

INNOVATION FUND

Deployment of net-zero and innovative technologies

eM-Rhone: electroMethanol-Rhône

The Innovation Fund is 100% funded by the EU Emissions Trading System

| Project Factsheet

The eM-Rhône project will integrate several technologies for large-scale e-methanol production beyond the current state of the art. The project will combine renewable hydrogen production, carbon capture from an existing cement plant, and e-methanol synthesis. It aims to demonstrate an optimised synergy between these three mature building blocks to produce e-methanol. This will translate into a 99% relative greenhouse gas (GHG) emission avoidance compared to the reference scenario of methanol production from natural gas.

In practice, 27 kilotonnes per year (kt/y) of renewable hydrogen are planned to be produced using 170 megawatt (MW) Proton exchange membrane (PEM) electrolyzers, powered with renewable energy. The electrolyzers will combine different power purchase agreements that ensure additionality and traceability of the renewable power, while providing flexibility of electrolysis for the e-methanol plant. In order to ensure a continuous e-methanol production, the

COORDINATOR

ELYSE ENERGY

LOCATION

France

CATEGORY

Energy intensive industries (EII)

SECTOR

Chemicals

AMOUNT OF INNOVATION FUND GRANT

EUR 115,190,750

EXPECTED GHG EMISSIONS AVOIDANCE

2,325,243 tonnes CO₂ equivalent

STARTING DATE

01 January, 2024

ENTRY INTO OPERATION DATE

31 May, 2028

FINANCIAL CLOSE DATE

31 December, 2025

* Calculated vs. the 2021-2025 ETS benchmark of 6.84 tCO₂e/tH₂, not taking into account additional carbon abatement due to substitution effects in the H₂ end use application, i.e. conservative estimate.

project will store hydrogen both in gaseous form and, innovatively, in solid state using metal hydrides.

Meanwhile, full-scale carbon capture is planned to be implemented at the Le Teil Blanc cement plant of Larfage Cement, capturing 195 kt/y of concentrated CO₂ through an innovative cryogenic technology. As a result, the plant will synthesise 138 kt/year of e-methanol using the renewable hydrogen and the captured CO₂. Innovative monitoring of these building blocks will enable complete synergy and provide a competitive and green solution to the chemical market. This solution is expected to result in 2.3 million tonnes of CO₂ equivalent of greenhouse gases avoided over the first ten years of operation.

Strategically, the project will contribute to the Renewable Energy Directive and the REPowerEU communication in its goal to roll out renewables, reach a domestic production of renewable hydrogen

of 10 million tonnes a year by 2030, and reduce fossil fuel consumption in industry and transport.

The eM-Rhône project will provide the chemical industry and local off-takers with a sustainable low-carbon substitute for fossil fuels. It will thus have a strong impact on the Rhône basin region, creating more than 300 qualified jobs. The investment will further benefit local economy, promoting regional collaboration and supporting the competitiveness of the cement and chemicals industry. The project also has significant scalability potential to double its e-methanol production capacity through the creation of economies of scale and synergies in the context of the wider eM-France Elyse Energy program.

| Participants

ELYSE ENERGY

France

LAFARGE CEMENTS

France