Dalmia
Bharat Limited

CII National Award for Excellence in Energy Management-2023

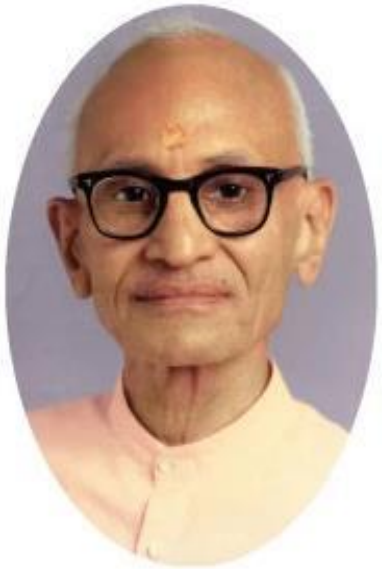
Dalmia Cement (North East) Limited
Lanka, Assam

Presented By

1. Indra Bhushan Chetry (Engineer)
2. Krishn Kumar (Engineer)

Group Overview

Dalmia Bharat Group



2040 DCBL commits to be Carbon Negative

2019 Dalmia DSP commissions Unit-1 at RGP capacity 3.13 mMT on 12-12-19 at record time of 15.3 month.

2015 Dalmia Cement (Bharat) Limited fired the kilns at two locations - Belgaum District, Karnataka & Umrangsho, Assam; having total capacity of 3.5 mMT

2012 **Dalmia Cement (North East) Limited formerly known as Calcom Cement India Limited had taken over by Dalmia Cement (Bharat) Limited**

2004 Dalmia Cement sets up its first 27 MW captive power plant at Dalmiapuram

1995 New generation monolithic refractory products like castables, precast blocks and lance pipes are successfully introduced in OCL.

1993 The company also gets IS/ISO 9001 certification.

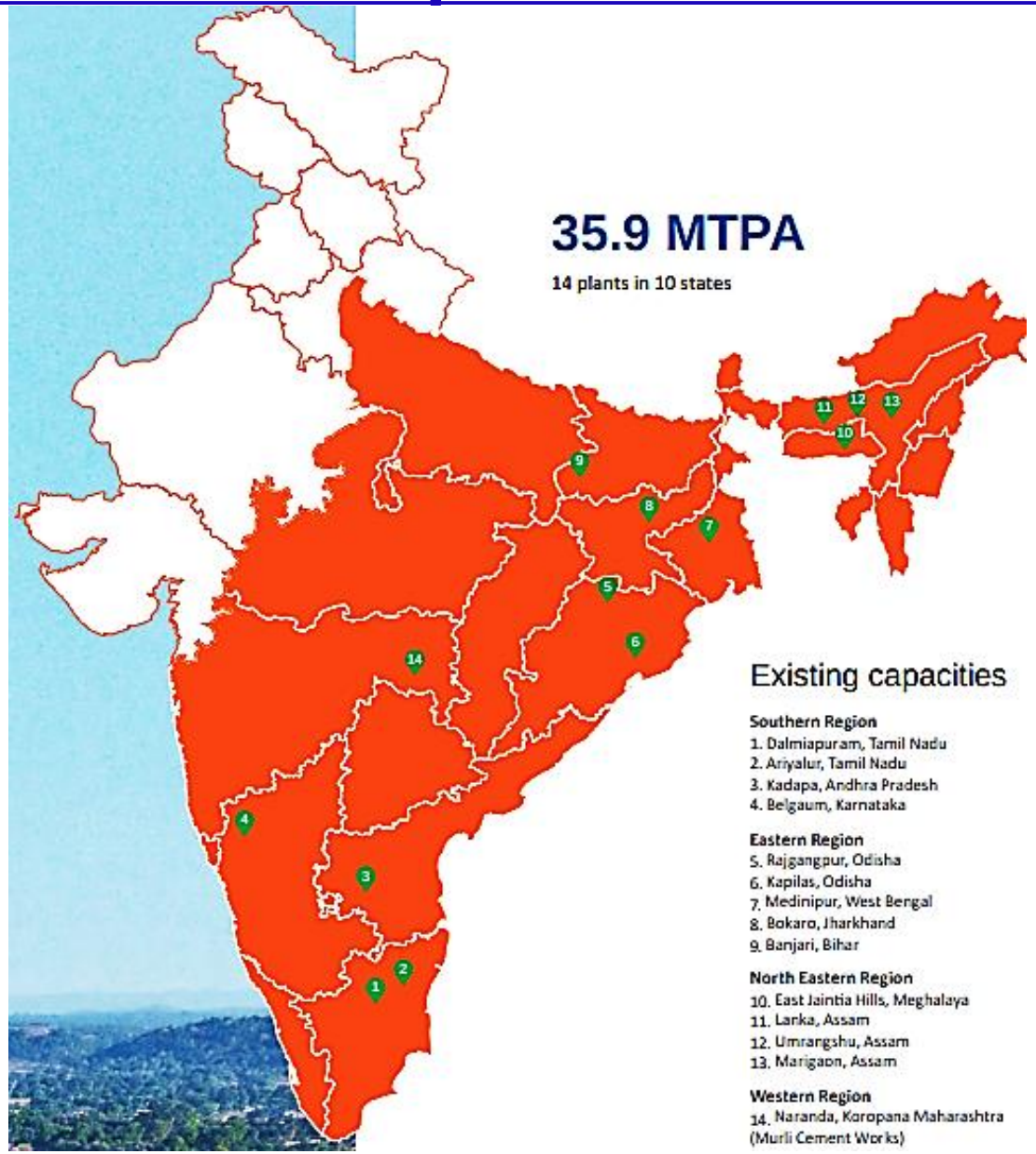
1984 Dalmia Cement Bharat Limited (DCBL) manufactures Oil Well Cement (OWC) and Cement for Railway sleepers.

1950 Jaidayal Dalmia sets up a cement plant at Rajgangpur in Orissa to manufacture super grade cement to build the Hirakud Dam.

1939 Installs a kiln with the capacity to manufacture 250 tonnes of cement on daily basis by semi-dry process at the Dalmiapuram Plant in Tamil

1939 -

Dalmia Cement presence PAN India



Existing capacities

Southern Region
1. Dalmiapuram, Tamil Nadu
2. Ariyalur, Tamil Nadu
3. Kadapa, Andhra Pradesh
4. Belgaum, Karnataka

Eastern Region
5. Rajgangpur, Odisha
6. Kapilas, Odisha
7. Medinipur, West Bengal
8. Bokaro, Jharkhand
9. Banjari, Bihar

North Eastern Region
10. East Jaintia Hills, Meghalaya
11. Lanka, Assam
12. Umrangshu, Assam
13. Marigaon, Assam

Western Region
14. Naranda, Koropana Maharashtra (Murli Cement Works)

DALMIA CEMENT

DALMIA SUGAR

DALMIA POWER

DALMIA-OCL REFRACTORIES

CRAFT BETON

DALMIA NEWTHINK!

OUR CEMENT PRODUCTS

FOR HOME BUILDERS

- Dalmia OPC | 43 & 53 Grade
- Dalmia PPC
- Dalmia PSC
- Dalmia DSP

SPECIAL APPLICATIONS

- Airstrip Cement
- Oil Well Cement
- Railway Sleeper Cement
- Konark PCC

Dalmia is the Only Cement Company Globally committed to RE 100

EP 100 - A global campaign to double Energy Productivity

Source: CDP Cement Report 2018

RE 100 A global initiative bringing together businesses committed to 100% renewable electricity by 2030

First Cement Company to join Globally EP 100

Global Recognition

Dalmia Cement and FLSmidth of Denmark sign a MoU for cooperation in next generation cement technology towards building a sustainable future in presence of Danish Prime Minister and Indian Prime Minister in Copenhagen

Global Recognition

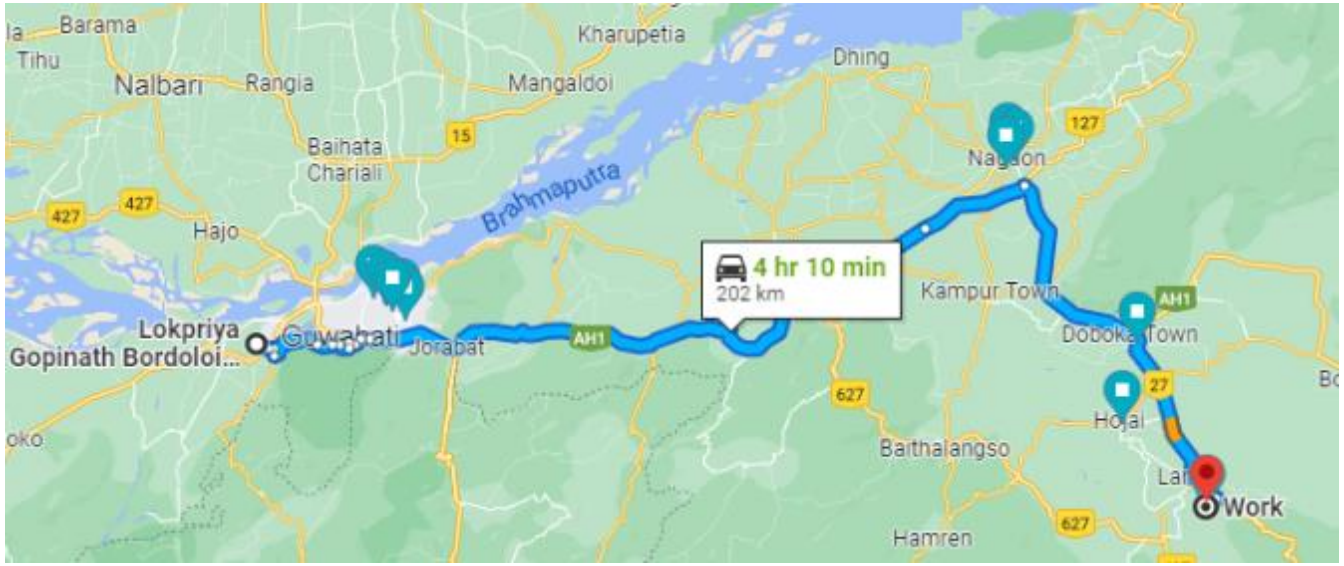
Dalmia Bharat was the only cement company invited to present at UN Climate Action Summit 2019 in New York

Our Commitment - Carbon Negative Cement Group by 2040

- Usage of 100% renewable power under fossil free electricity initiative – by 2030 (RE 100)
- Double energy productivity – by 2030 (EP 100)
- Renewable biomass and alternate fuels including plastic waste to replace fossil fuel use – by 2035
- Carbon Capture and Utilisation (CCU) for process emissions and Carbon Sequestration – by 2040
- In Our group Power Mix currently, we have Renewable Installed/commissioning Capacity of 218.5 MW including 130 MW Solar Plant, 72 MW WHRS and 16.5 MW Wind.

Dalmia Cement (North East) Limited- Introduction

- 2010 : Lanka Grinding Unit Commissioned.
- 2012 : Taken Over By Dalmia Cement Bharat Limited.
- 2014 : 2nd Cement Mill commissioned.



- Plant Name : DC(NE)L, Lanka
- State : Assam
- District : Hojai
- District Head Quarter : Hojai
- Product manufactured : Cement Grinding

- Distance of Lanka Unit from :-
- Hojai : 15 KM
- Guwahati Air Port : 202 KM
- Our Jagiroad Plant (GCW) : 150 KM
- Our Umrangshu Plant (USO) : 74 KM
- Our Meghalaya Plant (MGH) : 176 KM

Dalmia Cement (North East) Limited- Introduction

GATE COMPLEX

CEMENT SILO-2 NOS.
CAPACITY-5000MT
DSP SILO- 1 NO.
CAPACITY-500MT

12 SPOUT
PACKER/DOUBLE
DISCHARGE -3
NOS., MAKE-EEL

PACKING PLANT & SILO

TRUCK TIPPLER

TRUCK LOADER-9
NOS

STORES

2014- Lanka-plant 2nd line commissioned

2012 – CCIL taken over by DCBL

2010 -Lanka grinding unit commissioned

2004 - CCIL established by other group

CEMENT MILL

CHEMICAL LAB

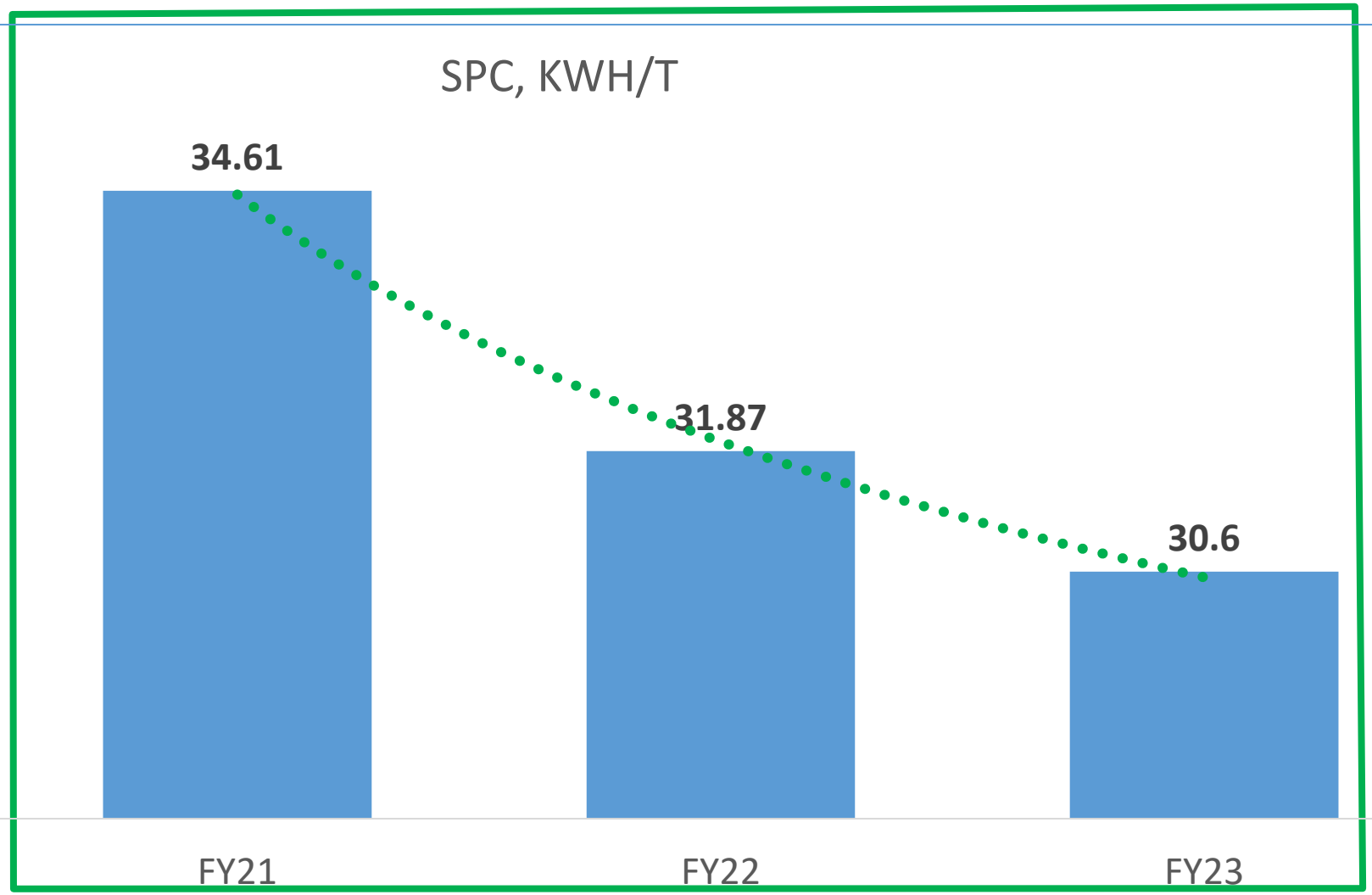
WORKSHOP

CANTEEN

Specific Energy Consumption Data

Parameter	2020-21	2021-22	2022-23
Installed Cement Capacity (mMTPA)	1.72	1.72	1.72
Actual Cement Production (mMTPA) :	1.24	1.51	1.59
Product Contribution of PPC (mMTPA) :	1.02	1.28	1.48
Product Contribution of OPC (mMTPA) :	0.22	0.23	0.11
Annual Electrical Energy Consumption (million kWh)	42.92	48.12	48.57
Specific Electrical Energy Consumption - PPC	33.68	30.62	28.58
Specific Electrical Energy Consumption - OPC	37.06	35.65	34.17
Overall average Specific Electrical Consumption	34.61	31.87	30.55

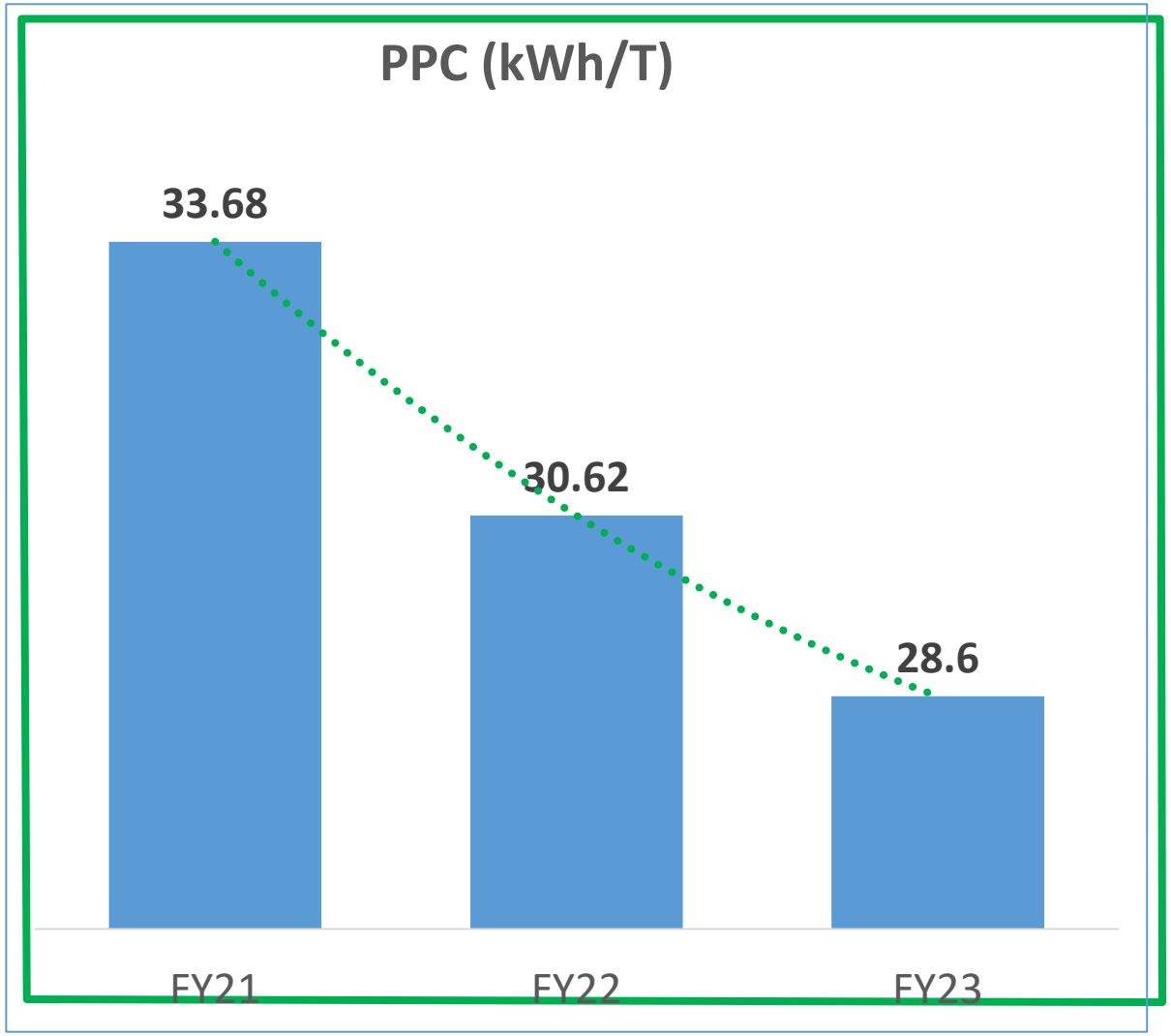
Specific Power Consumption in Trend Overall (KWH/T)

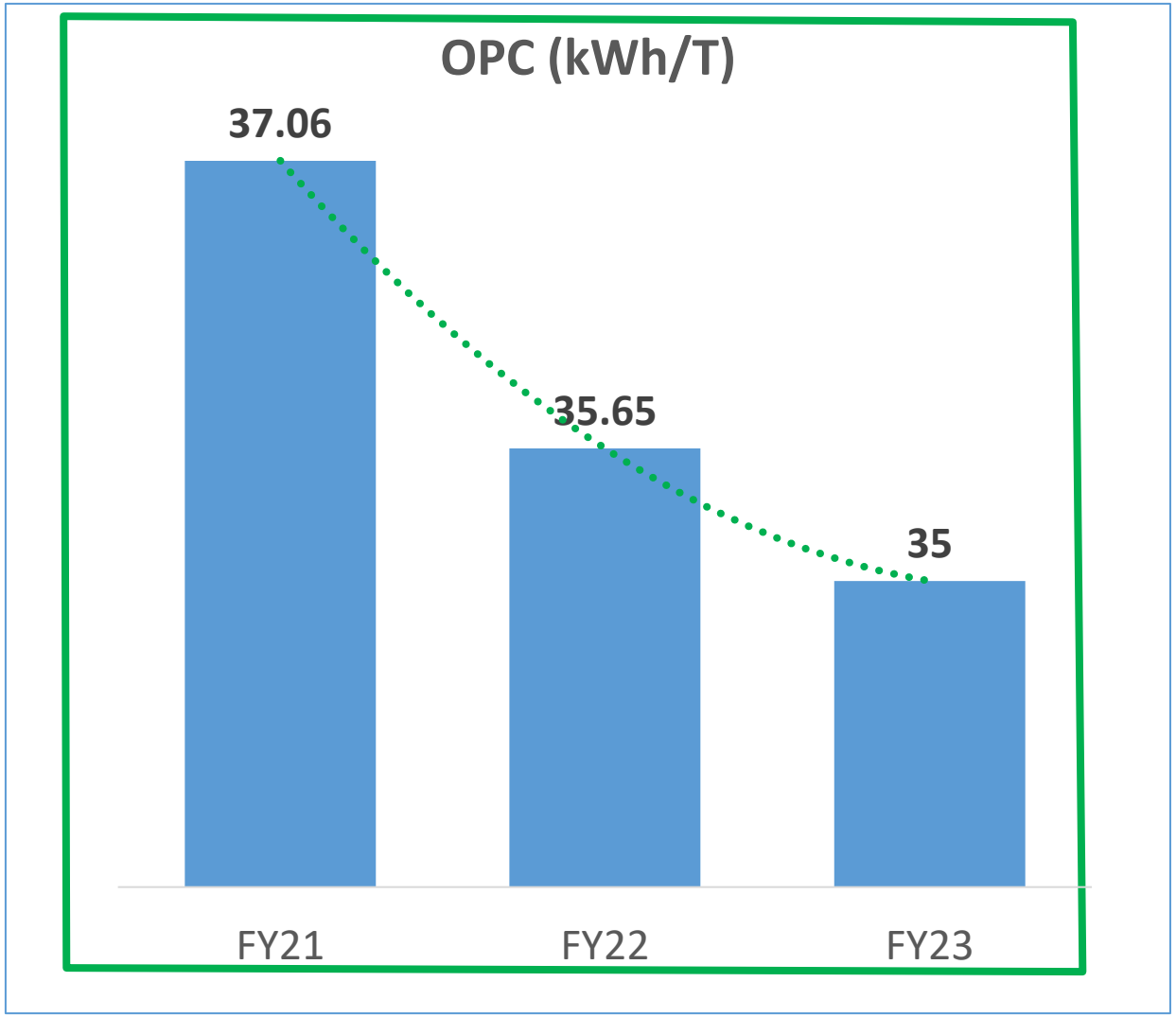


Major Initiative Executed :-

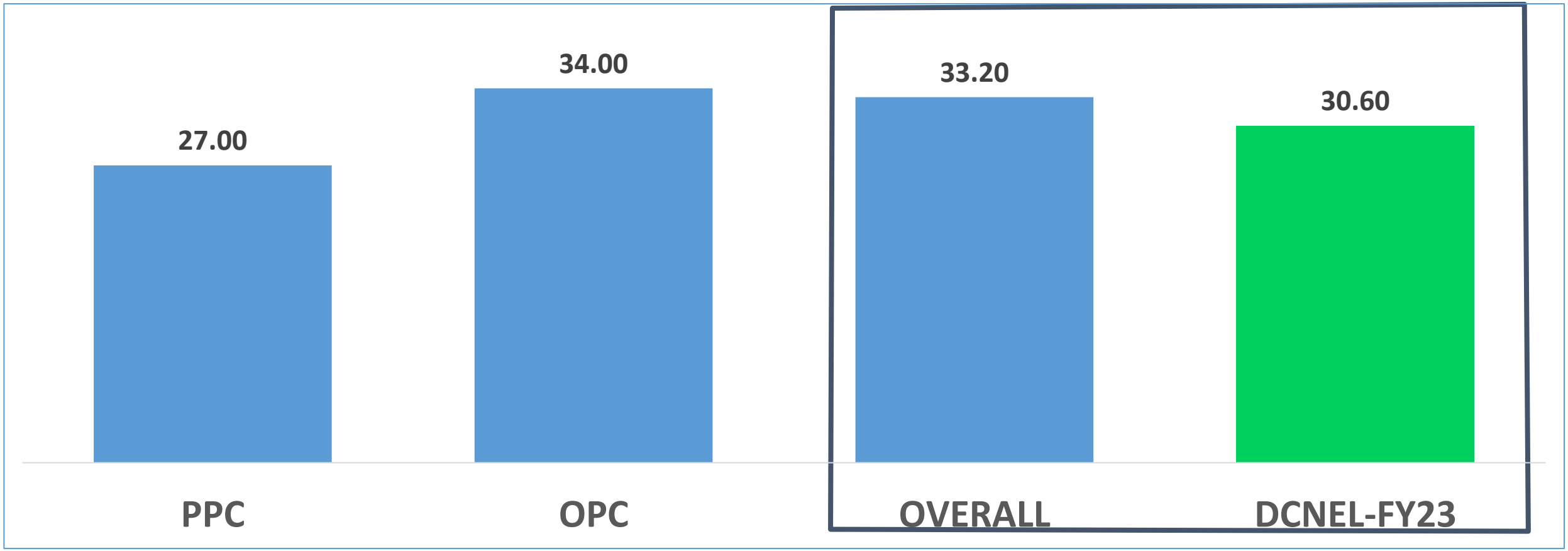
- ✓ Separate air receiver for Girth Gear of mill-1 and mill-2
- ✓ Installation of VFDs for fan, belt conveyors.
- ✓ Compressed air optimization by reduction of operating pressure, arresting leakages.
- ✓ Resizing of higher KW motor to lower KW.
- ✓ Arresting false air at baghouse.Earlier it was 9.8%, now its reduced to 5.2%
- ✓ Grinding media optimisation at mill.

Specific Energy Consumption (Product wise)





Benchmark for PPC/OPC/ OVERALL (kWh/T)



Major Energy conservation project planned during 2022-23

Sl.No	Description of Project	Saving on SPC, KWH/T	Required for enhancement of Productivity	Expected Completion Date	CO_2 reduction (in ton/yr)	Remarks
1	20 MWp Ground Mounted Solar Plant	-	-	-	18119	Completed
2	Additional 4 MWp Ground Mounted Solar Plant	-	-	-	2899	Completed
3	Roller Press for CM-1	4.1	Yes	31st Mar'23	92925	Completed
4	Additional 5 MWp Solar in under installation for FY23-24	-	-	Nov'23	4530	Work In progress

Energy saving project implemented in last 3 years

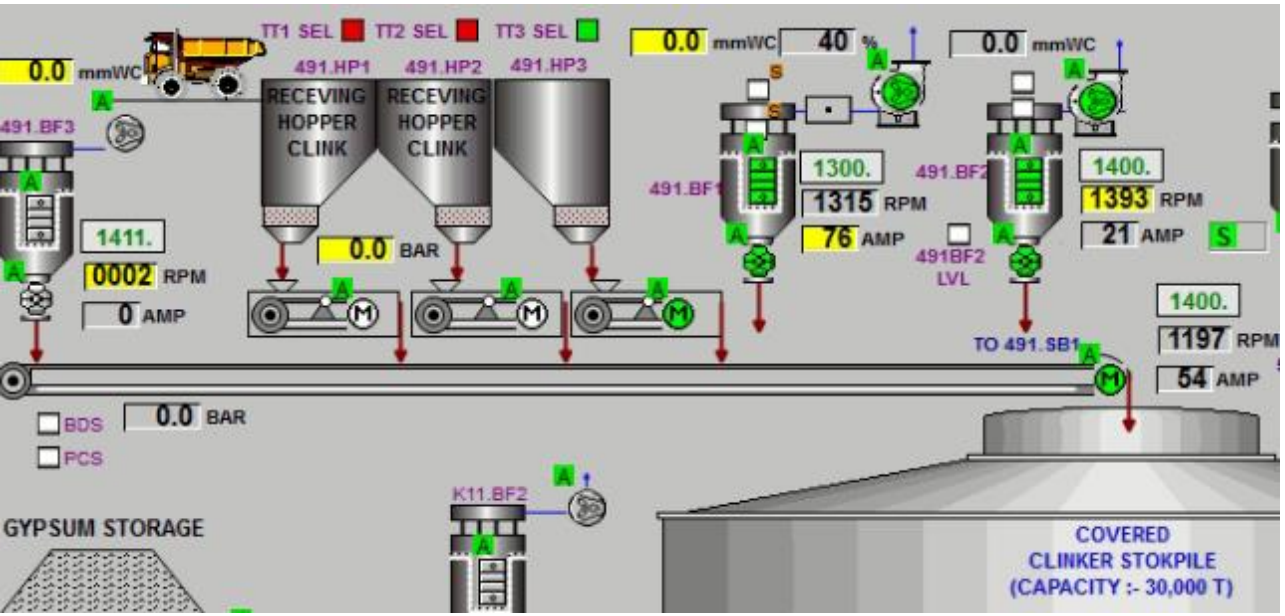
Year	No of Energy Saving projects	Investment (INR Million)	Electrical Savings (Million KWH)	Savings (INR Million)	Impact on SEC (Electrical kWh/MT cement)
FY 20-21	3	18	7.3	15.2	2.0
FY 21-22	1	6	1.5	7.5	0.5
FY 22-23	2	0.9	0.24	1.32	0.6
Total	**6**	**24.9**	**9.04**	**24.02**	**3.1**

Major Project Executed During Last Three years :-

1. Conversion of 11 no's of DOL starter with VFD.
2. WTP cooling tower fan interlock with temperature.
3. Storage coverage shed for fly ash - cap. 25KMT
4. Unmanned Weigh bridge operation and RFID for logistic controls
5. In house feeding of Condition flyash system
6. Zero Loss Drain valve

Innovative Project-1

- **Logic modification of Belt conveyors with VFD for power saving**



Earlier operation pattern (Though VFD exists):

Belt conveyor were running in full speed and manual setpoint provision given to operator to reduce the speed from 1500 RPM to 1000 RPM. But due to operation load operator missed out to reduce the RPM and forgot to increase when material unloading going on.

Power Consumption earlier : 335 KW /Hr
Power Consumption after implementation : 275 KW /Hr

Changed pattern with VFD interlocks :

1. Logic modified, As soon as belt start RPM is set to full and sustain for 90 secs, if current reduces to 50 Amp RPM is reduced to 1000 RPM and when current increases from 50 Amps for 5 sec then RPM is increased to 1400 RPM and sustain this 90sec and this cyclic operation continues in auto logic.
2. Same implemented for 11 Belt Conveyors.

BENEFITS:
- ❖ Saving of 60 KW/Hr
- ❖ Yearly Saving of Rs 18.72 Lakh /Yr

Innovative Project-2

- **Control feeding of Conditioned flyash in Hopper**

Earlier there was no option of feeding CFA on existing flyash feeding circuit and hence CFA was fed without proper ratio of DFA and CFA which led to frequent jamming of mill. Our team did brainstorming and came up with an idea of installing in house made belt feeder through which proper ration of CFA and DFA is fed and result of which is mill jamming is reduced to greater extend.

Utilization of Renewable Energy Sources

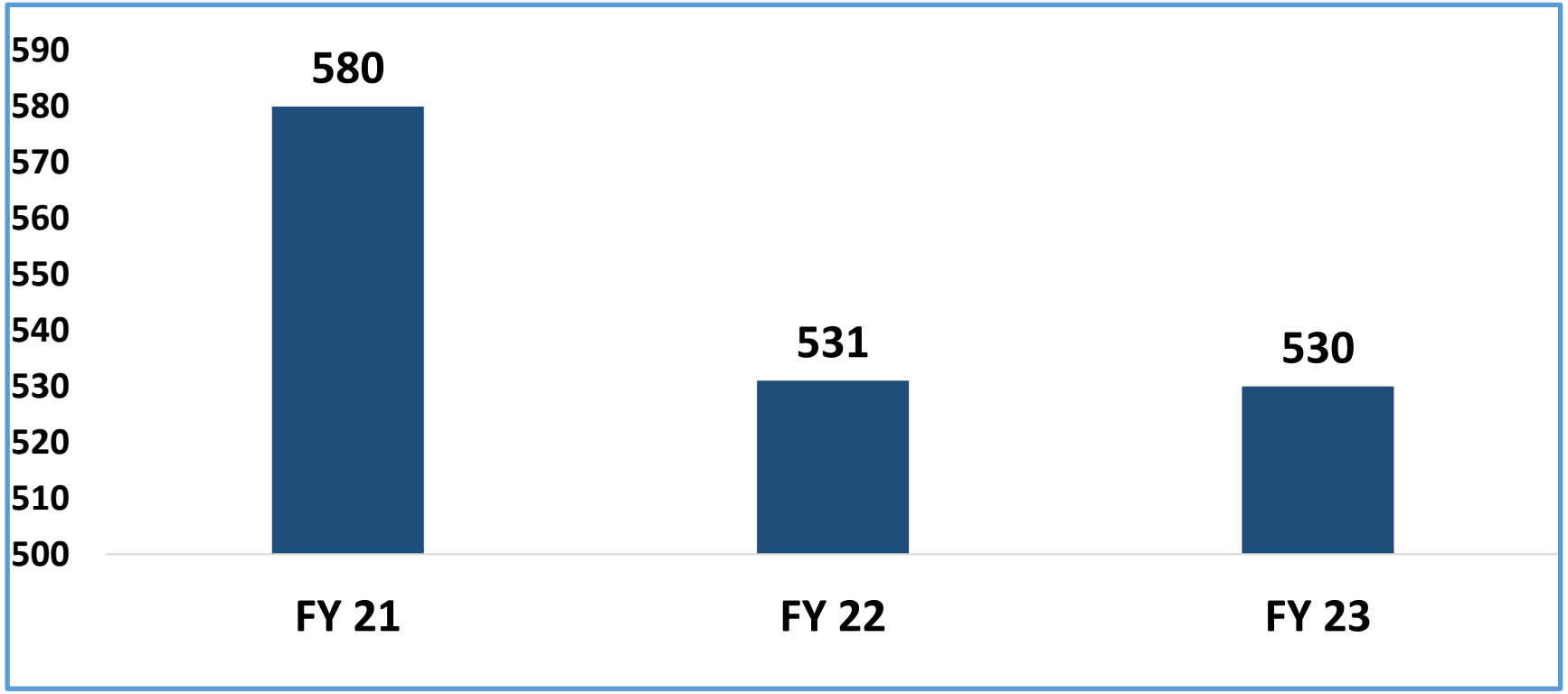
Dalmia Cement (North East) Limited- Lanka, Assam

- In Year FY22-23 we commissioned 24 MWp Ground Mounted Solar plant at our plant for captive consumption and wheeling to group plants.
- We have installed 40 No's Solar lights at highway to plant connectivity road and colony roads.
- RPO Obligation - All obligation is fulfilled and having excess Non-solar obligations.

Dalmia Cement Bharat Limited (Group)

- In line with our group vision of Carbon Negative Goal by 2040, we have brought down carbon emissions from 489kg/ton to 468kg/ton of cement.
- Installed/commissioning Capacity of 218.5 MW including 130 MW Solar Plant, 72 MW WHRS and 16.5 MW Wind.
- Dalmia USO Plant installed 6.8 MW WHRS & DC(NE)L, Lanka is drawing excess power from Dalmia USO.

Green House Gases(GHG) Inventorization



Action Plan for Reduction of CO2 Emission :-

- ✓ 40 % replacement of GRID power by Solar power in captive consumption and 29% within group units
- ✓ Installation of Roller press in Cement Mill-1 which will result in enhancement of productivity and specific power consumption reduction by 4.1 kWh/T of cement.

Initiative on Carbon Capture

Road To Carbon Negative by 2040

Dalmia Cement (Bharat) Limited and Carbon Clean Solutions have teamed up to build the cement industry's largest Carbon Capture Plant.

The carbon capture plant is a large scale facility of 500,000 tonnes per year carbon capture at Tamil Nadu, India.

Dalmia Cement signed a Memorandum of Understanding with Carbon Clean Solutions Limited (CCSL) ,a leader in low-cost carbon dioxide separation technology to provide technology and operational services for the plant based on its patented CDRMax Technology

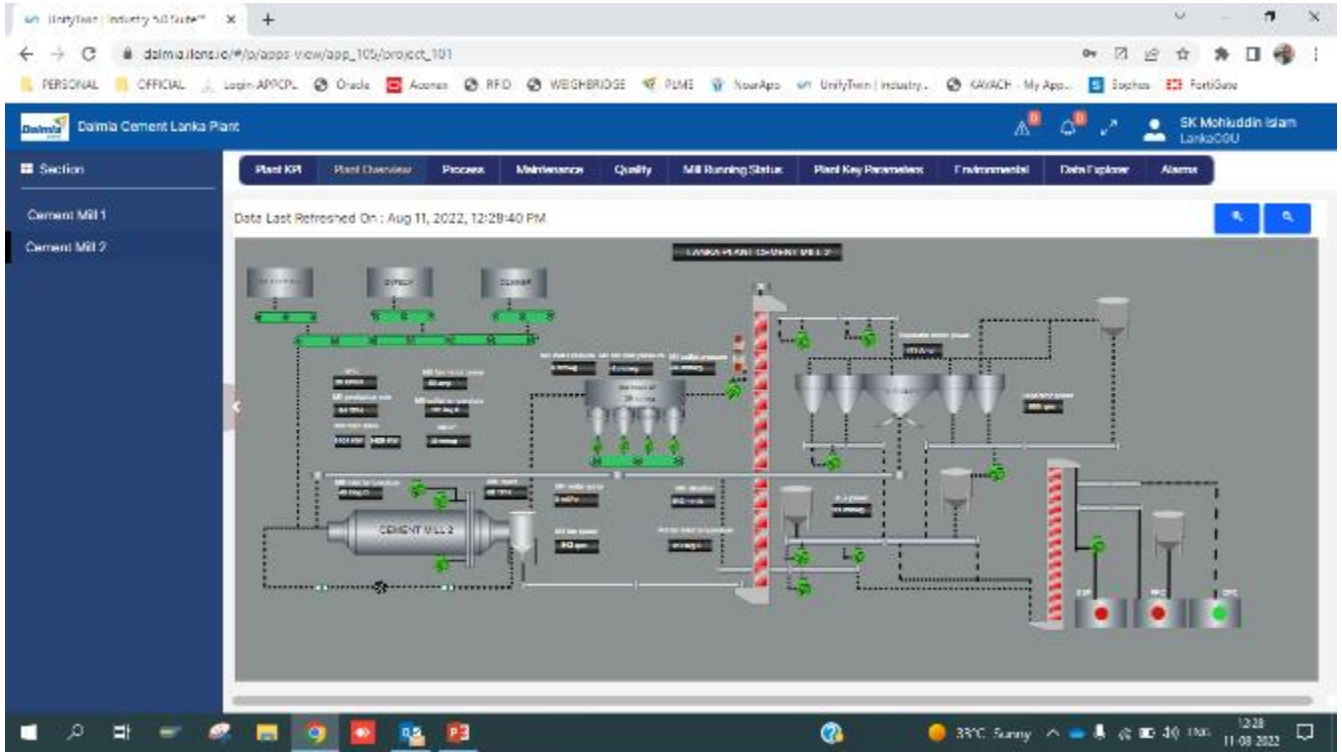
Dalmia Cement and CCSL will explore multiple utilization streams for the CO2 that is captured from this large-scale plant, including direct sale for use in other industries, and manufacture of chemicals.

Green Supply Chain Management

Executed Project :-

- Clinker carrying vehicles from Umrangsho unit are being used for transportation of Bagasse on return load.
- During FY 23, we have executed 211 Trips (2221 MT Bagasse) on return load.

Team Work, Employee Involvement & Monitoring



IOT based KPI monitoring:-

- Implemented IOT based mobile and desktop monitoring with regular alerts for better control and optimization.

Team Work, Employee Involvement & Monitoring

- Daily power consumption report circulation (Drive Wise) to all concern.
- Daily review of power consumption detail during production meeting chaired by Unit Head.
- Daily Circulation of Specific power consumption to all concern along with historical data.
- Idea collection through drop box, review & implementation.
- Energy audit (Internal & external).
- Onsite & off site training as per training calendar.
- Approval of capex/opex on early of financial year for all Energy Saving project / initiatives.

LIST OF KAIZENS

Sl. No.	Description	Action Taken	Benefits
1	Mill tripped due to frequent girth gear grease pump tripping	Provided a standby grease line with different air filter so that maintenance could be done during continuous operation of the other grease line.	Plant Reliability increases (93% to 98%)
2	Silo - 1 & Silo - 2 Exhaust Fan local control	Manual switch provided at Silo bottom, so that idle running is avoided.	Annual saving of 43,200 kWh
3	HP Pump was running idle for Mill - 1 & Mill - 2 slide shoe lubrication	Hp pump will stop in Mode-3 after 1 min, continues running not required	Annual saving of 57,600 kWh
4	Operate the process with single compressor running	Butterfly valves provided in different lines, where air requirement isolated	Annual saving of 1,58,400 kWh
5	Reduction in idle hour of start and stop duration for Mills	Idle running of mill equipment's eliminated by providing stopping logics	Annual saving of 40,000 kWh

Implementation of ISO 50001/ IGBC Rating

DC(NE)L-Lanka

bsi.

Certificate of Registration

ENERGY MANAGEMENT SYSTEM - ISO 50001:2018

This is to certify that:

Calcom Cement India Limited
2 No. Pipalpukhuri Lanka
Hojai 782446
Assam
India

Holds Certificate No: **ENMS 777428**

and operates an Energy Management System which complies with the requirements of ISO 50001:2018 for the following scope:

The Manufacture of Ordinary Portland Cement and Pozzolana Portland Cement.

For and on behalf of BSI:

Theuns Kotze, Managing Director Assurance - IMETA

Original Registration Date: 2023-03-11
Latest Revision Date: 2023-03-11

Effective Date: 2023-03-11
Expiry Date: 2026-03-10

Page: 1 of 1

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Further clarifications regarding the scope of this certificate and the applicability of ISO 50001:2018 requirements may be obtained by consulting the organization.
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BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Dalmia Cement (North East) Limited received the BSI certification of ISO 50001

DC(NE)L-Lanka

Dalmia Cement (North East) Limited received the Platinum benchmark from IGBC (Indian Green Building Council)

Learning from CII Energy Award 2020 or any other award program

1. Reduction of Compressor Pressure from 5.8 to 4.8 Kg/Cm2, increased the off time delay from 4 sec to 6 sec for Main Product Bag Filter & Reduction of Comp. Air Pressure from 5.7 to 4.5 Kg/Cm2 for Nuisance Bag Filters. Annual saving of 1.10 lacs.

2. Use of zero loss drain valve in all receiver tanks, eliminated the problem of condensation and avoided compressed air losses happening in timer mode.

3. Fixing of vibrators at hopper cones, belt chutes etc. to avoid jamming during monsoon. This has helped to prevent material fluctuations due to high moisture, & thereby maintaining uniform feed & hence control the specific power consumption.

Award, acknowledgement & major achievement

Dalmia Group

Mr. Mahendra Singhi honoured with 'Person of the Year' Award

Plaudit! Dalmia Bharat grabs Supply Chain Management Award for Fly Ash Utilization

Kapilas Unit

Kadapa Unit

Dalmia Cement Belgaum Unit Receives Top Honours from Ministry of Mines

Rajgangpur unit wins ESG Champion for Green Fuel and Net Zero Commitments!

DC(NE)L-Lanka

BAGGED 5S PLATINUM AWARD FROM ABK-AOTS IN DEC 2018

BAGGED 5S PLATINUM AWARD FROM QCFI CHENNAI CHAPTER IN SEP-2019

Lanka unit of Dalmia Cement declared the winner of the 20th Annual Greentech Safety India Award'21

THANK YOU

CONTACT INFORMATION

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