

Methanation with CO₂ captured from air: Climeworks launches DAC-3 plant in Italy

- DAC-3 plant in Troia, Apulia, filters CO₂ from ambient air for the Horizon 2020 research project STORE&GO
- CO₂ is methanated catalytically with renewable hydrogen (Power-to-Methane), then liquified and used to fuel natural gas vehicles
- Project will demonstrate an innovative, large-volume energy storage technology to balance fluctuating and intermittent renewable energy

Troia, Apulia (Italy) / 01.10.2018

Swiss-based company Climeworks has launched a further Direct Air Capture plant (DAC-3), this time in Italy. Every year the DAC-3 facility will filter up to 150 tons of CO₂ directly from ambient air. The new plant is part of the Horizon 2020 research project STORE&GO, which demonstrates that Power-to-Gas technologies can be used for large-volume energy storage. In addition to the demonstration plant in Italy, further STORE&GO pilots are being realized in Germany and Switzerland.

The DAC plant using CO₂ from ambient air for methanation as part of the STORE&GO project was installed in July and now starts operation. It consists of three DAC collectors using the latest Climeworks' technology and requires less energy than the DAC-18 plant in Hinwil, Switzerland. Making use of excess on-site photovoltaic energy, an alkaline electrolyzer (200 kilowatt) locally generates 240 cubic meters of renewable hydrogen per hour.

The captured CO₂ and renewable hydrogen generated on-site are catalytically methanated (Power-to-Gas) in modular reactors by French company ATMOSTAT. Waste heat retrieved from the reactors' cooling circuits is extracted for the operation of Climeworks' DAC-3 facility. The methane is then liquified and used to fuel natural gas lorries.

The primary objective of the STORE&GO research project is to demonstrate the viability of large-volume energy storage through Power-to-Gas technology in real-life applications. To this end the technology will be operated for 4,000 hours in the next 17 months. So far, large-volume energy storage is scarce in Europe. But the European Union plans to use 43% renewable energy by 2030 and 50% by 2050. In order to do so, it will need more energy storage. Making use of the Europe-wide natural gas network in conjunction with STORE&GO technology has considerable potential. Aside from Climeworks, industrial partners of the Italian part of the STORE&GO project are ENGINEERING, who coordinates the overall pilot, ATMOSTAT, HYSYTECH, IREN Energia SPA and studio BFP. Research partners are the CEA and Politecnico di Torino.

PRESS RELEASE



For Climeworks, this Horizon 2020 research project is a consistent continuation of its own Power-to-Fuel/Power-to-Methane work. Such work was first demonstrated in 2015 within a project consortium led by the Institute for Energy Technology and with partners Audi, the University of Applied Sciences Rapperswil, the Swiss Competence Centers for Energy Research, the Swiss Commission for Technology and Innovation, Energie Zurichsee Linz, Erdgas, EWJR, and Climeworks.

About STORE&GO

The international project STORE&GO was launched in 2016 and is part of Horizon 2020, the EU's Research and Innovation program. The project researches the generation of renewable gases through methanation and industrial-scale energy storage in order to enable commercial operation. It encompasses technological as well as economic and legal aspects. The research based on three different Power-to-Gas concepts takes place in three locations in Germany (Falkenhagen, Brandenburg), Italy (Troia, Apulia) and Switzerland (Solothurn). The project is coordinated by the DVGW (German Technical and Scientific Association for Gas and Water) research station at Engler-Bunte-Institute of Karlsruhe Institute for Technology (KIT). The project is planned to run for four years (2016-2020). Its budget is about 28 million Euro, of which about 18 million Euro are funded by the EU.

Further information: <http://www.storeandgo.info>

About Climeworks

Climeworks captures CO₂ from ambient air with the world's first commercial carbon dioxide removal technology. The Climeworks direct air capture plants capture CO₂ with a filter and are powered by either waste or renewable energy.

Climeworks air-captured CO₂ is sold to customers in the Food, Beverage & Agriculture; and Renewable Fuels & Materials markets. Climeworks also offers Emissions Reversal, enabling customers to realize their climate goals by safely and permanently storing air-captured CO₂ underground, and thereby ultimately stopping climate change from reaching dangerous levels.

Founded by engineers Christoph Gebald and Jan Wurzbacher, Climeworks has assembled the world's largest team of experts in the field and has a goal of capturing one per cent of global emissions by 2025.

Further information: www.climeworks.com

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