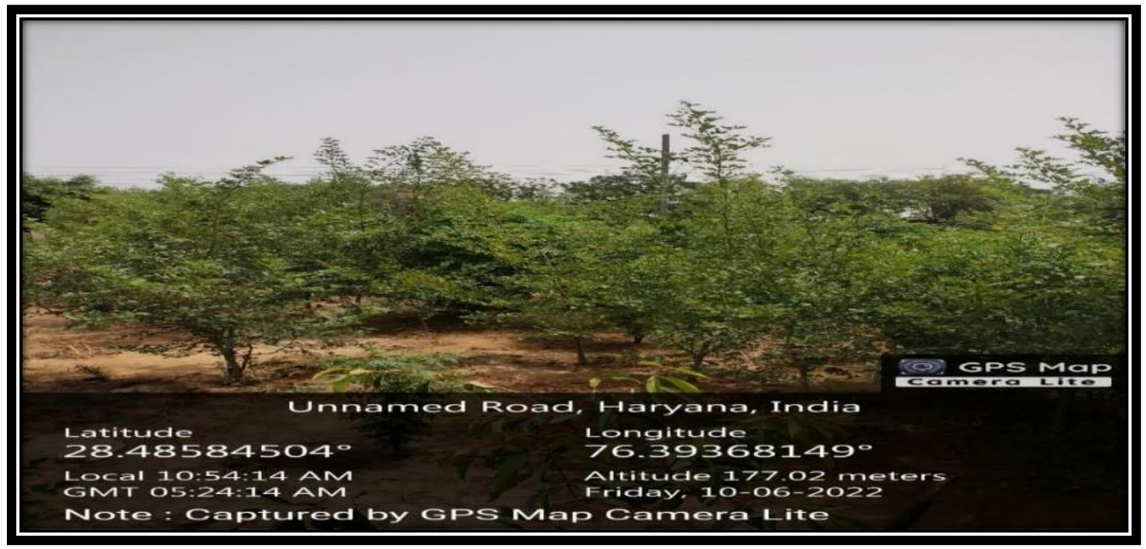
Some other green initiatives:

- **Installation of 1 KW Solar System at Jharli Panchayat office.**
- **Rain Water Harvesting Pit (1035 m2) provided at Animals Hospital, Jharli**
- **Use of Solar water pump at guest house.**
- **Rain Water Harvesting Pit (1200 m2) provided at JK cement gate no.2**
- **Plantation of Miyawaki plants.**
- **Development of Green Park**

S. No.	Description	Units	Till 2017-18	2018-19	2019-20	2020-21	2021-22
1	Number of saplings planted in plant and colony area	nos.	5000	6500	7500	8000	9000
2	Plantation area in plant and colony area	m2	60000	70000	80000	85000	95000
3	Percentage of green cover in plant and colony area	%	21	24	27	29	32

GHG Inventorization

Development of Green Belt Area



Green Supply Chain: Best Practices

S. No	Project Implemented	Project Details
1	Reverse Integration of Gypsum supplied from Punjab	Gypsum trucks from Punjab used for Cement Transportation upto Punjab
2	Use of Mould Gypsum (Waste Gypsum) as Alternate Raw Material	Mould Gypsum is Waste of the Gypsum industry and by using the same for Cement production as an alternate raw material for Mineral Gypsum
3	Bulk transportation of Cement	We increase our Bulk Cement dispatch. This enable us to reduce the standard vehicle trips.
4	Cement dispatch lead distance reduction by GPS tracking	We have installed GPS in all trucks and drivers are instructed to follow the shortest route which is validated by our Logistics dept.

Green Supply Chain Management

For Green Energy and CO2 reduction we are promoting Electronic Vehicle (EV) by following methods

a) Within Company : - Car Loan eligibility increases by 20% w.r.t to normal limit

b) Outside Company : - Promoting use of EV trucks by financing Transporters in phased Manner . As a pilot project, order for 2 new EV vehicle has been placed for 55 MT.

c) Use of CNG Vehicles for cement transportation

JKCement

JK Cement Works, Jharli
A unit of JK Cement Ltd.
CIN: L17229UP1994PLC017199
Mohanbari Road, Jharli - 124106, Distt. Jhajjar(Haryana) INDIA
+91 - 9729991610 jkc.jhar@jkcement.com
www.jkcement.com

Green Transport Policy

Our Green Transport Policy aim is to develop and improve environment-friendly transport system. Our target is to reduce environmental impacts and improve performance by reduction of carbon emission.

We are committed to implement green transport policy by –

- Implementation and compliance of all emission controls and transport regulations like not to engage vehicles more than 15 year old, all trucks entering plant premises should carry valid PUC, inspection of general condition of trucks, ensuring possession of valid insurance policy etc.
- Ensuring promotion of 100% BS IV/BS VI trucks.
- Preference of CNG based vehicles for Delhi.
- Target of use of electric vehicles in future.
- GPS should be installed in the vehicles for tracking.
- Promote integration of trucks by not sending any empty vehicles from Plant like clinker unloaded vehicles may carry pond ash or gypsum vehicles may carry cement in return.
- Avoid re-handling and re-transporting of semi-finished products to maximum possible extent.
- Driver should always be in sound state i.e. non-alcoholic.
- IN view of environmental concern we are demanding transporters to cover tarpaulins to avoid pilferage.
- Maintain RTA norms strictly for driver's competence etc.
- Maximizing the efficiency of our transportation routes through improved logistics and flexible delivery methods.
- Training employees in safe and efficient driving programs.
- Working with suppliers and contractors to support our green transport policies.

1st April 2021

UNIT HEAD

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JK SUPER CEMENT BUILD SAFE
JK CEMENT WallMaxX White Cement Wall Putty
Manufacturing Units at :
Nimbahera, Mangrol, Gotan (Rajasthan) | Muddapur (Karnataka)

Green Transport Policy

Certification and Policies

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

J K Cement Works

(Unit of J. K. Cement Ltd.), Village: Jharli, Tehsil: Matanhail, District: Jhajjar, 124106, Haryana, India

has been approved by Lloyd's Register to the following standards:

ISO 14001:2015, ISO 9001:2015, ISO 45001:2018, ISO 50001:2018

Approval number(s): ISO 14001 – 0053121, ISO 9001 – 0053123, ISO 45001 – 0053124, ISO 50001 – 0053122

The scope of this approval is applicable to:

Manufacture of Ordinary Portland Cements and Blended Cements.

Luis Cunha
Area Operations Manager - SAMEA
Issued by: Lloyd's Register Quality Assurance Limited

JKCement

JK Cement Works, Jharli
A unit of JK Cement Ltd.
CIN: L17229UP1994PLC07199
Mohanbari Road, Jharli - 124106, Distt. Jhajjar/Haryana INDIA
+91 - 9729991610 jkc.jhar@jkcement.com
www.jkcement.com

Energy Management Policy

As a responsible corporate, we are committed to conduct our operations of Cement Grinding & Packing by utilizing various forms of energy in the most cost effective and efficient manner so as to conserve energy resources and make to cleaner to Environment for our future Generation.

TO ACHIEVE THE ABOVE WE WILL STRIVE:

a) To work continuously for improvement in Plant operations efficiency guided by energy conservation.
b) To optimize the consumption of resources, viz. raw material, utilities, fuel, electrical and renewable energy.
c) To periodically review the specific energy consumption norms by bench marking.
d) To comply with all applicable Regulations and other requirement, if any.
e) To carry out Energy audits for identifying area for improvement.
f) To Implement Energy Conservation Activities and to adopt energy efficient Technologies.
g) To promote renewable energy and green initiatives.
h) To develop a holistic strategy on use of renewable energy for electricity, heating and cooling.
i) Diversifying energy supply and reducing dependence on non-renewable energy.
j) To inculcate the principles of energy conservation in its people and processes on continuous basis through Training among all Employees & stack Holders.
k) Reduction in specific energy consumption by 4% on yearly basis.

1st April, 2021

UNIT HEAD

JKCement

JK Cement Works, Jharli
A unit of JK Cement Ltd.
CIN: L17229UP1994PLC07199
Mohanbari Road, Jharli - 124106, Distt. Jhajjar/Haryana INDIA
+91 - 9729991610 jkc.jhar@jkcement.com
www.jkcement.com

Water Policy

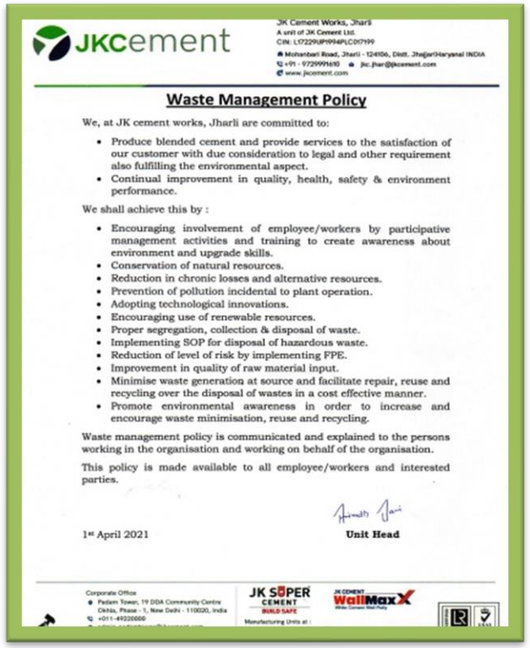
Being cement industry we should see ourselves having dual role in water resource management: to reduce the impact of our operation and to contribute to the communities where we operate. To provide sufficient and safe water to people & plant as well as to conserve water, we are committed to efficient water management practices viz. :

- Develop means & methods for water harvesting.
- Treatment of saline water by installation of LTE (Low Temperature Evaporator) for Plant process.
- Water audit & regular monitoring of water consumption.
- Zero leakage.
- Creating awareness towards water conservation among employees and community for conservation of water.
- Motivating employees and community for new techniques for water conservation like drip irrigation, water sprinklers.
- Complying with all applicable legal and other requirements for which organization subscribes.
- Assessing and managing water use and discharges to water as part of our environmental management systems.
- Designing sustainable water systems that benefit our business, the community and the environment.
- Contributing to local initiatives that increase access to clean fresh water and improve basic sanitation.
- Developing tools, technologies, and practices that make water use more efficient and reduce costs.

"WATER ADDS VALUE TO PEOPLE & ORGANIZATION, CONSERVE IT INTELLIGENTLY"

1st April 2021

UNIT HEAD



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Waste Management Policy

We, at JK cement works, Jharli are committed to:

- Produce blended cement and provide services to the satisfaction of our customer with due consideration to legal and other requirement also fulfilling the environmental aspect.
- Continual improvement in quality, health, safety & environment performance.

We shall achieve this by :

- Encouraging involvement of employee/workers by participative management activities and training to create awareness about environment and upgrade skills.
- Conservation of natural resources.
- Reduction in chronic losses and alternative resources.
- Prevention of pollution incidental to plant operation.
- Adopting technological innovations.
- Encouraging use of renewable resources.
- Proper segregation, collection & disposal of waste.
- Implementing SOP for disposal of hazardous waste.
- Reduction of level of risk by implementing FPE.
- Improvement in quality of raw material input.
- Minimise waste generation at source and facilitate repair, reuse and recycling over the disposal of wastes in a cost effective manner.
- Promote environmental awareness in order to increase and encourage waste minimisation, reuse and recycling.

Waste management policy is communicated and explained to the persons working in the organisation and working on behalf of the organisation.

This policy is made available to all employee/workers and interested parties.

1st April 2021

Unit Head

ISO 14001, ISO 9001, ISO 45001 & ISO 50001	**Energy Management Policy**	**Water Policy**	**Waste Management Policy**

Involvement of employee

Monthly Kaizen Implemented Status for last one year	
August, 21	05
September, 21	04
October, 21	04
November, 21	02
December-2021	04
January-2022	05
February -2022	04
March-2022	01
April-2022	02
May-2022	05
June-2022	01
July-2022	03

Involvement of employee - Kaizen

Sr. No.	Month	Kaizen	Investment	Benefits	Payback
1	**August,21**	**Direct Fly Ash unloading in fly ash silo extraction bin**	**Rs. 4.0 Lacs**	**Power Savings**	**1 Year**
2	August,21	Group LOTO box and personal locks	Rs. 1.0 Lacs	Safety	NA
3	August,21	Installation of VFD in Cement silo feeding elevator.	Rs. 6.0 Lacs	Power savings & Throughput increase	6 Months
4	August,21	Purging of bag House in DP mode	Nil	Power Savings via less Comp. run	Immediate
5	August,21	Packer bin aeration blower auto start	Nil	Power Savings	Immediate
6	Sept, 21	Connection of Rotary feeder motors changed in Star mode from Delta	Nil	Power Savings of Rs. 1.3 Lacs/Year	Immediate
7	Sept, 21	Reduction of LT voltage at MCC end to rated voltage 430 V to 418 V	Nil	Reduction of magnetizing losses in transformer and motors. Power Savings of Rs. 2.0 Lacs/Year	Immediate
8	Sept, 21	Reduction of idle running of packer transport group	Nil	Power saving due to reduction idle running of packer transport group	Immediate
9	Oct,21	Installation of Celling mounted Fire Extinguisher in cable cellar	Rs. 0.65 Lacs	Safety of Cable and Load center equipment	NA
10	**Oct,21**	**Stack Monitor Blower motor interlock provided with Bag house fan**	**Nil**	**Power Saving of Rs. 10625/Year due to idle running stop**	**Immediate**
11	Oct,21	P&V system provided in Compressor house	Rs. 8.46 Lacs + Running Cost	Spare cost reduction of Rs. 2.48 Lacs	5 Year

Involvement of employee - Kaizen

Sr. No.	Month	Kaizen	Investment	Benefits	Payback
12	Oct, 21	Installation of CJC oil filtration system at Ball mill.	Rs. 5.0 Lacs	Rs. 7.0 Lacs	0.8 Year
13	Nov, 21	Installation of 1.5T, 800W BLDC AC in server Room	Rs. 41500.0	Power Saving of 15 KWH per day, Saving of Rs. 35880/Year	14 Months
14	Nov, 21	Local Start / stop provision for Fly Ash compressor.	Nil	Idle running of compressor eliminated	Immediate
15	Dec, 21	Dust and spillage control in SAC head at wagon tippler.	Nil	Spillage control and reduction of dust in atmosphere	Immediate
16	Dec, 21	Dust and spillage control in BC-500 and BF335 area	Nil	Spillage control and reduction of dust in atmosphere	Immediate
17	Dec, 21	Platform provided for tarpaulin removal at Wagon Tippler.	Nil	safe removal of tarpaulin at height from Wagon Rack	Immediate
18	Dec, 21	Installation of Trans vector nozzle for cleaning application	3000	provide safety to user and less air consumption	28 Months
19	**Jan, 21**	**Modification of TPS from diesel engine to electric motor**	**In house with available spares**	**Total saving of Rs. 730/- per hour. 16 Lakh per annum**	
20	Jan, 21	Visual light indication provided for Dry Fly Ash Bin	Nil	Signal indication to site person, to start/stop unloading	Immediate
21	Jan, 21	In house development of Badminton court	9500/- (Painting cost)	--	Nil
22	Jan, 21	Stack PM data display at plant main gate	Nil	1.2 Lakh and 0.4 Lakh Annual cost	Immediate
23	Jan, 21	Shift Operator Performance Report	Nil	Operators performance shift wise	Immediate

Involvement of employee - Kaizen

Sr. No.	Month	Kaizen	Investment	Benefits	Payback
24	Feb-22	Installation of new Transmitter in Sector gate and logic modification	23500/-	It will reduce downtime and safety of technician.	-
25	Feb-22	Installation of VFD in packer-2 bag filter fan motor of 75KW for power saving.	5.2L	Power Saving	21 Month
26	Feb-22	Installation of AC power saver in 4 nos. split AC.	8000/-	Power Saving	16 Month
27	Feb-22	Installation of 4 nos. 1.5T, 800W BLDC split AC for power saving.	1.66 L	Power Saving	14 Month
28	Mar-22	Installation of Thermo- Hygrometer data logger	5000/-	Data recording through mobile App	-
29	**Apr-22**	**Merging of belt BC170, BAC175, and CW180 in to belt BC190 in packing plant.**	**25800/-**	**Power saving , ease of maintenance**	**3 Moths**
30	Apr-22	RP Profiling as per RP wearing Pattern	-	Centre gap reduced by 4-5 mm resultant production increase by 5-10 TPH	-

Energy Management

Energy Data Collection

- EMS
- Total 28 Energy Meters for all section and major drives. (>5% of total power)
- KW Transducers for All MCC incomers

EMS System

Energy Reports

- Daily Power Report
- Shift wise Report
- Real Time display of total power in CCR (IOT)

Daily Power report

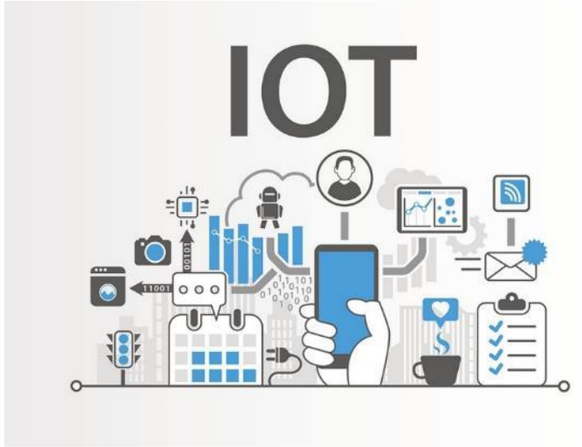
Review System

- Daily Variance analysis in power
- Daily Production meeting and Power review
- Weekly Energy Cell Meeting chaired by unit head
- Quarterly Objective and Target review
- Comparison of data with benchmark

Energy Monitoring

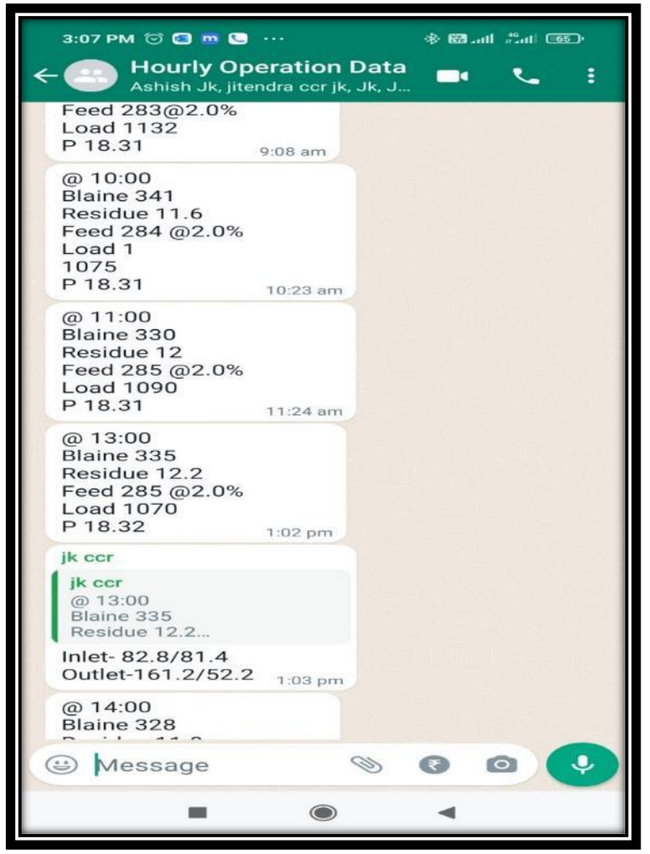
Energy Management

Reporting Parameters by digital platform for Real Time Action

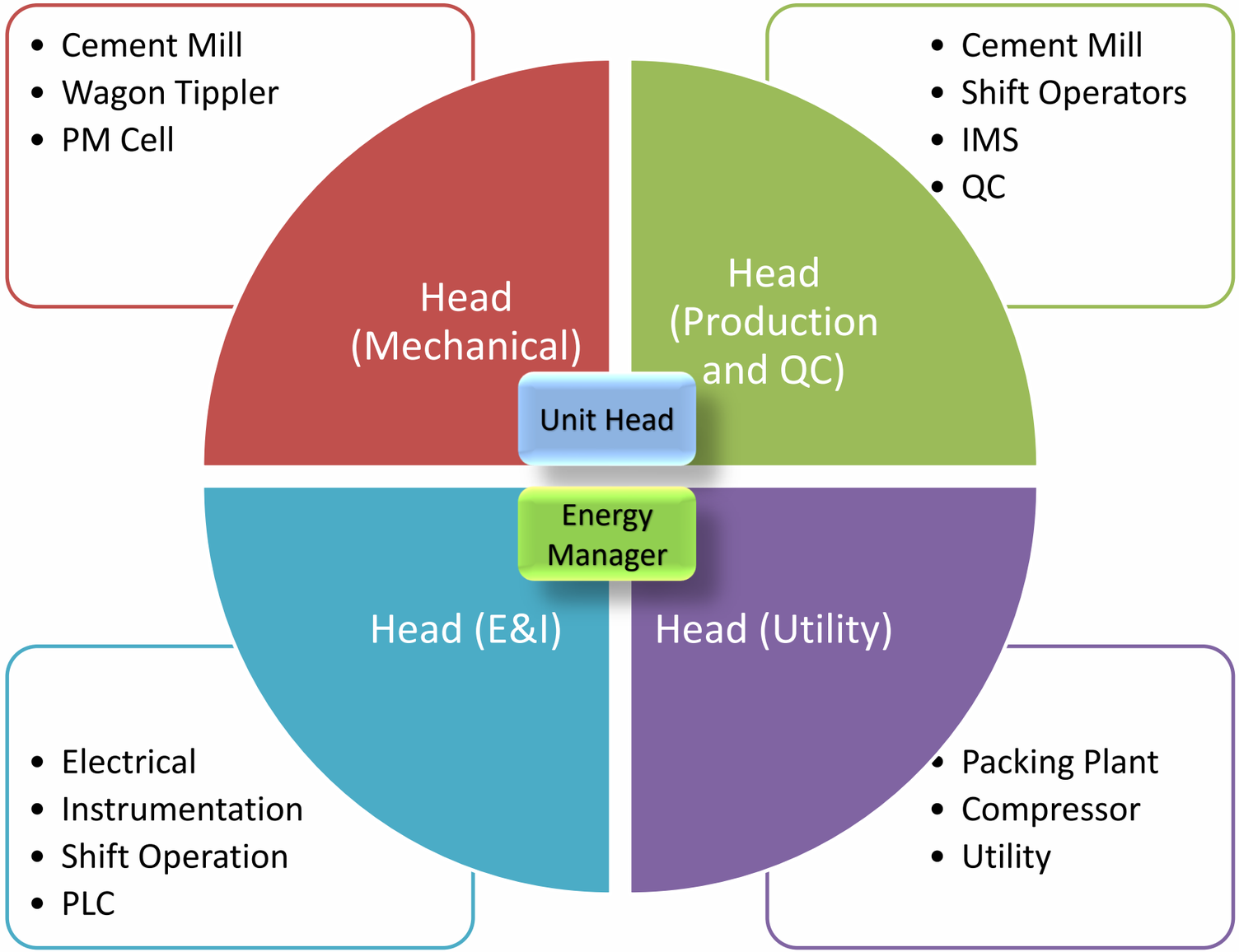


Quality Parameters continuous monitoring through Digital platforms.

Online monitoring of power consumption shift wise for timely corrective action in real time to optimize power.



Energy Committee



Energy Management Cell

Sr. No.	Member Name	Designation
1	Mr. Anirudh Dani	Unit Head
2.	Mr. Lokesh Pancholi	Energy Manager
3.	Mr. Rajeev Agarwal	Head - E&I
4.	Mr. Vishal Jain	Head –Commercial
5.	Mr. Lokesh Maratha	Head – Mechanical
6.	Mr. Ashish Khulve	Head – Process
7.	Mr. Manoj Yadav	Head – Packing & Utility
8.	Mr. Deepak Kushwaha	Head – QC
9.	Mr. Avtar Singh	SH – Electrical

Learning from CII

The Confederation of Indian Industry (CII) is working to facilitate Industries Achieve World Class Levels In Energy Efficiency.

Various events and training programs conducted by CII are extended learning and knowledge sharing platforms where we can unearth the best practices, latest technologies and future roadmaps to achieve Excellence 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:

1. **Optimization of voltage in distribution Transformer to 418-420V from 427-430V.**
2. **Install trans vector nozzle for cleaning applications.**
3. **Reduction in Compressor power by optimizing generation pressure as per requirement.**

Award and Recognition

CII Circle Award (2022) - Best Energy Efficient DC (Under PAT Scheme)

Energy Efficiency Unit in CII National Award for Excellence in Energy Management- 2021

Best Fly Ash Utilization Award – 2022 by Mission Energy Foundation

Best Fly Ash Utilization Award – 2022 by Mission Energy Foundation

Green Co Gold Award – 2018

Way Forward for Sustainability

- Reduction in pressure drop across cement mill circuit by CFD analysis.
- Plant PID loop optimization.
- VFD installation at Silo feed Elevator BE-370 to Increase throughput.
- Roller profiling on regular bases for increasing productivity.
- 2MW solar Power plant under OPEX mode.
- Installation of energy efficient BLDC AC.
- Installation of High Efficiency water pump.

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