



Demonstrating sustainable value creation from industrial CO₂ by its thermophilic microbial conversion into acetone



ABOUT

PYROCO₂ is scaling carbon capture and utilization with its breakthrough bioprocess, turning industrial CO₂ and renewable hydrogen into climate-positive acetone, a building block for chemicals and materials with a negative carbon footprint.

The project will build a demonstrator plant using up to 1,000 tonnes of CO₂ per year (equal to the annual emissions of 220 cars) and aims to enable 17 Mt CO₂eq emissions savings by 2050. Funded by the EU's Horizon 2020 programme under the Green Deal call on closing the industrial carbon cycle.

THE PROJECT

PYROCO₂ is accelerating Europe's path to climate neutrality by transforming industrial CO₂ into climate-positive acetone using green hydrogen and an energy-efficient thermophilic bioprocess. The project demonstrates the scalability and economic viability of CCU, enabling sustainable chemicals, synthetic fuels, and recyclable polymers while targeting 17 Mt CO₂eq emissions reductions by 2050 and paving the way for replication across Europe.

The PYROCO₂ demonstrator plant will be able to produce up to 400 tonnes acetone annually from 910 tonnes of industrial CO₂ and green hydrogen. It will be located at **SINTEF's piloting area at Tiller**, near Trondheim, Norway, while the industrial cluster of **Herøya Industrial Park** in southern Norway will serve as a primary scenario location for a future full-scale PYROCO₂ production site with guaranteed access to industrial CO₂ feedstock and green energy at a competitive price and connects several carbon-intensive industries with chemical production through industrial symbiosis.

OBJECTIVES

PYROCO₂ will demonstrate that carbon capture and utilization can deliver climate-positive acetone at scale, creating a sustainable platform for chemicals, fuel additives, and materials.

To achieve this, the project will:

- Design and build a demonstrator plant based on industrial symbiosis, proving how carbon-intensive industries can turn CO₂ into value while reducing emissions.
- Demonstrate large-scale thermophilic microbial gas fermentation, producing up to 4,000 t/a of acetone from CO₂ and renewable electricity as a platform for further catalytic upgrading.
- Establish acetone from CO₂ as a competitive alternative to fossil-based production routes.
- Create synergies with CCUS, renewable energy, and hydrogen initiatives supporting Europe's Green Transition.
- Drive the emergence of CCU hubs across Europe, strengthening the chemical industry's leadership in the low-carbon, circular economy.



CONTACT US

PROJECT COORDINATOR

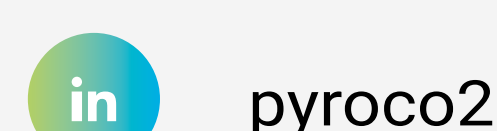


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