JK LAKSHMI CEMENT LTD.
SURAT GRINDING UNIT

Mentor:- Mr. Ajay Kumar Sharma (Unit Head)

Presented By:- Mr. Vipin Joshi (Lead Presenter) (Ele Engineer)
Mr. Rahul Swami (Ele Engineer)
Mr. Mehul Singh (Mech Engineer)

1. Brief introduction on Company/Unit

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

➢**1.1 Profile:-** JK Lakshmi Cement Limited is a part of the prestigious 125 years old JK Organisation, which owes its name to Late Shri Lala Juggilal Ji Singhania and his son Late Shri Lala Kamlapat Ji Singhania. Having started the company in 1982, we have modern and fully computerized, integrated cement plants at Jaykaypuram, in the Sirohi district of Rajasthan.

We also have four split location grinding units at - Kalol and Surat in Gujarat, Jharli in the Jhajjar district of Haryana and Cuttack in Odisha. The combined capacity of our company is 13.3 Million MT per annum.

JK Lakshmi Cement Limited, Surat

1. Brief introduction on Company/Unit

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

1.2 Process:- Here at Surat grinding unit, having capacity of 1.35 Million MT per annum, we are only grinding, packing and dispatching the cement.

1.3 Products:- At JKLCL Surat, we have wide product portfolio catering to varied construction requirements. We grind cement grades like OPC 43 & OPC 53 and Blended Cements like PPC and composite Cement.

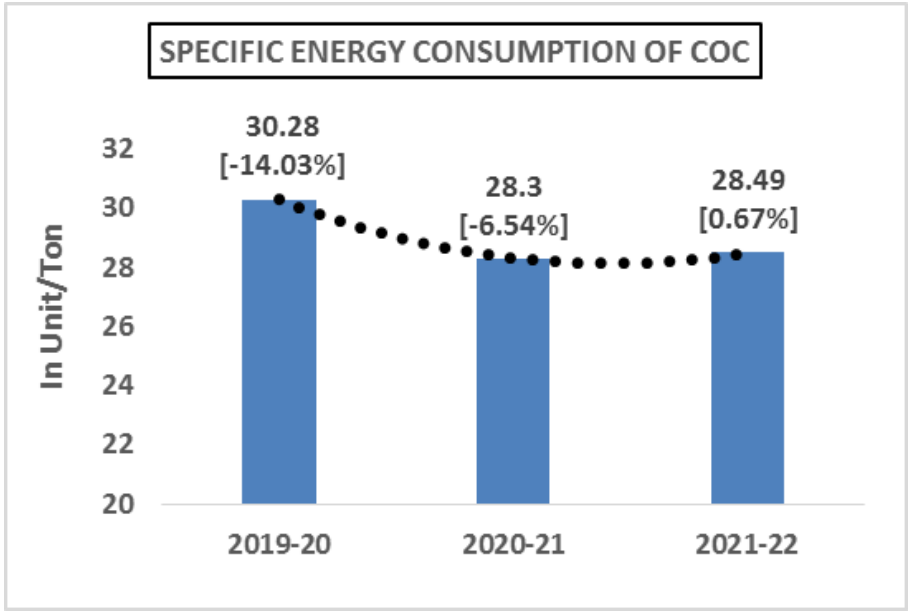
2. Technology/specifications of major sections:-

Sr. No.	Equipment Name	TPH (Operating OPC)
1	Ball Mill	100
2	Vertical Roller Pre-Grinding Mill	40

Packing Plant Power Utilisation			
Sr. No.	FY	(Unit/Ton)	
		Bulk Loading	Bags
1	2019-20	0.18	1.46
2	2020-21	0.16	1.44
3	2021-22	0.15	1.35

2. Percentage Improvement in SEC in last 3 years

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

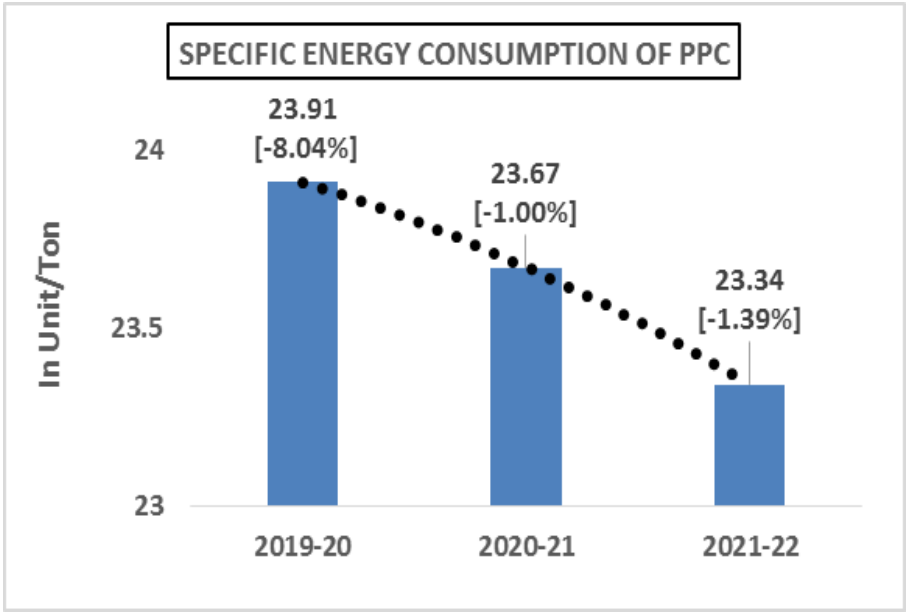


With collection of smart-resilient techniques and methodologies aimed at reducing the overall power consumption we have decreased, achieved and sustained our power consumption

Percentage of Overall Power improvement (in last 3 years) in

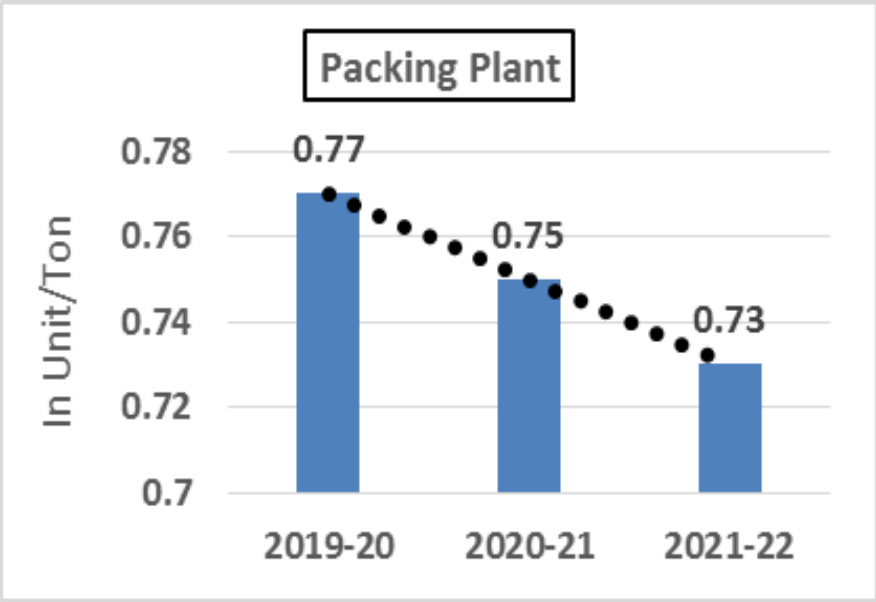
1. **Composite cement :- -19.9%**
2. **PPC:- -10.43%.**

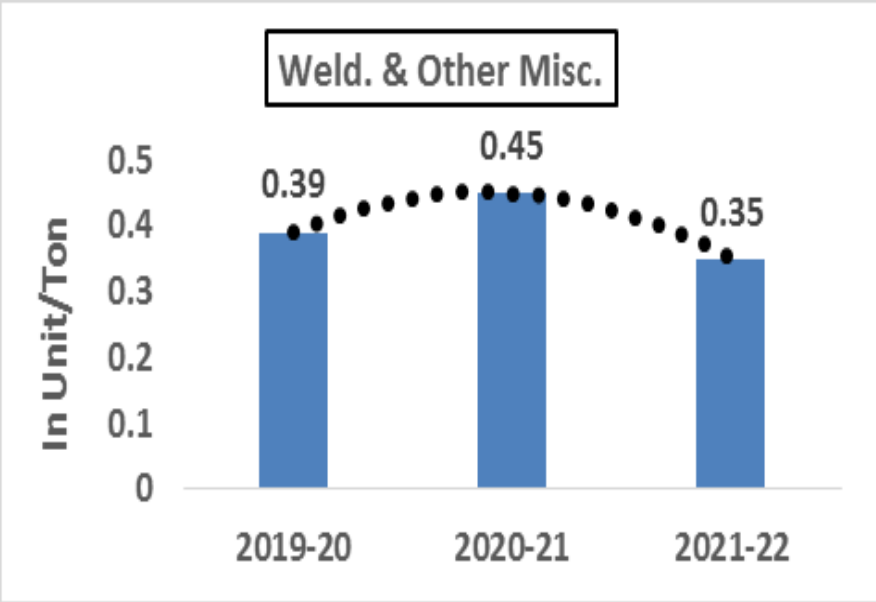
We have replaced PPC with COC to reduce consumption of clinker up to 10%.



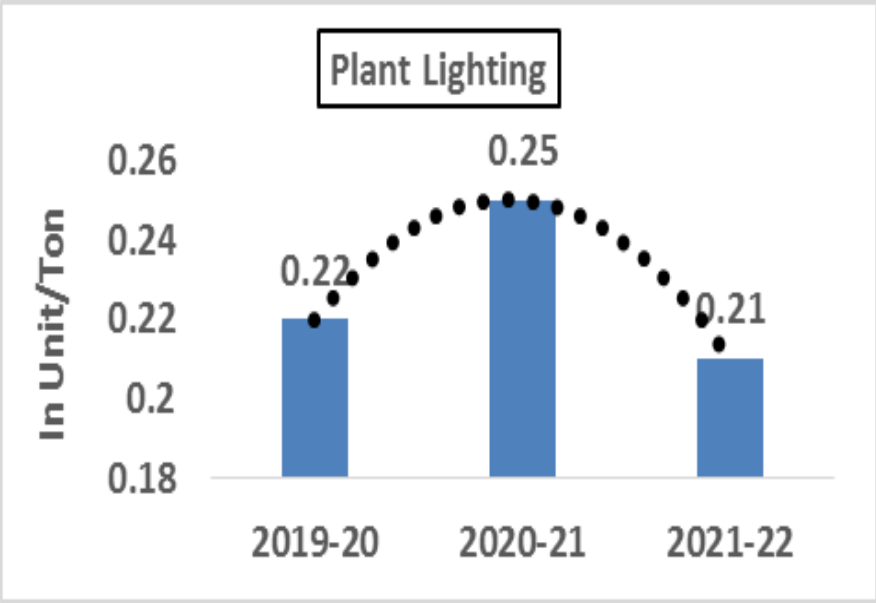
2. Percentage Improvement in SEC in last 3 years

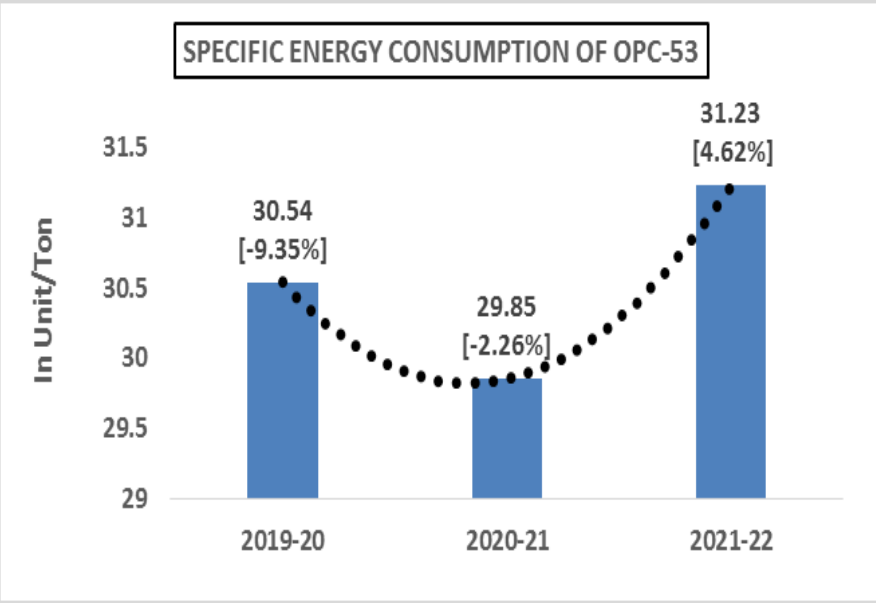
JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT





100% interchangeability in Packing Plant circuit between Silo(s) – Packer(s) – Belt(s) have contributed a lot in power reduction.



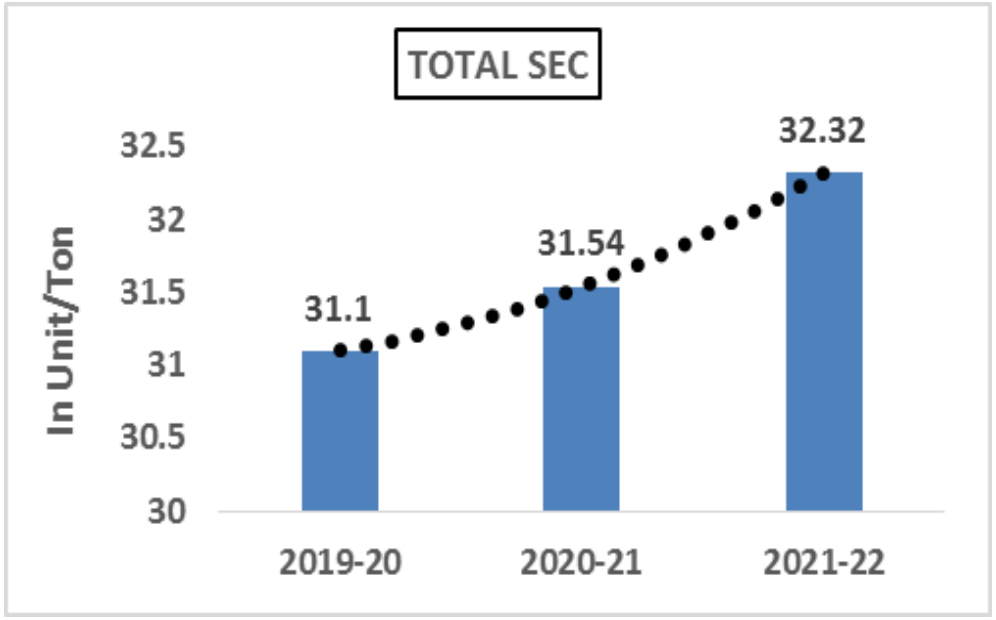


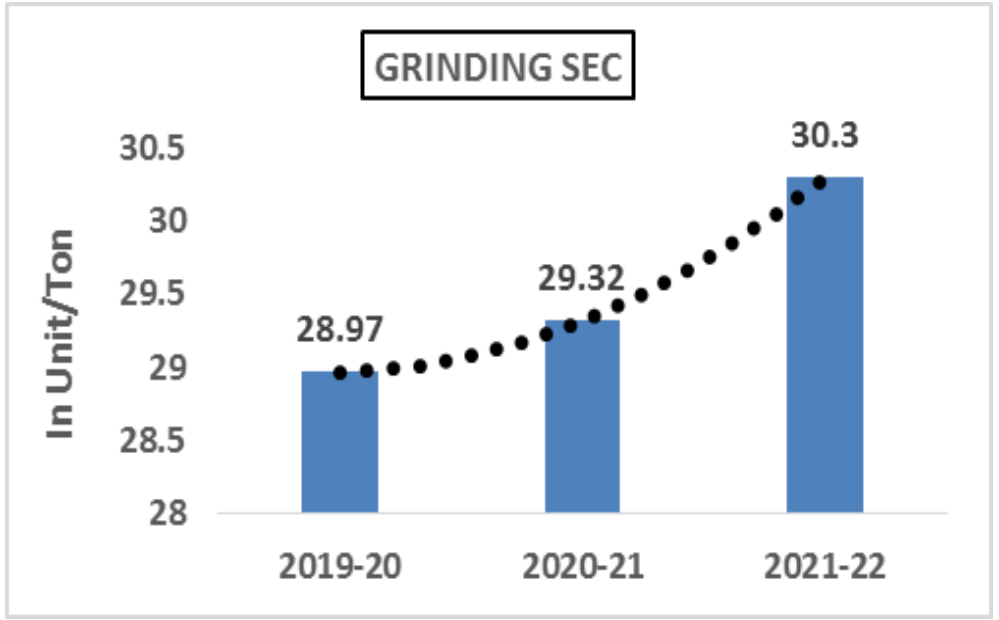
Overall **Power improvement** in OPC-53 cement:- **-6.99%.**

Note:- OPC-53 SEC Power has increased in 2021-22, due to change in clinker source.

2. Total and Grinding SEC from FY 2019-22

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT



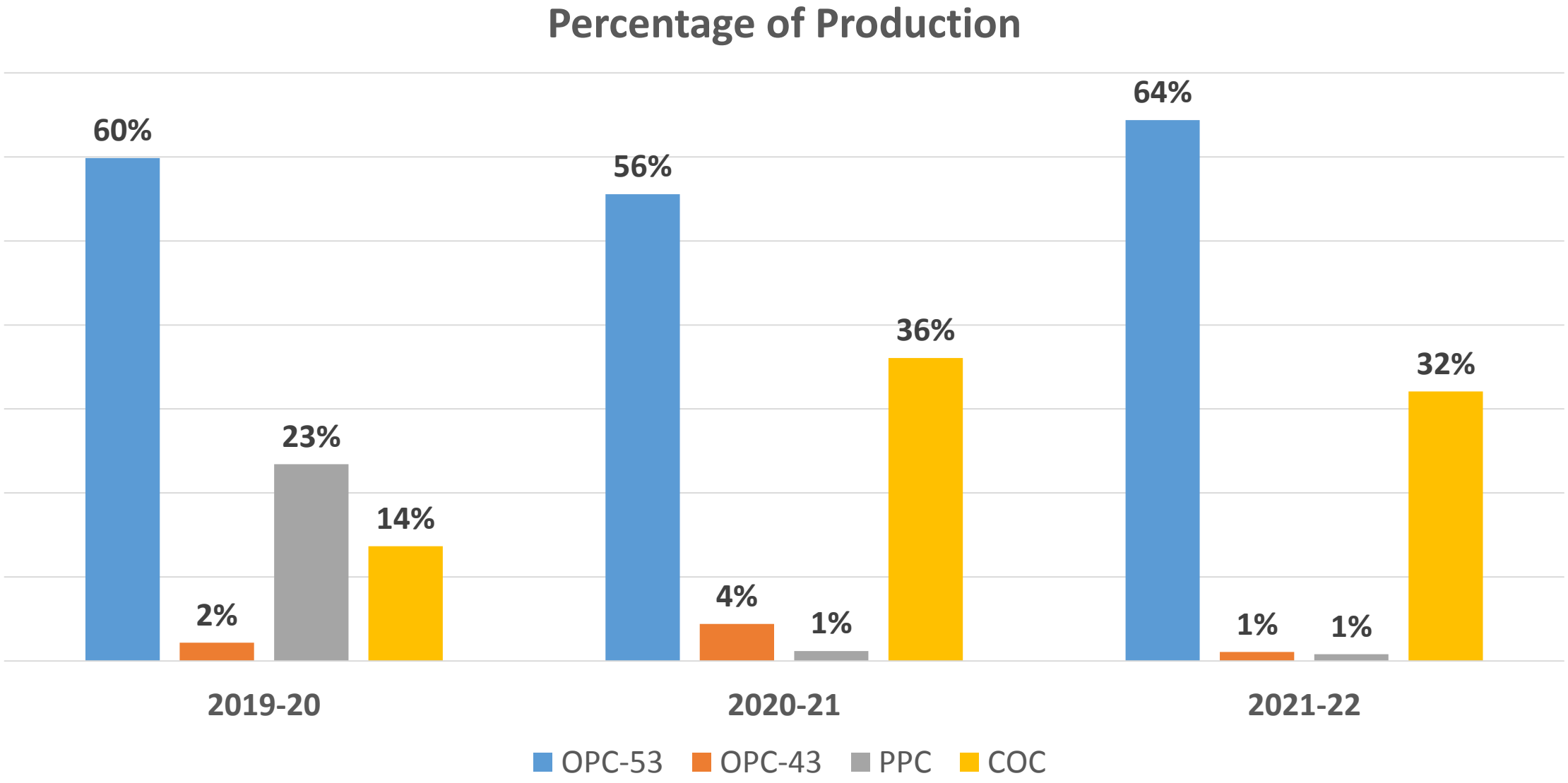


Grinding SEC and Total SEC have increased due to increased production of OPC-53 from 59.88% in 2019-20 to 64.38% in 2021-22 and decrease in production of PPC from 23.42% in 2019-20 to 0.81% in 2021-22.

% OF PRODUCTION			
FY	**2019-20**	**2020-21**	**2021-22**
OPC-53	59.88 %	55.56 %	64.38 %
COC	13.67 %	36.07 %	32.07 %
PPC	23.42 %	1.18 %	0.81 %

2. Total and Grinding SEC from FY 2019-22

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT



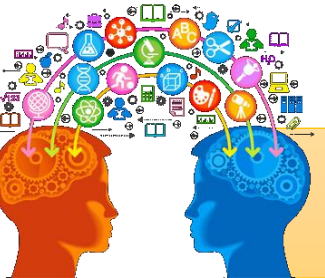
3. Information on Competitors, National & Global benchmark

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

NATIONAL & GLOBAL ENERGY BENCHMARKING		
Sr. No.	**Name of Competitors**	**SEC Grinding Values (FY 2021-22)**
1	JK Cement, Jharli	25.41
2	Heidelberg Cement India Ltd.-Unit Jhansi	27.61
3	Ultra tech HCW	28.73
4	JK Lakshmi Cement Ltd.-Unit Surat	30.30

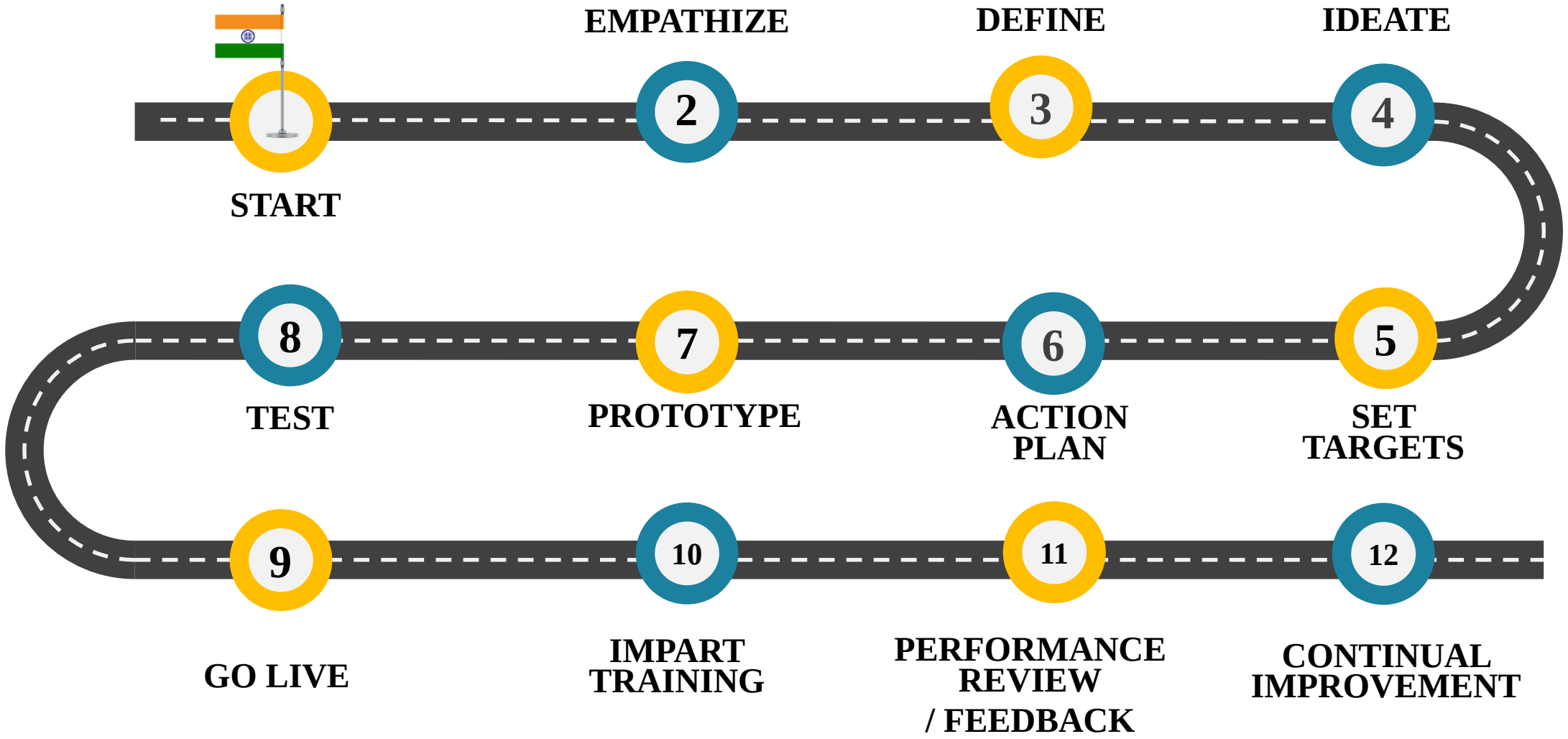
Here we find a room for improvement in our performance activities and a void between top performing competitors. We continue to strive for the better results in FY 2022-23. For that we have developed an action plan and have aligned ourselves to achieve the bench markings.

Ref. SEC data reported in earlier Energy Award Programs.



3. Road Map to achieve The Target

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT



Moving towards excellence

3. Information on Competitors, National & Global benchmark

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

ACTION PLAN TO ACHIEVE NATIONAL/GLOBAL BEST SEC	
SR. NO.	**ACTION PLAN FY 2022-23**
1	Use of wet and dry fly ash in manufacturing of cement.
2	Will ensure continuous use of 100% Chemical Gypsum which is a waste product of chemical industry.
3	Promote and motivate suppliers having focus on green energy.
4	Purchase of 5 star rated and energy efficient electrical products.
5	Usage of STP treated water for gardening.
6	Use of recyclable cement bags for dispatching cements.
7	To expand our "Green Energy Footprints we are purchasing power from renewable sources which will reach 60%-65% of our total consumption. To achieve this we are working for Solar Wind hybrid power purchase from M/s Continuum Energy from December 2022 onwards, over and above existing sources. Along with this we'll continue to purchase wind power from M/s Trinetra 20%-25% of Total Energy consumption.
8	Will incline our plant operation timings in such a way so that our solar generation utilization is maximized.
9	Have achieved best "TURN AROUND TIME" from last 3 consecutive years and will continue to strive for the same.

3. Information on Competitors, National & Global benchmark

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

LIST OF ENCON PROJECTS PLANNED FOR FY 2022-23			
Sr. No.	Title of Project	Annual Saving (Million kWh)	Investment (Rs in Million)
1	Reduce pressure drop across CM separator	0.078	1
2	Optimize operation of silo top bag filters by interlocking VFD rpm with silo suction	0.0072	0.1
3	Installation of New LP Screw compressor for Fly Ash Unloading	0.171	1.6
4	Install transvector nozzle for cleaning applications	0.0014	0.015
5	Replace conventional fans with Energy Efficient BLDC Ceiling fans	0.00594	0.075
6	Convert existing Cement Mill into mono chamber mill	0.39	3
7	Optimize performance of PID loops	0.21	1
8	Installation of Energy Saver for Split ACs	0.02835	0.16
9	Reducing the compressed air leakage in Packing plant	0.02	0
10	Adding VFD in screw compressor for reducing power consumption.	0.072	0.3

4. Energy Saving projects implemented in last three years

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Year	No of Energy saving projects	Investments (INR Millions)	Electrical savings (Million kWh)	Savings (INR Million)	Impact on SEC (Electrical kWh /MT cement)
FY 2019-20	4	0.300	0.037	0.306	0.048
FY 2020-21	2	0.020	0.045	0.358	0.08
FY 2021-22	4	4	0.027	0.216	0.035

5. Innovative Projects implemented

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

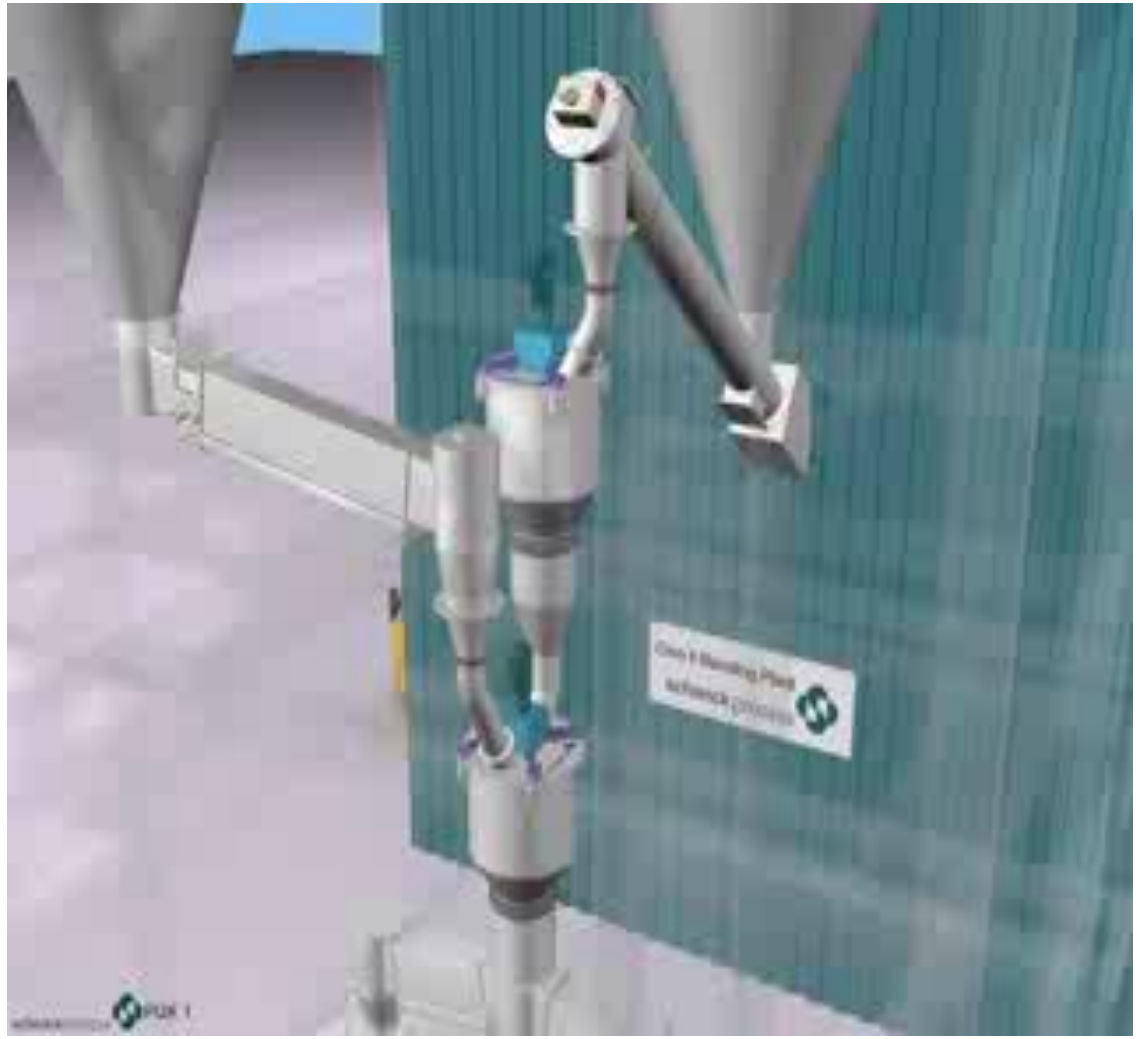
❖ Multi compartment Silo with real time blending:-

Brief description on why innovative:- Three different compartment silo's provide reliable storage with integral blending and dispatch station. The concept of storing, real time blending and dispatching simultaneously has been implemented via this project to increase dispatch efficiency.

Impact created:- Increased production rate, **reduced Turn Around Time** for bulk loading below is 2 hours and for Bags below 04 hours.

Replication potential:- This technology has been installed in JKLCL Cuttak as well.

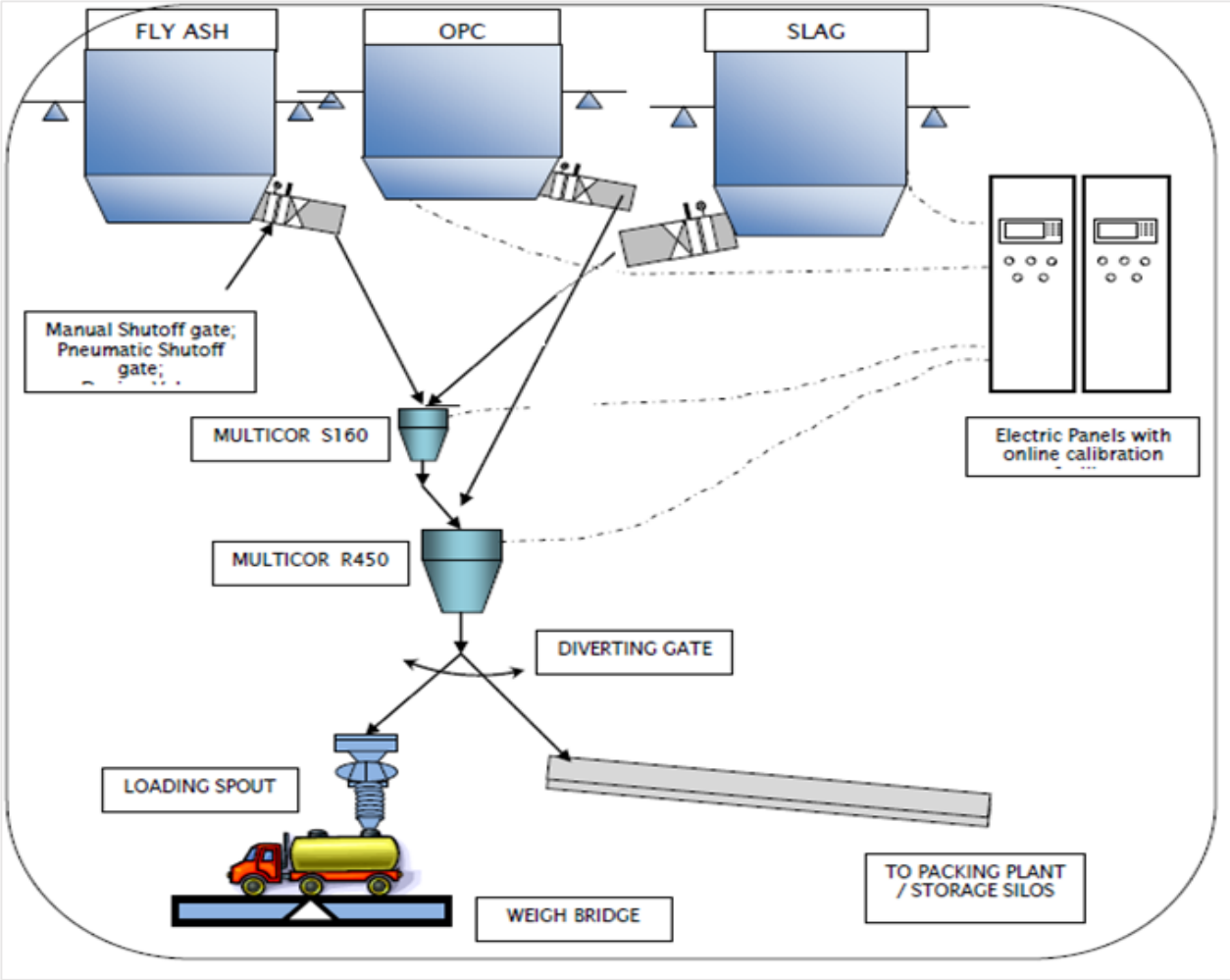
Packing Plant Power Utilisation			
Sr. No.	FY	(Unit/Ton)	
		Bulk Loading	Bags
1	2019-20	0.18	1.46
2	2020-21	0.16	1.44
3	2021-22	0.15	1.35



5. Innovative Projects implemented

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

❖ **Multi Compartment Silo with real time blending:-**



Process Flow Chart

Multi Compartment Silo

5. Innovative Projects implemented

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

❖ **Auto Bag placer & Auto truck loader:-**

Brief description on why innovative:- Efficient and high performing automatic bag loading technology for open top trucks. Bag Placer provides automatic handling of Open-mouthed Bag by placing them on the bag holder.

Impact created:- Manual truck loading is dangerous and dusty. Operators put their health at risk and the bags themselves are also prone to damage, since they are handled erratically. Automatic truck loading eliminates these risks and improves productivity.

Replication potential:- This technology has been installed in JKLCL Kalol as well.

5. Innovative Projects implemented

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

❖ **Auto Bag placer & Auto truck loader:-**

Auto Bag Placer

Auto Truck Loader

5. Innovative Projects implemented

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

❖ Vertical Roller pre-grinding mill:-

Brief description on why innovative:- VRPM with combination of existing ball mill where efficient course grinding takes places by means hydraulic press applied by roller on material.

Replication potential:- For substantial power saving and capacity enhancement in the field of Clinker Grinding it's easy to replicate. Also as rollers have higher periphery, a wider uniform grinding layer is formed and hence increases grinding efficiency.

Impact created:- 1250kW consistently delivering **20%-25%** as a final product contributing in SEC reduction of **3-4 Unit/Ton**, which lent a helping hand to us in setting up milestones such as 96250.63 MT of product dispatch in Dec 2019 & 95380 MT of production in the month of Jan 2019.

6. Utilisation of Renewable Energy sources

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Year	Technology (electrical)	Type of Energy	Onsite/Offsite	Investment made (Rs. Million)	Installed Capacity (MW)	Capacity Addition	Generation (million kWh)	Utilization (million kWh)	% of Overall Electrical Energy
FY 2019-20	Renewable	Solar	Onsite	None	2.2	None	3.38	2.73	14.05%
	Renewable	Wind	Offsite	None	2.362	None	2.31	2.31	9.58%
FY 2020-21	Renewable	Solar	Onsite	None	2.2	None	3.09	1.88	17.48%
	Renewable	Wind	Offsite	None	2.362	None	5.28	5.28	29.93%
FY 2021-22	Renewable	Solar	Onsite	None	2.2	None	3.16	2.53	12.85%
	Renewable	Wind	Offsite	None	2.362	None	5.32	5.32	21.63%

Note:-

1. Maintenance cost of Onsite solar power plant is 1.2 Million INR per year.
2. Total invoice cost for wind power purchase is:

For FY	Invoice cost (Rs. Million)
2019-20	12.21
2020-21	19.42
2021-22	27.66

7. Waste utilization and management

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Sr. No.	FY	Chemical Gypsum	Fly-Ash /Additive	Slag	Total Cement Grinding (MT)
1	2019-2020	22815	96076	21651	774044
	% of Material Uses	3%	12%	3%	100%
2	2020-2021	15209	60205	40557	559642
	% of Material Uses	3%	11%	7%	100%
3	2021-2022	21121	78589.5	49981	761370
	% of Material Uses	3%	10%	7%	100%

Note:- Chemical gypsum has been used as an **replacement of mineral gypsum**. Dry Fly-ash, Wet Fly-ash and Slag are being used as a **replacement of clinker.**

Gypsum Yard

Slag Yard

7. Infrastructures

Paver Blocks are used in Parking area, Walkways, pathways and Roads construction.

Fly-ash bricks used in the making of walls for Plant Offices, Packing plant, gypsum yard, slag yard etc.

For plant beautification, fish pond and gardening tiles stones wastes are used for making ways.

All office building roofs are made of tin shed or using precast bricks. No red bricks used in plant.

8. GHG Inventorisation

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Annual Report GHG Report

Sr. No.	Financial Year	GHG Emission (tonnes) Scope 1	GHG Emission (tonnes) Scope 2	GHG Emission (tonnes) Scope 3	GHG Emission (tonnes) Total	Production MT	Net CO2 Emission in Tons	CO2 Emission in per ton of cement ground	CO2 Emission in per ton of cement ground (Without Solar Generation)
1	2019-20	21	17502	2274	19797	774044	17023	0.022	0.026
2	2020-21	12	12939	2417	15367	559642	12836	0.023	0.027
3	2021-22	17	18862	2642	21521	761370	18929	0.025	0.027

Public Disclosure:- LED screen placed outside of plant premises for displaying live SPM and weather data.

8. Initiatives on Carbon reduction:-

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

IN-HOUSE BULK LOADING SPOUT & WEIGH-BRIDGE INSTALLATED TO REDUCE TURN AROUND TIME.

BULK LOADING< 2 HOURS

BAGS < 4 HOURS.

Facility of Car-pooling for staffs arriving duties, results in 356.97Kg of Carbon emission reduction annually.

Proper inspection of PUC certificate of all vehicles entering plant premises including Staffs, workers, vendors, contractors etc.

9. Green Supply Chain Management:-

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

JK LAKSHMI CEMENT

Sustainability Policy

JK Lakshmi Cement Ltd. is committed to maintain and innovate our operations and processes to remain in harmony with Nature, Society and Economy. We are focused on responsible governance that integrates various dimensions of sustainability, towards betterment of stakeholders and nurtures the legacy of future generation.

We are committed to:

- Safeguarding the values of Environmental, Social and Corporate integrity ingrained in the working practices.
- Adopting resource efficient technology, identifying processes, equipment & systems to reduce consumption of fuel, raw materials, energy, water, etc.
- Working towards Climate Change, monitoring and mitigating our Emissions through innovation and scientific acceptance.
- Promoting use of alternate fuel sources and use of Renewable energy
- Reducing water footprint through effective implementation of conservation strategies, efficient waste water management system and creating awareness within the organization and to the society.
- Adopting sustainable mining practices including quarry rehabilitation, biodiversity management and stakeholder interactions.
- Maintaining Transparency in reporting disclosures and integrity in our communications with our stakeholder.
- Implementation of a Sustainable Supply Chain Management system through innovating supply chain systems and logistics.
- Addressing social responsibility towards inclusive growth and welfare of local community through regular involvement and engagement programmes.
- Implementation of OH&S standards and guidelines through providing training, resources and education to employees, workers and visitors.
- Capacity building of our employees and stakeholders for recurring advancement in quality of products, productiveness and profitability.

Dr. S Chouksey
Whole Time Director

S K Wali
Whole Time Director

JK LAKSHMI CEMENT

Corporate Environment Policy

JK Lakshmi Cement Limited is consistently making its efforts to integrate the environmental concerns into the main stream of the corporate policies since its inception and commits to:

- Comply with all applicable laws, standards and regulations related to the environment.
- Optimize use of natural resources like limestone, coal, gypsum, water and energy etc.
- Adopt ecologically sound manufacturing process and mining technologies and develop greenbelt.
- Adopt state of art technology for control and monitoring of emissions, effluents and wastes.
- Develop a rehabilitation programme for all limestone quarry sites and shall foster conservation plan for forestry, wildlife and biodiversity, wherever applicable.
- Utilize various waste derived fuels like biomass etc. and raw materials like fly ash, etc. by co-processing of the wastes.
- Create awareness among the employees, local community on environmental concerns.
- Provide resources for employee training to facilitate improvement in environmental performance.

JK Lakshmi Cement Limited shall communicate this policy to all its employees, contractors, customers, and other stakeholders.

Dr. S Chouksey
Whole Time Director

S K Wali
Whole Time Director

Integrated Management Policy

(For ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO 50001:2018)

We at

JK Lakshmi Cement Limited

Grinding Unit, Surat

Commit ourselves to strive for

Total Stakeholder Delight

by continually improving our QEHS & Energy performances.

We are committed to

- Customer Satisfaction
- Comply in letter and spirit with all applicable legal, statutory, other requirements, guidelines and code of practices.
- Operate our plant in a safe and efficient manner.
- Conservation of resources like water, electricity, raw material etc through process optimization and the use of alternative raw material derived from waste.
- Improve on power consumption through innovation & use of energy efficient technologies & establishing energy performance objectives & target.
- Keep our plant environment friendly and green.
- Ensure that QEHS & Energy commitments are integrated in all our people & processes by providing information & resources for the same.

JKLC – Surat Unit recognizes that QEHS & Energy programs are paramount to ourselves, customers and to the society we operate in. We will communicate this to every concerned parties.

Date: 01/12/2021
Place: Surat

Sh. Ajay Kumar Sharma
(Sr. General Manager)

We have,

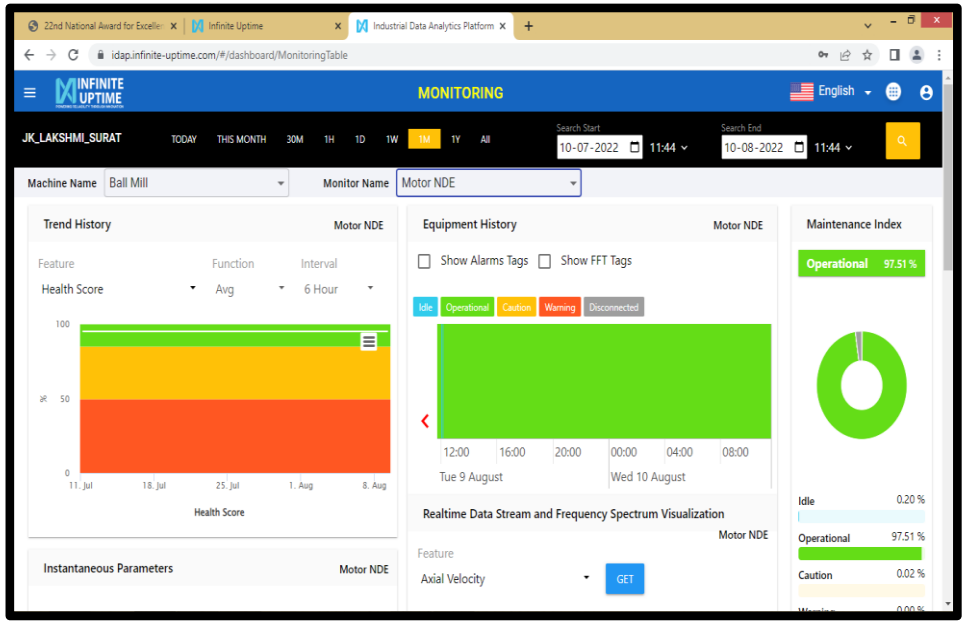
1. Sustainability Policy on Organisation level which is committed to maintain and innovate our operations and process to remain in harmony with Nature, Society and Economy.
2. Corporate Environment Policy that abide us in making efforts to integrate the environment concerns.
3. Integrated Management Policy at unit level making us committed towards Green Supply Chain Management.

10. Teamwork, Employee Involvement & Monitoring:-

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Daily Monitoring System:- Live monitoring & Alert based IOTs sensors installed for tracking key metrics like MTBF, Health Scores etc. to improve the health of our rotatory assets (Ball Mill, VRPM and CA Fans).

It provides shift-wise OEE status with Pareto downtime reasons, productivity losses, and quality defects. This data, coupled with the current status of process yield per hour and process critical parameter analytics, shall help drive OEE improvement.



IOTs Sensors

10. Teamwork, Employee Involvement & Monitoring:-

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Imparting EnMS training, TBT, BBS to Staff, Workers, contractual workmen, labours, families etc. related to energy use and consumption on Weekly/monthly basis.

Daily review meeting chaired by Unit Head Shri. Ajay Sharma Sir, Sr. General Manager.

Projects implemented through Kaizens FY-21-22

1. Installed temperature controller for optimizing operation of exhaust fan in Sub-Station & LC's, saving 3.9kWh.
2. Sensor based water dispenser installed in water taps to avoid water wastage and less operation of water pump, saving 3.7kWh.
3. Wi-Fi/GSM based pump controller to turn ON/OFF khadi water pump sets through mobile phone, reducing its ideal operation, saving of 5.5kWh.

11.Implementation of ISO 50001/Green Co/IGBC rating:-

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

Bureau Veritas Certification

JK LAKSHMI CEMENT LTD.

VILLAGE: DASTAN, TALUKA: PALSANA, SURAT – 394 310, GUJARAT, INDIA.

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System standard detailed below.

Standard

ISO 50001:2018

Scope of certification

MANUFACTURING AND PACKING OF ORDINARY PORTLAND CEMENT (OPC), PORTLAND POZZOLANA CEMENT (PPC) AND COMPOSITE CEMENT.

Original cycle start date: **27 April 2018**
Expiry date of previous cycle: **26 April 2021**
Recertification Audit date: **21 April 2021**
Recertification cycle start date: **14 June 2021**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **26 April 2024**

Certificate No. **IND.21.5454/EN/U** Version : **1** Revision date: **14 June 2021**

Signed on behalf of BVCH SAS – UK Branch
Jagdheesh N. MANIAN
Head – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division

UKAS MANAGEMENT SYSTEMS 0008

Certification body address: 5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom.

Local office: Bureau Veritas (India) Private Limited (Certification Business) 72 Business Park, Marol Industrial Area, MIDC Cross Road 'C', Andheri (East), Mumbai – 400 093, India

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization. To check this certificate validity please call **+91 22 6274 2000**.

IGBC CERTIFICATE

IN THE MAKING

Already applied Ref. No. GF 21 1177

EnCon Project budget allocation %	
Total turnover of the company/plant FY 2021-22 (Rs. Million)	**3860**
Amount invested in EnCon Projects FY 2021-22 (Rs. Million)	**4**
Investment %	**0.10 %**

13. Awards and Recognitions:-

JK LAKSHMI CEMENT Ltd.
SURAT GRINDING UNIT

National Safety Award-2017

Our Unit Head Shri. Ajay Sharma Sir, Sr. General Manager receiving NSA-2017

CII-Green Pro Certification for COC cement

CII-Green Pro Certification for PPC cement

NABL Accreditation

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

Let Us Make Our Plant, A Better Plant, Every Moment.