

Air Liquide starting a CO₂ capture pilot unit dedicated to the decarbonization of cement industry

Air Liquide announces the start-up of its first industrial-scale pilot unit specifically designed for the cement sector, based on its Cryocap™ proprietary technology. This pilot is located at the CaptureLab launched by Holcim and is a significant milestone to support the scaling up of industrial carbon capture solutions in hard-to-abate sectors.

The Cryocap™ FG (Flue Gas) is a version of Cryocap™ in particular designed for the cement sector. As part of Cryocap™ FG, this industrial-scale pilot unit introduces key technologies for the pre-treatment of flue gas, which remains one of the primary challenges in the decarbonization of these hard-to-abate sectors. With a capacity of 3,000 Nm³/h of flue gas, the unit enables the removal of impurities from the flue gas and preconcentration of CO₂ prior to final CO₂ purification, an essential step for reliable and large-scale deployment of carbon capture technologies for the cement industry.

Designed with a modular approach for easy transport and installation, the unit can be easily relocated to other industrial sites after its initial phase at Holcim's CaptureLab in France, the world's first capture test platform for the cement industry. **The scale-up validated by this pilot unit is a significant milestone for the roll-out of the Cryocap™ technology across the cement industry**, where most CO₂ emissions result from the chemical breakdown of limestone rather than energy use alone, making the process particularly difficult to decarbonize.

This pilot builds upon Air Liquide's decade of industrial expertise at Port-Jérôme, France, with Cryocap™ H₂ and paves the way for the next cement and lime projects, featuring the pioneering Air Liquide technology.

Armelle Levieux, member of Air Liquide's Executive Committee, notably supervising Innovation and Technology activities, stated: **"We are proud to commission this industrial-scale pilot at Holcim's CaptureLab, a project that marks a significant step forward in the decarbonization of the broader cement industry. This new pilot unit highlights Air Liquide's leadership in innovation and our unique ability to scale proprietary technologies from laboratory research to industrial-scale applications, providing impactful solutions for our customers."**

About Cryocap™

Under Cryocap™, Air Liquide has developed a comprehensive range of technologies to capture and/or liquefy CO₂ in all industrial sectors. The Cryocap™ technology is mainly based on a cryogenic process (involving low temperatures to separate gases). Other technological building blocks (membranes, adsorption) supplement it. Cryocap™ uses no solvents and is powered by electricity. The Cryocap™ technology has been in industrial operation for more than 10 years, in Port-Jérôme, France.

About Cryocap FG

Cryocap FG is a version of the Cryocap™ technology specifically designed for hard-to-abate industries like cement and lime. Installed directly at the flue outlet, it allows operators to deploy carbon capture without requiring any modifications to existing production facilities. By uniquely combining adsorption and cryogenic separation, this highly efficient system can achieve a CO₂ recovery higher than 95%.