CII National Energy Award for Excellence in Energy Management-2023

UltraTech Cement Limited

Unit: Sikandrabad Cement Works

Presented by- Mr. Amit Zaroo (SH-Mechanical)
Member- Mr. Venkata Rao Lolla (AM-Process)

Integrity Commitment Passion Seamlessness Speed

Purpose and Values

OUR GROUP PURPOSE

"TO **ENRICH** LIVES, BY BUILDING **DYNAMIC** AND **RESPONSIBLE** BUSINESSES AND INSTITUTIONS, THAT INSPIRE **TRUST**."

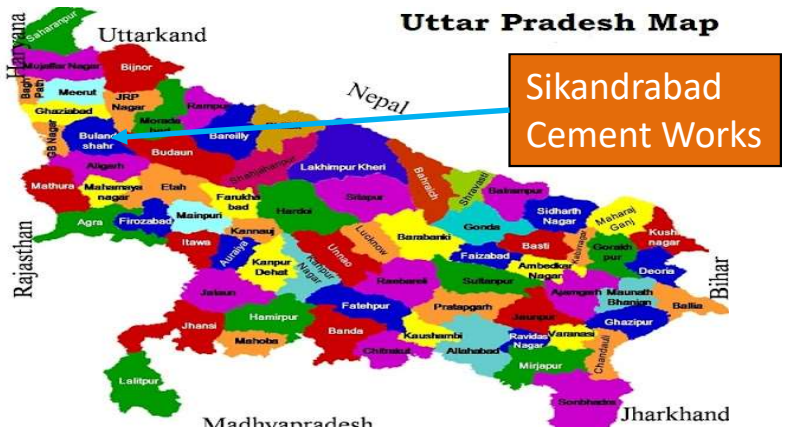
LIVING the VALUES

Integrity **Commitment** **Passion** **Seamlessness** **Speed**

1. Introduction to Company

Company Profile- UltraTech Cement Limited

- UltraTech Cement Limited is the cement flagship company of the Aditya Birla Group. UltraTech is the largest manufacturer of grey cement, ready mix concrete (RMC) and white cement in India.
- UltraTech has a consolidated capacity of 132.4 MTPA of grey cement.
- UltraTech has 23 integrated manufacturing units, 29 grinding units, one Clinkerisation unit and 8 Bulk Packaging Terminals.



Sikandrabad Cement Works

- Sikandrabad Cement Works is a 1.0 MTPA Clinker Grinding Unit (GU) established in 2011 under Jaypee Associated Limited. In 2017, UltraTech Cement Limited (UTCL) acquired integrated cement plants and grinding units of Jaypee group, including Sikandrabad Cement Works.
- Product contribution- 100% PPC.
- Our unit is located in 16 Acres area, Just in Time concept and inprocess capacity losses were very Low.

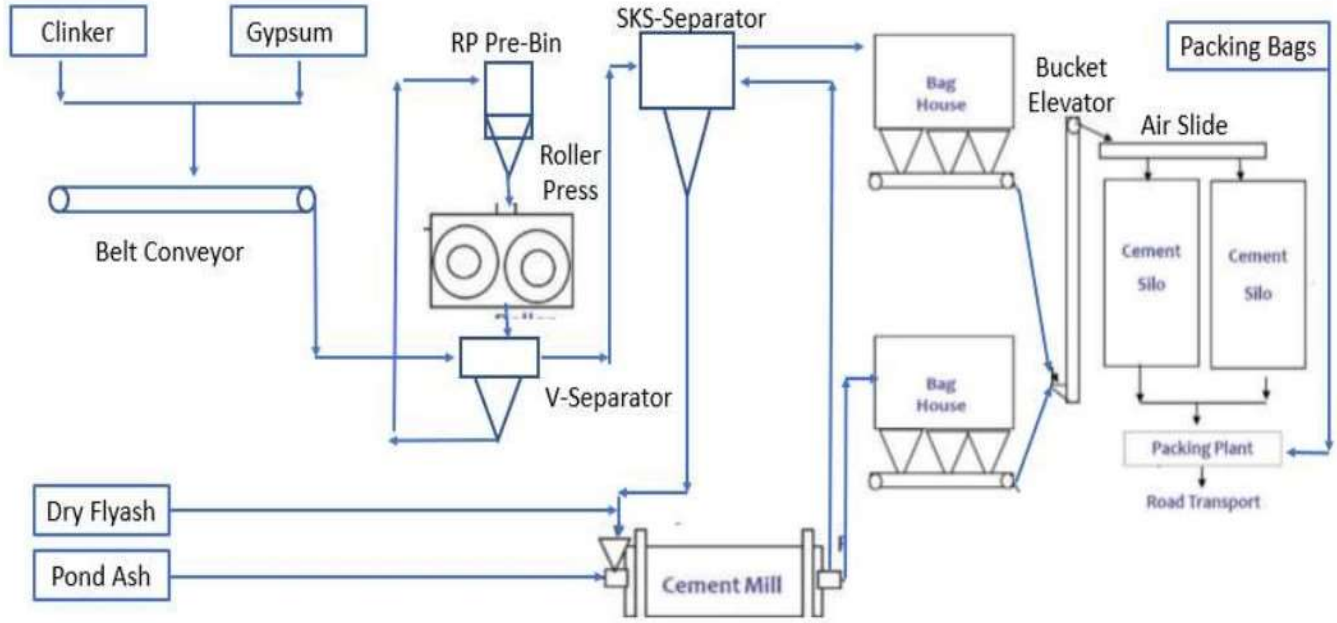
2. Process Flow and Technology

- **Cement Grinding & Storage :**

Clinker, Gypsum & Fly ash are extracted from their respective hoppers and fed to the V separator after that material is sent to Cement Mill.

Cement Mill will grind the material to a fine powder and the final product is transported to steel silos for storage .

- **Cement Packing & Dispatch** - Cement extracted from cement silos is packed in bags by rotary packing machines and dispatched to consumers by road.



Type of Cement	Raw Mix Proportion, % by weight.		
	Clinker	Gypsum	Fly ash/Pond Ash
PPC	60 - 61	4 - 5	Up to 35

Plant Equipment Details

BALL MILL

- Make: WALCHAND NAGAR/ ELECON.
- Capacity: 150 TPH PPC @3500 Blaine
- Size: Dia :-3.71m X L:- 12.4m.

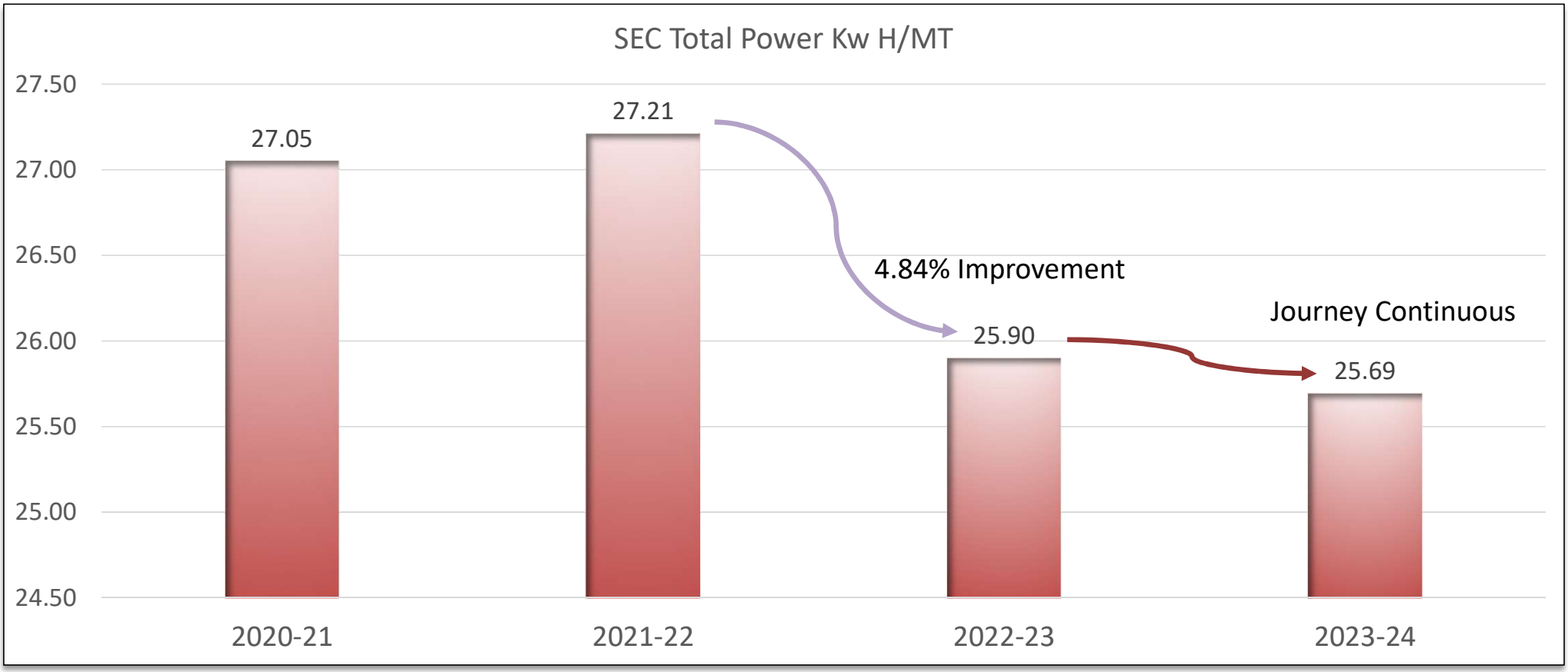
ROLLER PRESS

- Make: KHD
- Model : RP-S-10
- Size: D-1070/L-1100
- Through put: 430TPH

PACKING PLANT

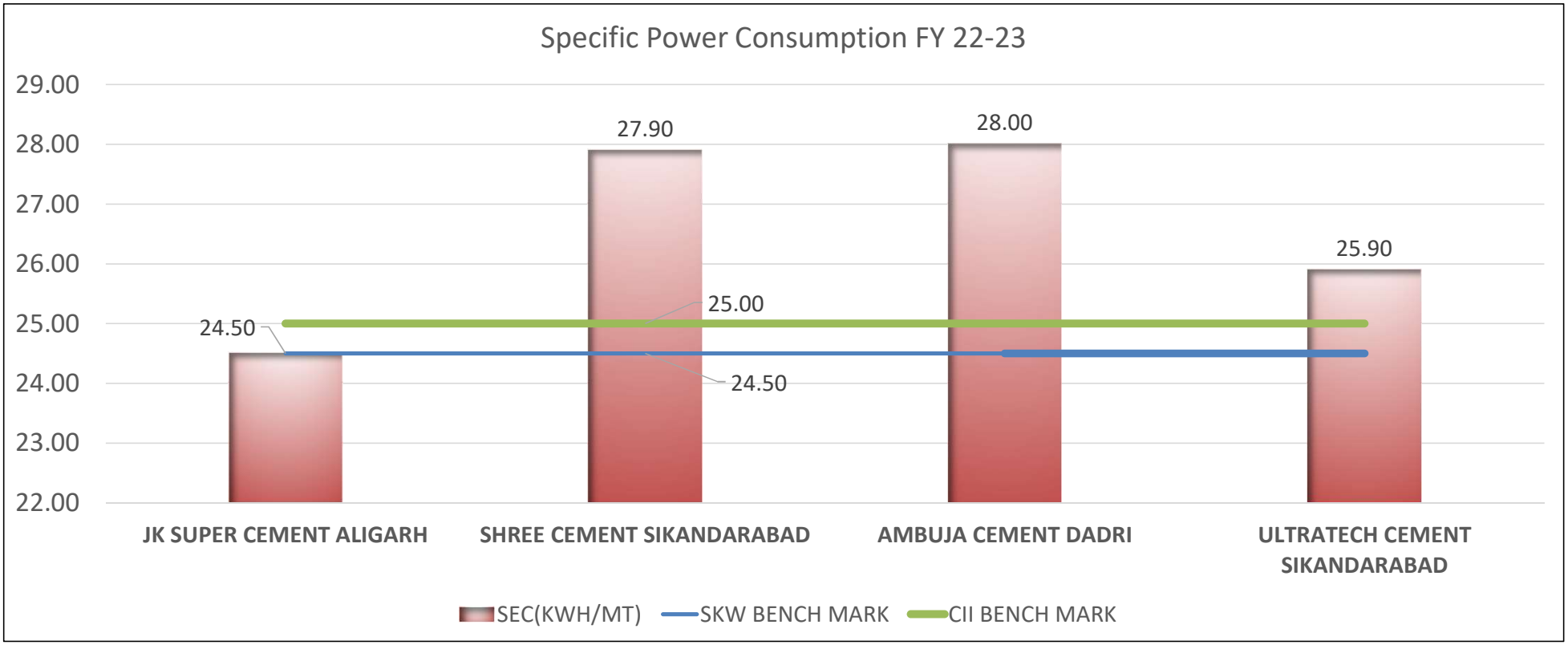
- 2 Nos Packers
- 8 Spout single discharge
- Capacity: 120TPH
- 4Nos TLM :EEL
- Manual Loader Rail mounted

2. Specific Energy Consumption- TOTAL POWER



Integrity Commitment Passion Seamlessness Speed

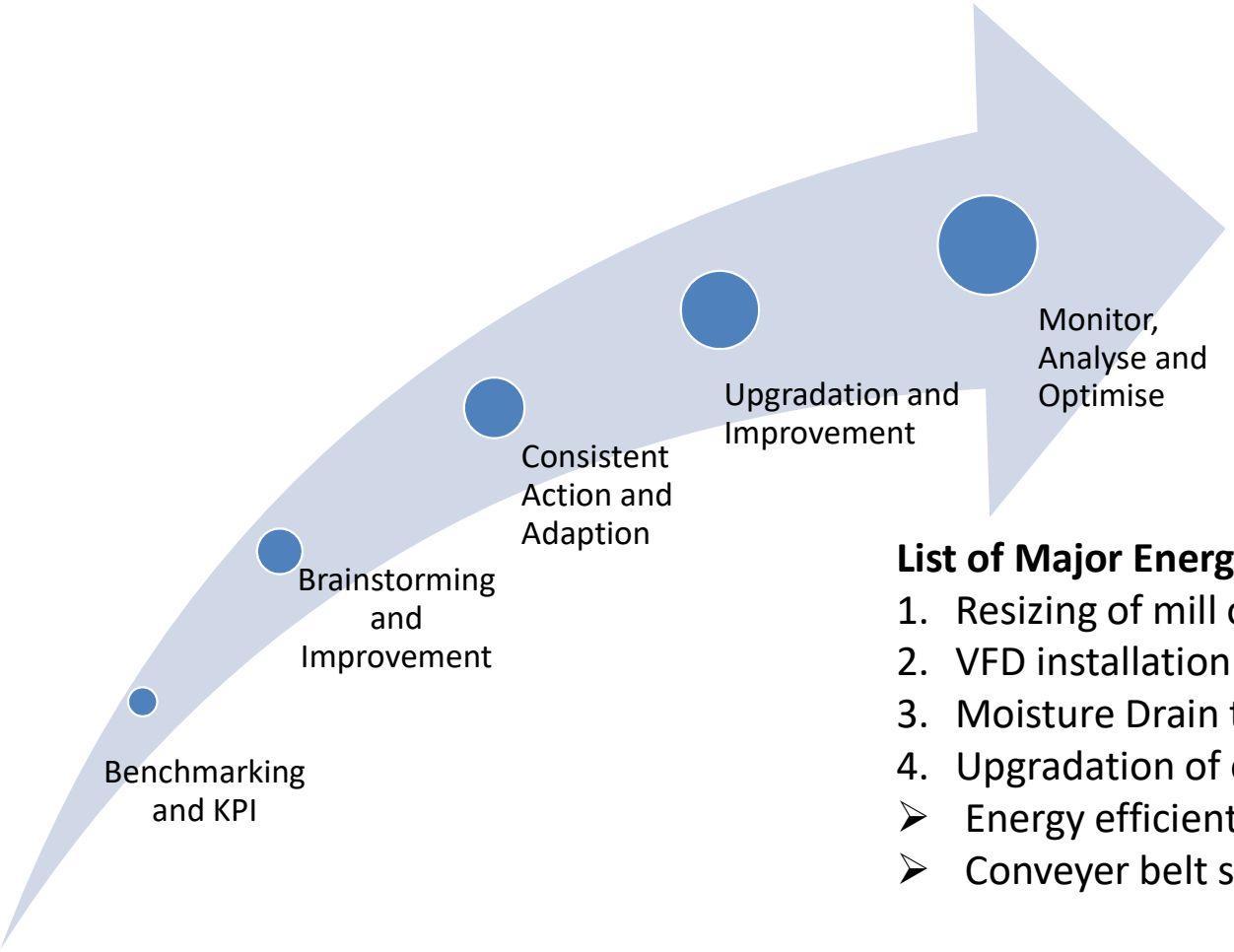
3. Information on Competitors, National & Global benchmark



Target for FY 23-24 is

25.5 KWH/MT

4.Road map and action for achieving the target and benchmark



Target for FY 23-24

25.5KWH/MT

List of Major Energy Conservation Project Planned in FY 23-24

1. Resizing of mill outlet Bucket elevator
2. VFD installation in bag filter fans.
3. Moisture Drain trap.
4. Upgradation of equipment's :

- Energy efficient motor replacement with old one
- Conveyer belt size optimisation.

4.0 Energy Saving projects Implemented

List of Energy Saving Project year wise:-

YEAR	No. of energy saving project	Investment (INR Million)	Electrical saving (Million kWh)	Total saving (Million)	Impact on SEC/ (Electrical kWh /MT Cement
2020-21	6	10.75	1.0	6.42	1.0
2021-22	4	0.35	1.94	1.31	0.02
2022-23	3	3.28	2.0	1.32	0.02

Summary of projects in FY 2020-21:

1. Replacement of Screw compressor in place of Reciprocating compressor. (TA)
2. VFD installation in bag filter fans. (EO)
3. Single bag filter use for two Fly ash silos as well as Cement silos. (E0)
4. In Roller press Forged roller changed with compound cast roller. (TA)
5. Automation of bag filter fan ON/OFF interlocking with truck tippler operation.(E0)
6. Bag filter fan speed optimization through PID implementation in Packing Plant.(E0)

4.0 Energy Saving projects implemented

- **Summary of projects in FY 2021-22:**
- Modification carried in reciprocating low pressure compressor.
- One bag filter removed from packing plant elevator dedusting line.
- Water circulation Pump of the Capacity of 45 KW was replaced with the capacity of the 9.3 KW
- One air slide fan removed out of two in packer circuit.

- **Summary of projects in FY 2022-23**:
- Installed single VFD for two bag filter fans in RMH circuit.
- Air slide replacement in place of two screw conveyors.
- Belt bucket elevator modification – Increased no's of the buckets by reducing spacing in-between Buckets with existing drive station.

5.0 Innovative Projects Implemented

1.0 Air slide in place of the screw conveyor at Cement Mill vent Bag filter Discharge

Theme

Power Saving by replacing screw conveyor with Air slide

Problem

High Maintenance of the screw conveyor & reduction of the power

Solution

Replaced the existing screw conveyor with air slide & running successfully Instead of the two screw conveyor drives of 5.5 kw.

Benefit

Saving of the 0.003 kWh/MT SEC.

Annual saving of 1.2 Lakh after investment of 1.9 Lakh.

Improvement in the plant reliability.

5.0 Innovative Projects Implemented

2.0 Enhance the capacity of the silo feed bucket elevator.

Theme

Improvement of the silo feeding Elevator capacity to 220 TPH .

Problem

Silo feed elevator is getting pressurized during the plant operation.

Solution

Additional buckets in the elevator which has improved the bucket lift capacity with out any retrofitting of the elevator. By reducing the bucket spacing from 450 mm to 350 mm, we have achieved desired TPH.

Benefit

Saving of the 0.05kWh/MT SEC.

Improved house keeping

Improvement in the plant feeding capacity to 220TPH.

Before

After

5.0 Innovative Projects Implemented

3.0 Single VFD installation for two bag filter fans.

Theme

Power saving through installation of VFDs

Problem

To reduce the power in RMH circuit.

Solution

Installed single VFD for two bag filter fans.

Benefit

Saving of 0.05 kWh/MT of SEC.

Annual saving 4.6 Lacs. after investment of 2Lacs.

6.0 Utilisation of Renewable Energy

We are using **offsite** generated solar power energy generated by M/s Lalganj Power Limited since April, 2022.

Our Group is purchasing 35 MW Solar from M/s Lalganj Power Private Limited for our 4 units- Sikandrabad, Aligarh, Dadri and Tanda. Out of 35 MW, 9.1 MW of share is considered for Sikandrabad Cement Works.

- ✓ **Cost Saving**
- ✓ **Energy Independence**
- ✓ **Sustainability Goals**

Year	Technology (solar/wind/biomass)	Installed Capacity (MW)	Consumption (million kWh)	% of overall electrical consumption	Renewable Energy Saving Detail In (Rs million)
2020-21	Solar				
2021-22	Solar				
2022-23	Solar	9.1	12.93	44.08	31.17

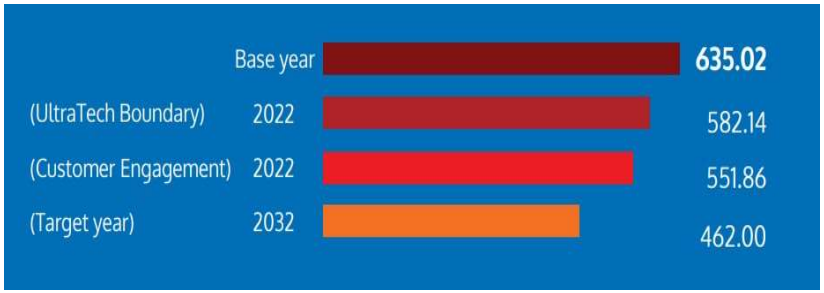
7. GHG Inventorisation- UltraTech Cement Limited

- We strive to reduce our Carbon footprint through multiple energy-efficient measures.
- We effectively lowered our specific GHG emissions compared to previous year by implementing various strategies and efficient measures.

Targets-

Reduction target set for 2032, validated by Science Based Targets initiative (SBTI).

- 9.1% reduction in carbon emissions
- 195 kg CO2/m3 GHG emission for concrete production
- 15.06% carbon intensity reduction against the SBTI



	(th. t CO2/Y)		
	2020-21	**2021-22**	**2022-23**
Scope I (Direct Emission)	56585	61755	62530
Scope II CO2 emissions (Indirect CO2 emissions from electricity consumption)	1405	1139	1695
Scope III CO2 emissions (Transportation)	5257	4547	4204

	(kg CO2)/t of Cementitious Product		
	2020-21	**2021-22**	**2022-23**
Scope I (Direct Emission)	596.59	582	557
Scope II CO2 emissions (Indirect CO2 emissions from electricity consumption)	16.74	11.12	16.31

Public disclosure: CO2 emission data of UTCL group is shared on the official website in Sustainability reports.

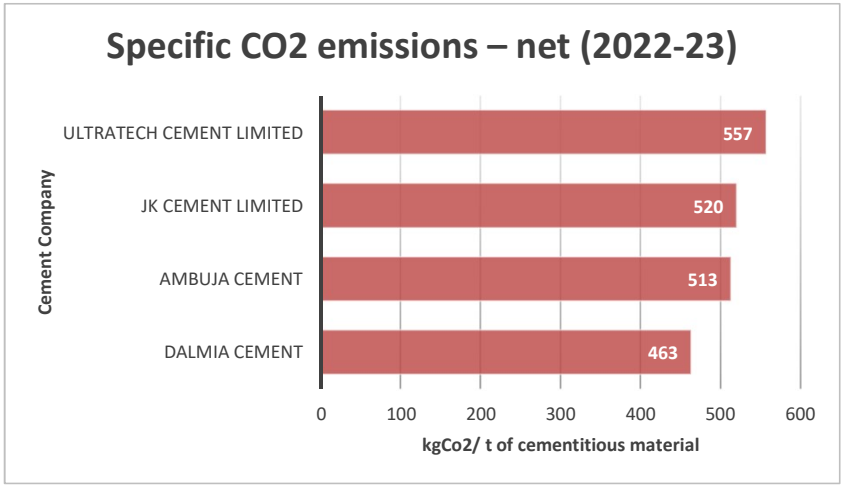
7. GHG Inventorisation- Unit: Sikandrabad Cement Works

Reducing operational GHG footprints-

1. Internal carbon pricing
2. Alternate raw material
3. Renewable energy
4. LNG/CNG based transportation of material

Reducing GHG with our products-

1. Life Cycle Assessment and Environmental Product Declaration .



	(kg CO2/y)			
	2019-20	**2020-21**	**2021-22**	**2022-23**
Scope II CO2 emissions (Indirect CO2 emissions from electricity consumption)	512173	490676	544917	541973
Scope III CO2 emissions (Transportation)	4175	7766	7078	8129

	(kg CO2)/t of Cementitious Product			
	2019-20	**2020-21**	**2021-22**	**2022-23**
Scope II CO2 emissions (Indirect CO2 emissions from electricity consumption)	1.65	1.52	1.63	1.37
Scope III CO2 emissions (Transportation)	0.013	0.024	0.0212	0.0198

8. Energy Management System

- In our current practice, we are monitoring and reviewing our energy performance manually.
- We are ISO 50001:2018 certified. ISO 50001 brings an effective process to measure and manage energy use in order to Reduce/manage energy usage and operating costs.
- **Challenges Faced:**
  - Time-Intensive: Manual data collection and analysis
  - Human Errors: Potential inaccuracies in data handling
  - Limited Scalability: Challenges in managing larger or multiple sites
- **Future Outlook:**
  - Potential Automation: Transition towards automated energy management
  - Efficiency Gains: Automation's benefits in accuracy and scalability
  - Continuous Improvement: Evolving strategies for enhanced energy management

Bureau Veritas Certification

ULTRATECH CEMENT LTD.
SIKANDRABAD CEMENT WORKS

19-20 INDUSTRIAL AREA SIKANDRABAD, DISTRICT: BULANDSHAHR – 203 206, UTTAR PRADESH, INDIA.

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above Organisation 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

Unloading & Storage of Clinker, Fly ash & Gypsum.
Clinker & Gypsum Grinding and mixing Fly ash to make Cement.
Cement Storage, Packing & Dispatch.

Original cycle start date: **09 April 2023**
Recertification cycle start date: **09 April 2023**
Subject to the continued satisfactory operation of the Organisation's Management System, this certificate is valid until: **08 April 2026**
Certificate No. **IND.23.7514/EN/U** Version: **1** Issue date: **09 April 2023**

For certificate authenticity, click here https://certcheck.ukas.com/

ISO 50001 IN043486

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

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 organisation.
To check this certificate validity please call **+ 91 22 6274 2000.**

UKAS MANAGEMENT SYSTEMS 0008

8. EMS- Leaning from CII and takeaway

The Confederation of Indian Industry (CII) is a prominent and influential association of Indian businesses that works to promote and support various industrial and economic activities in India.

It serves as a platform for businesses to interact, collaborate, and address issues related to industry growth, policy advocacy, innovation, and sustainable development.

Organizations can learn from CII's comprehensive approach to energy excellence, which encompasses awareness and education, encouraging energy audits, technology adoption, policy advocacy, benchmarking, and fostering a culture of sustainability.

- Implementation of best practices shared or learned from CII.
- Learned Project planning & Execution, Application engineering.
- Enhanced uses of various QC tools, Analysis & presentation skill.
- Reduced the project cost by utilizing internal resources and manpower.

Sharing:

The Success Story of same shared among our group units of UltraTech & Idea Sharing Platform " I Love My UltraTech"

9. Net Zero- Commitments and Initiatives

- Commitment to the GCCA 2050 Cement and Concrete Industry Roadmap for Net Zero Concrete. As a founding member of the Global Cement and Concrete Association (GCCA), we stand alongside forty other industry leaders, vowing to produce carbon-neutral concrete by 2050 and reduce Scope 1 CO2 emissions by 27% by 2032.
- Guided by the comprehensive 'Concrete Future' roadmap developed by the GCCA, we are aligned with the target of limiting global warming to 1.5°C set forth in the Paris Agreement

Initiatives:

✓ We are committed to the RE100 initiative and aim to source 100% of our electricity from renewable sources by 2050.

✓ By 2024, we plan to draw 34% of our power requirement from green sources.

- Increasing our green energy portfolio by setting up 345MW solar and wind power plants and 210 MW waste heat recovery systems (WHRS)

✓ As proud participants of EP100, a global leadership initiative uniting energy-efficient companies, we remain committed to doubling our energy productivity since 2018.

✓ Company aims to achieve a 27% reduction in Scope 1 carbon intensity by 31st March, 2032, against the carbon emissions from March 2017, with assistance from SBTi. And also signed for science-based targets (SBTi) to achieve the carbon neutrality target by 2050.

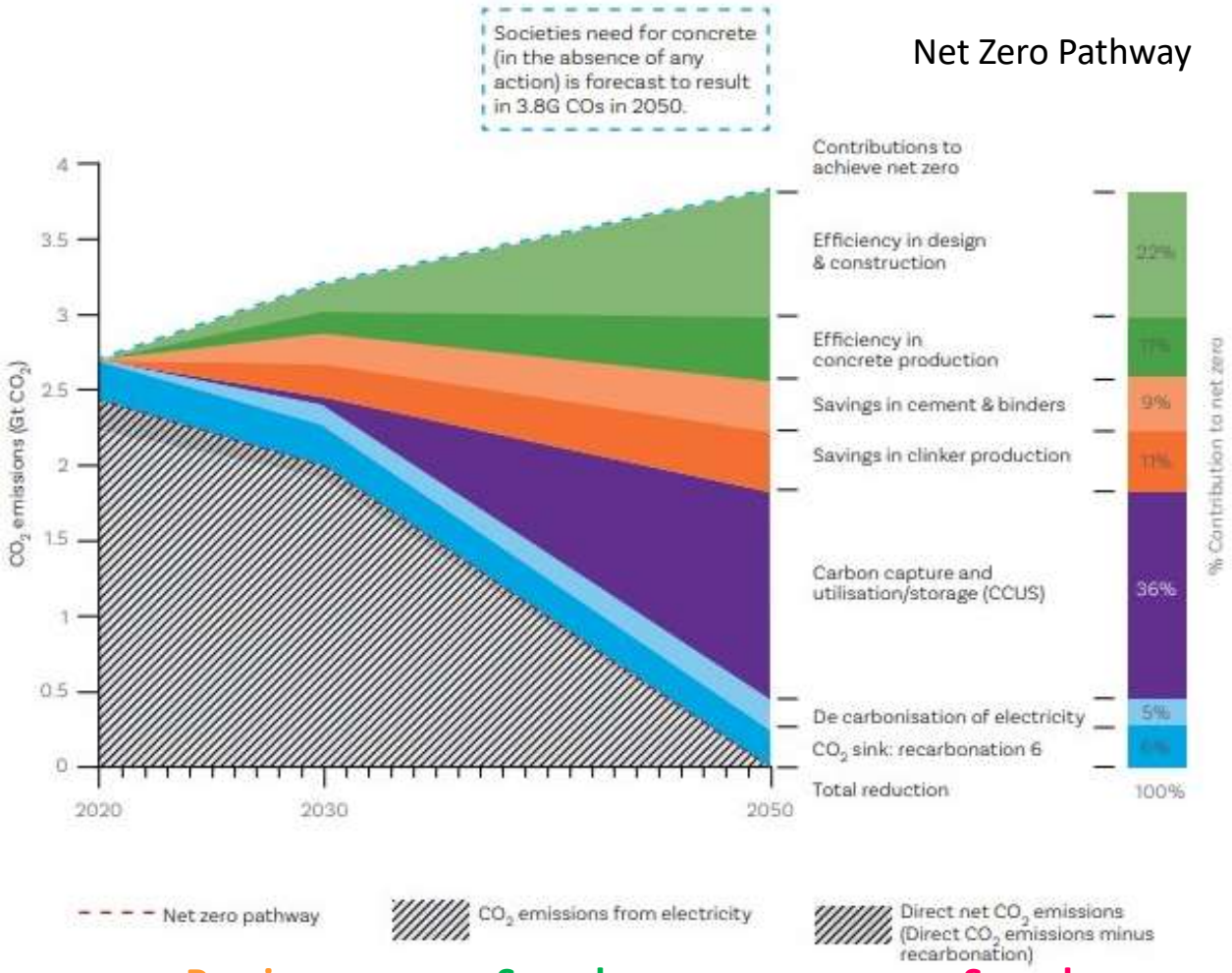
✓ UNEP Energy Compact Part of the UNEP Energy Compact, committed to accelerate achievement of clean, affordable energy for all and net zero emissions by 2050

9. Net Zero- Roadmap

The ‘Concrete Future’ roadmap’s seven-point plan serves as our guiding framework, driving us to deliver net-zero concrete and contribute to a decarbonized industry.

1. Efficiency in design & construction
2. Efficiency in concrete production
3. Savings in cement and binders
4. Saving in clinker production
5. Carbon capture and utilization/storage
6. De-carbonation of electricity
7. CO2 sink: Re-carbonation

Net Zero Pathway



Integrity **Commitment** **Passion** **Seamlessness** **Speed**

Certifications-

ADITYA BIRLA
UltraTech

intertek
Total Quality. Assured.

CERTIFICATE
OF REGISTRATION

This is to certify that the management system of:

Ultra Tech Cement Limited
Unit Sikandarabad Cements Works

Main Site: 19-20, Industrial Area, Sikandrabad,
Distt. Bulandshahr - 203205, Uttar Pradesh, India

has been registered by Intertek as conforming to the requirements of:

ISO 9001:2015

The management system is applicable to:

Manufacturing of PPC Grade Cement.

Certificate Number:
0084417

Initial Certification Date:
26 November 2018

Date of Certification Decision:
01 October 2021

Issuing Date:
04 October 2021

Valid Until:
25 November 2024

Calin Moldovean
President, Business Assurance

Intertek Certification Limited, 10A Victory Park, Victory Road, Derby DE24 8ZF, United Kingdom

Intertek Certification Limited is a UKAS accredited body under schedule of accreditation no. 014.

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone. The certificate remains the property of Intertek, to whom it must be returned upon request.

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ISO 14001:2015

The management system is applicable to:

Manufacturing of PPC Grade Cement.

Certificate Number:
0084416

Initial Certification Date:
26 November 2018

Date of Certification Decision:
01 October 2021

Issuing Date:
04 October 2021

Valid Until:
25 November 2024

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Main Site: 19-20, Industrial Area, Sikandrabad,
Distt. Bulandshahr - 203205, Uttar Pradesh, India

has been registered by Intertek as conforming to the requirements of:

ISO 45001:2018

Certified to OHSAS 18001:2007 from 26 November 2018 to 08 November 2020

The management system is applicable to:

Manufacturing of PPC Grade Cement.

Certificate Number:
0084418

Initial Certification Date:
26 November 2018

Date of Certification Decision:
01 October 2021

Issuing Date:
04 October 2021

Valid Until:
25 November 2024

Calin Moldovean
President, Business Assurance

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Thankyou….!!