



Accelerating Smart Power and Renewable Energy in India (ASPIRE)

WEBINAR ON

OPPORTUNITIES FOR DEPLOYMENT OF AI-BASED SOLUTION TO REDUCE ENERGY CONSUMPTION AND CARBON EMISSIONS IN THE CEMENT SECTOR

Wednesday, 31 May 2023

14:30 – 16:00 IST / 09:00 – 10:30 GMT



Background

The ASPIRE Programme¹ aims to strengthen partnerships between UK technology/ solution suppliers and Indian industries to accelerate the adoption of industrial energy efficiency and decarbonisation (IEED) measures. India is the second largest producer of cement in the world, with an installed capacity of 500+ million metric tons per annum (MTPA)². In 2022, India produced 370+ million metric tons (MT) of cement (~9% of global production)³. Demand for cement in India is estimated to touch ~420 MT by FY 2027⁴ and the industry promises huge potential for growth as India has a high quantity and quality of limestone deposits throughout the country.

The cement industry is a significant contributor to greenhouse gas emissions, particularly due to the high carbon intensity of the cement production process. To address this challenge and align with global efforts towards achieving net-zero targets, leading cement industries in India have announced several initiatives as part of their decarbonisation commitments. In view of this, the ASPIRE Programme in collaboration with the Bureau of Energy Efficiency (BEE), organised a one-day sectoral workshop on “Best Practices in Energy Efficiency & Decarbonisation in Cement Sector” on 14th March 2023 in Udaipur, Rajasthan. The workshop witnessed around 80 participants including various Indian cement manufacturers and UK technology and solution providers.

During the workshop, stakeholders deliberated on various best practices and technology interventions required to accelerate decarbonisation of the cement sector. Amongst the various innovative and new-

¹ The Accelerating Smart Power and Renewable Energy in India (ASPIRE) programme is a bilateral technical assistance programme implemented by Government of UK, in association with the Ministry of Power and the Ministry of New and Renewable Energy, Government of India

² Cement | BUREAU OF ENERGY EFFICIENCY, Government of India, Ministry of Power (beeindia.gov.in)

³ Cement: Production Ranking Top Countries 2022 | Statista

⁴ Indian Cement Industry Analysis | IBEF

age global technologies presented during the workshop, Carbon Re's AI-based Delta Zero Cement technology was identified as one of the potential solutions for improving industrial energy efficiency and decarbonisation. In view of this, a follow-up webinar is being organized on 31 May 2023 with a focus on disseminating information on Carbon Re's AI-based Delta Zero Cement technology, helping cement plant operators reduce energy consumption and carbon emissions.

About Carbon Re's Technology

Delta Zero, a product of Carbon Re, is especially developed for energy-intensive process manufacturing. It applies the latest advances in artificial intelligence (AI) and machine learning to uncover energy efficiencies and reduce costs and carbon emissions in industrial processes. Delta Zero focuses on the critical pre-heater and kiln processes stages that accounts for all thermal fuel use and emissions to optimise fuel use, reducing carbon emissions. Details are provided in the Annexure.

Objectives of the webinar:

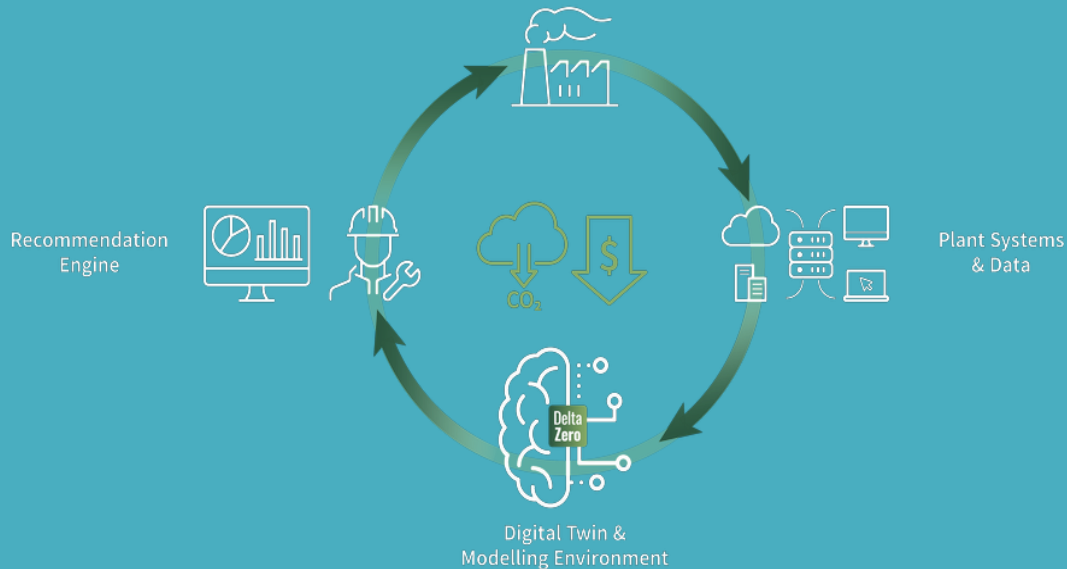
- (i) Share details of the innovative AI-based Delta Zero, an Artificial and Machine Learning technology offered by Carbon Re for reducing carbon emissions.
- (ii) Understand views of Indian cement industries on the nature of support required for greater and wider adoption of such innovative industrial energy efficiency/ decarbonisation technologies and solutions.

Agenda for the Webinar

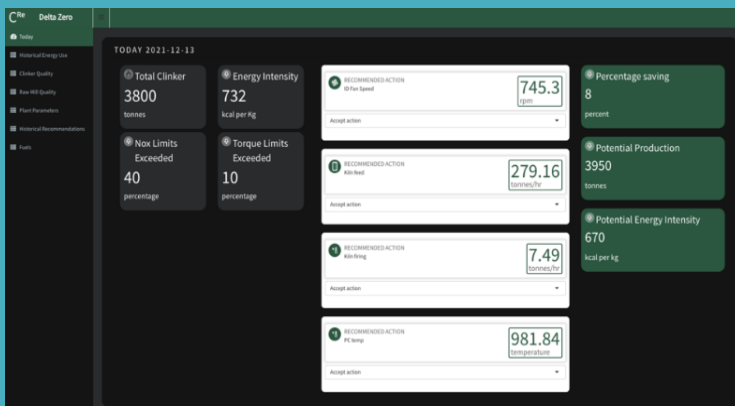
Time (IST)	Agenda Item	Presenter
14:30 – 14:35	Welcome Address and Introduction	ASPIRE Team
14:35 – 15:15	Presentation on AI-based Delta Zero Cement Technology	Carbon Re
15:15 – 15:55	Question and Answer	Moderated by ASPIRE Team
15:55 – 16:00	Summary and Vote of Thanks	ASPIRE Team

Annexure –Details of Delta Zero Cement – An Artificial Intelligence (AI) and Machine Learning (ML) based software platform.

Delta Zero applies the latest advances in artificial intelligence (AI) and machine learning to uncover energy efficiencies and reduce costs and carbon emissions in industrial processes. Key features of Delta Zero include: a) Human in the loop - provides plant operator control over the entire production processes, b) API layer data integration – provides access to the live status and data of plant, c) Digital twin – based on actual data, it maintains an accurate model specific of plant, d) Recommendation engine - provides specific and quantified setpoint recommendations to be actioned by the operator.



Delta Zero Cement (AI and ML-based software platform) simulates the chemical and physical processes in a plant, enabling AI agents to find solutions tailored to each plant. The software analyses feed rates, sensor data and control parameters to provide clear quantified recommendations to reduce the mass of CO2 emitted per useful heating value (kgCO2/UHV). Delta Zero Cement (AI and ML-based software platform) enables lower fuel costs and lower emissions.



Delta Zero Cement (AI and ML-based software platform) is powered by Deep Reinforcement Learning, a powerful branch of artificial intelligence that can efficiently handle complex relationships and provide effective pathways for process optimization. This brings advanced AI tools to cement plant operations, enabling significant efficiencies, cost savings and emissions reduction, without CAPEX. Delta Zero

Cement has already been piloted at various cement plants like Tarmac UK, Lafarge Holcim and Cemex across Europe, Asia, and the Americas.

For more information, please join the webinar on 31 May 2023 | <https://carbonre.com/>