

MEDIA RELEASE

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For Immediate Release

Low Carbon on Cement Possible with CCS

Edmonton, AB – A low carbon future for cement is advancing through a unique feasibility study to see carbon capture and storage (CCS) on Lehigh Cement’s plant in Edmonton, Alberta. Recognizing the substantial role that large-scale CCS has in reducing greenhouse (GHG) emissions, Lehigh Cement, the International CCS Knowledge Centre (Knowledge Centre), and Mitsubishi Heavy Industries (MHI) Group are moving forward with the engineering design for this feasibility study of the cement plant’s carbon capture system.

A first for the North American cement industry, the Lehigh CCS Feasibility Study looks at the viability of capturing 90-95 per cent of the carbon dioxide (CO₂) - an estimated 600,000 tonnes of CO₂ annually - from the cement plant’s flue gas. The study is also a first for each of these organizations in North America all of whom pledge to actively work toward decarbonization.

The study is timely as the recently released Canada Climate Plan specifically indicates that it will develop a comprehensive CCS strategy and explore other opportunities to help keep Canada globally competitive in this growing industry.

With experience gained through the design, construction, operation, and subsequent enhancements/modifications of the SaskPower Boundary Dam 3 CCS Facility (BD3 Facility), the Knowledge Centre, along with MHI Group and their collaborative work on the Shand CCS Feasibility Study, continue to be at the forefront of post-combustion capture processes globally and see an opportunity for CCS across post-combustion industries.

Due to the remarkable similarities in flue gases, the expertise acquired at the BD3 Facility can be adapted to the cement sector with experienced-based guidance from the Knowledge Centre. The Lehigh CCS Feasibility Study will look to an engineering design that tailors the carbon capture technology owned by Mitsubishi Heavy Industries Engineering (MHIENG), part of MHI Group, so called KM CDR Process™ being deployed at 13 commercial plants globally, for integration with Lehigh’s plant and output specifications, such as a flue gas pretreatment system and the carbon capture and compression process.

With cement demand on the rise and as a sector that is challenged with further abating emissions, large-scale CCS could well become the definitive solution to cut GHGs. The Lehigh CCS Feasibility Study explores the value of this for the cement industry, by encompassing engineering designs, cost estimation and an in-depth business case analysis.

Quotes

“Advancements for large-scale CCS on cement is important in the broader deployment of CCS facilities across sectors so that we, as global citizens, can make meaningful impact on emission reductions worldwide.”

- Beth (Hardy) Valiaho, VP Strategy & Stakeholder Relations, International CCS Knowledge Centre

"The path to achieving a carbon-neutral world by 2050 requires the ability to decarbonize hard to abate sectors. By exploring and unlocking ways to expand our proven carbon capture technology to new markets and applications, we can face the challenge head-on."

- Yoshihiro Shiraiwa, President & CEO, Mitsubishi Heavy Industries America

"This CCS feasibility study is essential for understanding how our industry can continue to meet growing production demands, while also meeting equally important climate targets. We are proud to be in a position to lead a global change with a crucial clean technology in our industry."

-Joerg Nixdorf, President, Lehigh Hanson Canada Region

-30-

QUICK FACTS & LINKS

Lehigh CCS Feasibility Study

- The Lehigh CCS Feasibility Study is being jointly conducted by the Knowledge Centre and Lehigh Cement with a target delivery of fall 2021.
- The objectives of the study are to deliver a Class 4 cost estimate; to work with a capture technology provider (MHI Group) to perform engineering design tailored to the Lehigh plant; to manage the process and engage third parties, as necessary; to complete a detailed business case; and to develop the budget for Front End Engineering Study (FEED).
- This initiative has received \$1.4M in funding from Emissions Reduction Alberta (ERA) through its Partnership Intake Program. ERA's investments help innovators develop and demonstrate GHG-reducing technologies that lower costs, improve competitiveness and accelerate Alberta's transformation to a low carbon economy.

Cement Emission Overview

- Concrete, a product of cement, is the second most consumed substance on the planet, next to water, with roughly attributing three tonnes of concrete yearly by every person on earth ([State of the Planet, Earth Institute, Columbia University](#)).
- Total emissions from the cement industry contribute as much as **7-8%** of global CO₂ emissions.
- Two thirds or 5% of global emissions result from the chemical reactions in the cement production process and therefore cannot be eliminated through gains in energy efficiency.
- Global demand for cement is expected to increase 12-23% by 2050 (IEA Report: [Transforming Industry through CCUS](#))

About the International CCS Knowledge Centre (Knowledge Centre): with a mandate to advance the global understanding and deployment of large-scale CCS to reduce global GHG emissions, the Knowledge Centre provides the know-how to implement large-scale CCS projects as well as CCS optimization through the base learnings from both the fully-integrated Boundary Dam 3 CCS Facility and the comprehensive second-generation CCS study, known as the Shand CCS Feasibility Study. Operating since 2016 under the direction of an independent board, the Knowledge Centre was established by BHP and SaskPower. For more info: <https://ccsknowledge.com/>

About Mitsubishi Heavy Industries Group:

Mitsubishi Heavy Industries (MHI) Group is a global leader in engineering and manufacturing. With more than 80,000 employees working in over 300 companies worldwide. MHI Group is a major global force in power systems, industry and infrastructure, and the aircraft defense and space industries. Mitsubishi Heavy Industries Engineering (MHIENG), together with Kansai Electric Power Co., Inc. (KEPCO) started the development of the Kansai Mitsubishi Carbon Dioxide Recovery KM CDR Process™, a post-combustion carbon capture technology, in 1990. As of November 2020, MHIENG has delivered a total of 13

commercial plants with the KM CDR Process™, making it a global leader in carbon capture technology deployment. Two more plants are currently under construction. For more info: <https://www.mhi.com/products/engineering/co2plants.html>

About Lehigh Cement & Lehigh Hanson:

Since 1956, Lehigh Cement has been an innovator, partner and collaborator in advancing the cement and concrete industry, and supporting Alberta's economy. Lehigh Cement is an affiliated company of Lehigh Hanson, the North American operations of HeidelbergCement. For more info: <https://www.lehighhanson.com>.

Lehigh Hanson is part of HeidelbergCement, one of the world's largest integrated manufacturers of building materials and solutions, with leading market positions in aggregates, cement, and ready mixed concrete. Around 54,000 employees at more than 3,000 locations in over 50 countries deliver long-term financial performance through operational excellence and openness for change. At the center of actions lies the responsibility for the environment. As forerunner on the path to carbon neutrality, HeidelbergCement crafts material solutions for the future.

About Emissions Reduction Alberta (ERA):

For more than 10 years, ERA has been investing the revenues from the carbon price paid by large final emitters to accelerate the development and adoption of innovative clean technology solutions. Since ERA was established in 2009, they have committed \$616 million toward 186 projects worth \$4.55 billion that are helping to reduce GHGs, create competitive industries and are leading to new business opportunities in Alberta. These projects are estimated to deliver cumulative reductions of 35 million tonnes of CO₂ by 2030. For more info: <https://eralberta.ca/>

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