

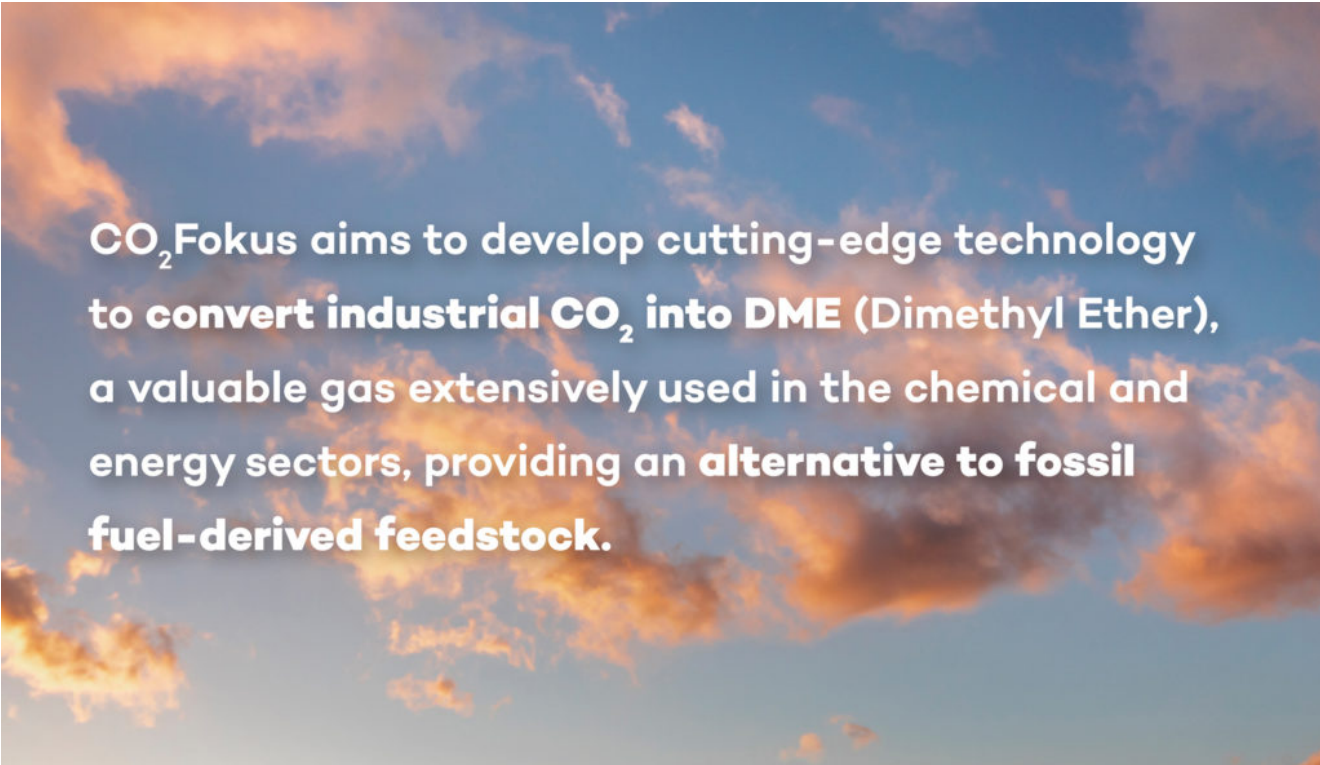
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May 2024

CO2fokus newsletter



CO₂Fokus aims to develop cutting-edge technology to **convert industrial CO₂ into DME (Dimethyl Ether)**, a valuable gas extensively used in the chemical and energy sectors, providing an **alternative to fossil fuel-derived feedstock.**

The CO2Fokus project conclusion

On 31 December 2023 the CO2Fokus project has officially concluded.

The project started in July 2019 and has been funded by the Climate, Infrastructure and Environment Executive Agency (CINEA) under the European Union's Horizon 2020 Research and Innovation programme with a budget of €3,994,950.00. The project involved thirteen partners with the goal of developing new technology able to produce DME using industrial CO₂ and green hydrogen as the primary reactants, through a single step process. DME (dimethyl ether) is a valuable gas and fuel extensively used in the chemical and energy sectors respectively, providing

an alternative to fossil fuel derived feedstock.

Traditionally, DME is produced starting from syngas in two steps, involving first the formation of methanol and then the dehydration of methanol to DME.

The single step process has many benefits, avoiding the dependence from fossil fuels and allowing the use of CO₂ emitted from large industrial point sources as a feedstock, boosting the development of CCU technologies.

CO₂Fokus investigated different aspects of the process design, including the new 3D printed catalysts that have been successfully produced and tested, comparing it to conventional powdered catalysts to ensure their effectiveness.

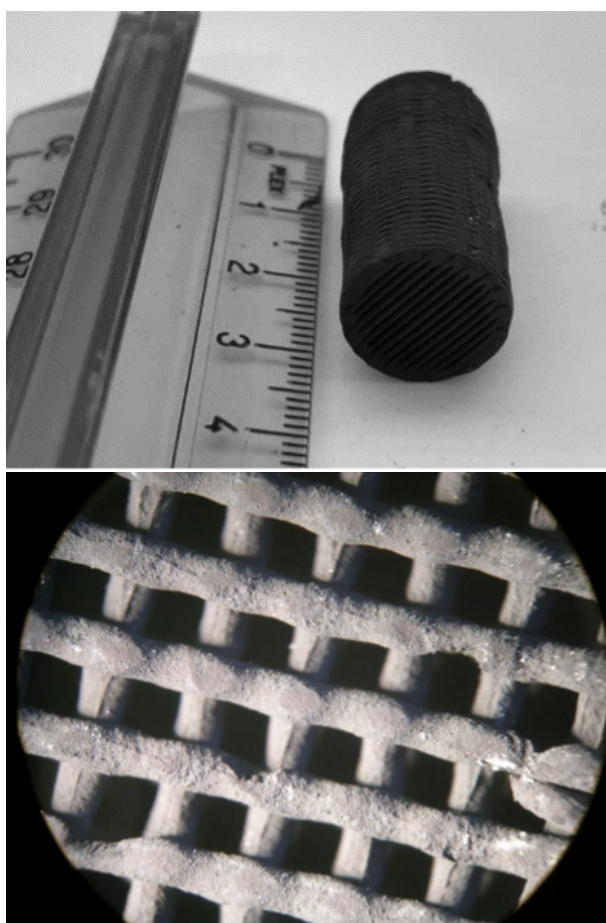


Figure 1 – CO₂Fokus 3D printed catalyst monolith, to be fitted in the reactor (as shown in [1])

[1] <https://doi.org/10.1016/j.jcou.2023.102458>

Moreover, a multi-tubular reactor has been developed and delivered to SOCAR, the project partner's facilities where the CO₂Fokus demo plant was built.

After the successful construction of the CO₂Fokus demo plant, tests were carried out to make sure each component worked properly. See below the photos of the custom built frames with the

internal working dimensions of 3 m x 2 m that hold the demo unit components.





Figure 2 - overall plant view (left); H₂, CO₂ and mixed gas heat exchangers (top right); reactor and resistance heater (bottom right)

Separately, at SolydEra's facilities, the Solid Oxide Electrolyser (SOE) stack was tested for more than 2000 hours under different conditions to investigate its performance for H₂ production.

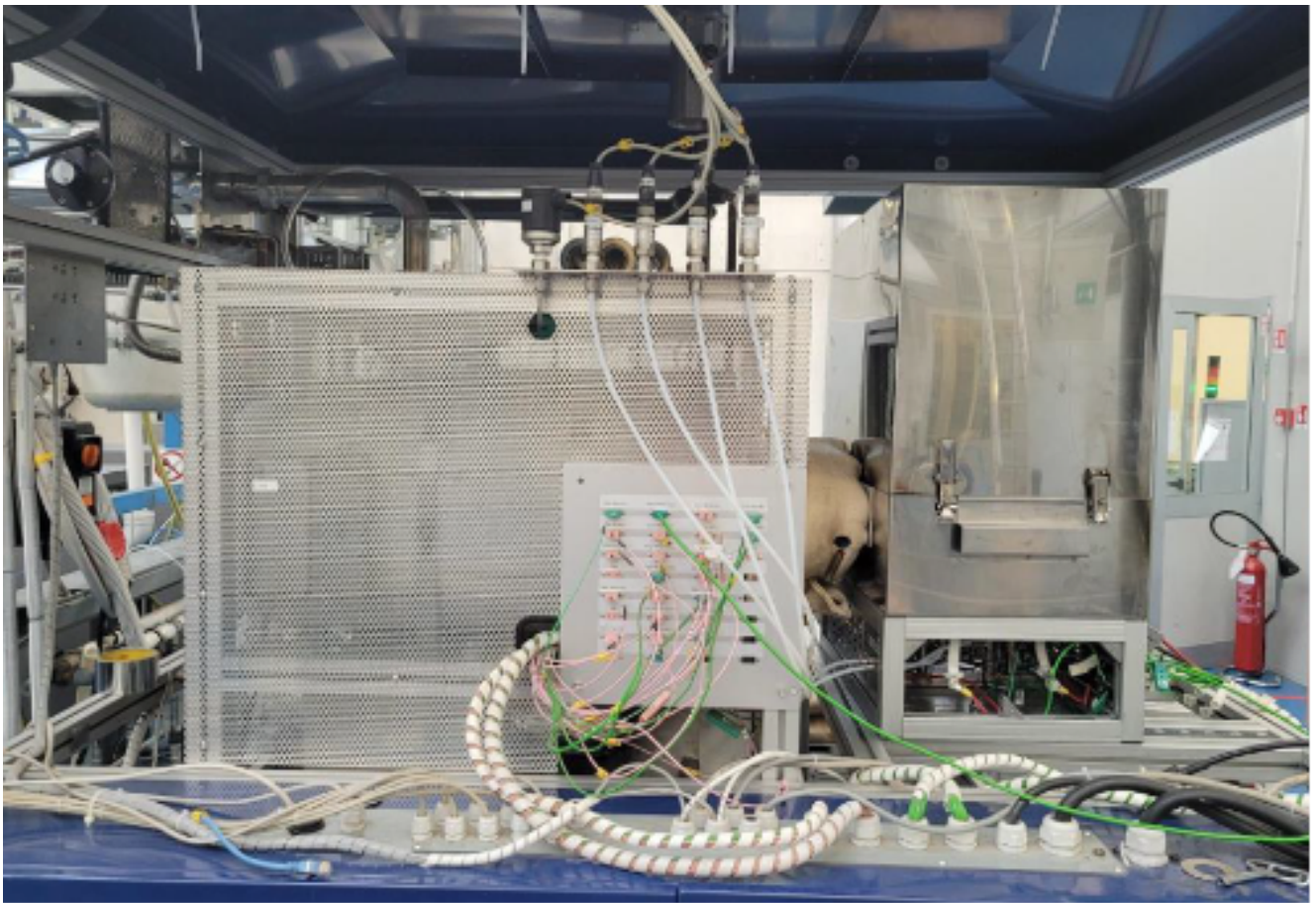


Figure 3 SOE stackbox for H₂ production at SolydEra's testing facility

At the beginning of December, SOCAR hosted the final plenary meeting in Izmir, where the project partners had the opportunity to meet again, share the last developments of their tasks and see the demo plant at the moment of its construction in full swing.



Figure 4 - CO2Fokus project partners at the final plenary meeting in Izmir

In addition, on the day after the plenary meeting, the CO2Fokus partners organized a workshop in Izmir that was open to the general public to share the project achievements and experience with other stakeholders, including representatives from other projects working in the same CCU sector.

PHYSICAL ATTENDANCE: please refer to this column

TIME CET	TIME IZMIR	
10:00	12:00	 LUNCH WITH POSTER VIEWING at Hazar Restaurant
11:00	13:00	Welcome and Introduction by CO ₂ Fokus Coordinator VESNA MIDDELKOOP (VITO)
11:05	13:05	Welcome and Introduction to work by SOCAR
11:15	13:15	Presentation of the LCA, S-LCA analysis, exploitation and market studies conducted in CO ₂ Fokus by ADRIANA DIAZ (ECO) and ADÉOLA JAIYEOLA (LGI)
12:15	14:15	Presentation of CO ₂ FOKUS Catalyst Development by GIUSEPPE BONURA (CNR-ITAE)
12:35	14:35	 COFFEE BREAK in the upper foyer of the hall
13:00	15:00	Latest status and developments in de-carbonization and carbon dioxide removal by SERHAT CAN BAYAR, Chairman Of The Board at Some Carbon Energy and DOĞAN ÇIÇEK, Carbon Project Developer at Some Carbon Energy, Ankara
13:20	15:20	Multi-scale sustainable process design for CO ₂ -hydrogenation to DME by HAMID REZA GODINI, Catalytic and Separation Processes, Development Engineer at C1 Green Chemicals AG., Berlin
13:40	15:40	Policy developments in Europe around CO ₂ utilisation to produce CCU fuels and CCU chemicals by TUDY BERNIER, Policy Director at CO ₂ Value Europe, Brussels
14:00	16:00	Renewable & Recycled Carbon DME for a Sustainable Future by SOPHIA HAYWOOD, Head of Advocacy of Communication at Dimeta, The Netherlands
14:20	16:20	Roundtable
15:00	17:00	 End of the meeting - COFFEE BREAK in the upper foyer of the hall

PLEASE NOTE: Make sure to look at the right time according to the time zone you are participating from.

Co2fokus Partners





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