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News

Innovation and Industry

Climate, environment and circular economy | CO2 capture, utilization and storage

Coordinated by Axens, the four-year dinamX “Demonstration and Innovative Applications of the DMX™ Process” project was launched by partners ArcelorMittal France, IFP Energies nouvelles (IFPEN) and TotalEnergies in 2020. Supported by the French Investments for the Future Program led by ADEME, dinamX is aimed at studying the application potential of DMX™ technology, developed by IFPEN for the decarbonizaton of blast furnace gases to new types of industrial CO_2 emitters.

CO_2 capture and storage (CCS) technologies appear essential to reduce industrial CO_2 emissions and achieve carbon neutrality, particularly in France where such emissions account for more than 30% of overall emissions. According to the International Energy Agency, CCS should make it possible to reduce CO_2 emissions in the energy and processes sector by 5.6 Gt by 2050 within the context of a Sustainable Development Scenario (SDS).

Developed by IFPEN, the DMX™ process to be marketed by Axens uses a more effective solvent than reference amine-based processes, which are energy-intensive due to the solvent regeneration. This highly competitive technology should enable a 30% reduction in the cost of CO_2 capture. It is set

to be demonstrated on an industrial pilot facility constructed in modular form by Axens at the ArcelorMittal France site in Dunkirk, at the end of 2021, within the framework of the European H2020 “3D” project, final step prior the marketing of the process.

Map of industrial CO_2 emissions in France

In order to determine the potential avenues for rolling out the DMX™ process at industrial sites other than steelmaking (cement works, refineries, incinerators, etc.), the dinamX partners began by mapping the biggest CO_2 emitters across France.

CO_2 emissions for these industrial emitters were qualified (flows, impurities, pressure) in order to identify the sites for which application of the DMXTM process would be feasible. In addition, a regional analysis resulted in the creation of a CO_2 emissions dispersal index and the identification of two regions, Hauts-de-France and Normandy, where emissions could be grouped together in a CCS “hub”. 86 million metric tons of CO_2 emissions, among the least dispersed in France, could thus be treated each year via CCS, provided storage sites are available.

A new step for the dinamX project

A new step in the dinamX project is set to begin with the launch of a case study at the Réty limestone plant site (Hauts-de-France), operated by Lhoist, a Belgian company specializing in the production of limestone and Dolomite. A technical and economic study will be conducted in order to determine the quantity of CO_2 necessary to capture as well as the cost of using the DMX™ process.

> ”Lhoist's involvement in the project reflects our ambition to extend the application of DMX™ CO_2 capture technology to new CO_2 emitter sectors. This represents another step forward on the road to the decarbonization of industry”, says Christian Streicher, Gas Development Director at Axens.
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> “For Lhoist, the creation of hubs collecting CO_2 emissions from multiple industrial players is a fundamental model of collaboration that will underpin a carbon-neutral society. Contributing to the emergence of innovative techniques enabling individual emitters to capture, purify, collect and use or store their emissions is a highly mobilizing “adventure” , particularly working alongside our major commercial partners” , affirms Thierry Chopin, CO $_2$ Innovation VP, at Lhoist.

“The dinamX project is supported by the French Investments for the Future Program (PIA) bed by ADEME” and the *Ressources Energétiques* Carnot Institute.

>> **For more information** : **Reducing industrial CO_2 emissions: $C0_2$ capture and storage**

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