4th Workshop of H2020 Carbon Capture Storage/Use (CCS/CCU) and Alternative Fuels projects

CO_2FOKUS

CO_2 utilisation focused on market relevant dimethyl ether production, via 3D printed reactor- and solid oxide cell based technologies

Prepared by Vesna Middelkoop

17/09/2019

CO2FOKUS
ADVANCING CO_2 CONVERSION

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n. 838061

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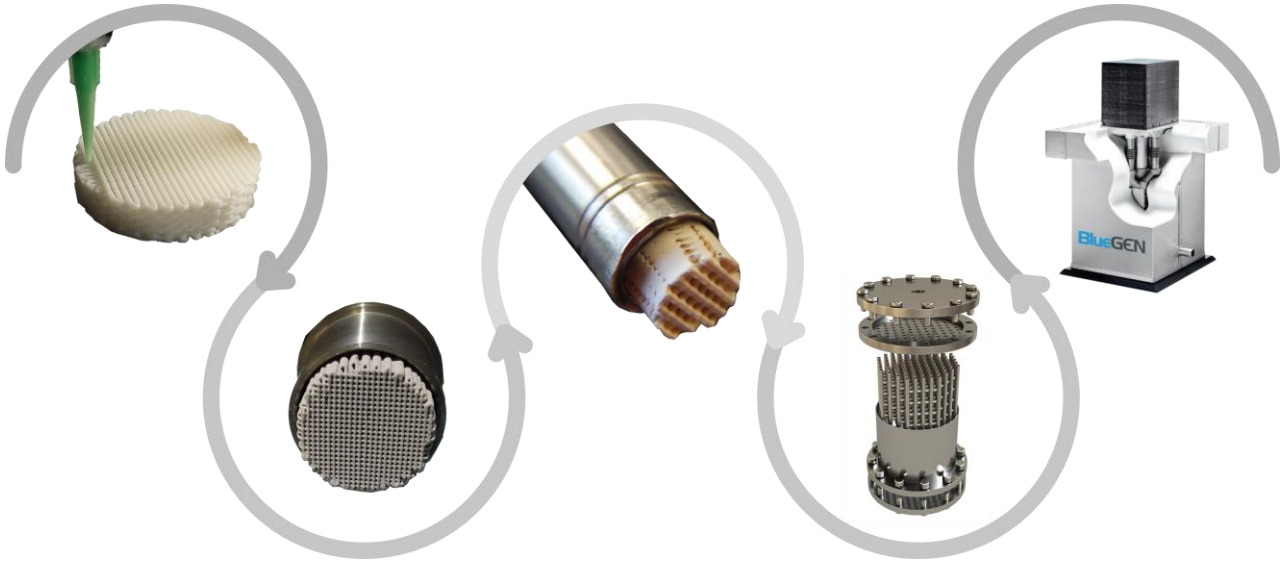
Concept

The project will develop cutting-edge technology able to directly convert industrial CO_2 into DME, a valuable gas extensively used in the chemical and energy sectors fostering an alternative to fossil fuel derived feedstock by:

- employing innovative 3D printed multichannel catalytic reactors and solid oxide electrolyser cells
- integrating and testing them in an industrial environment of large industrial CO_2 point sources



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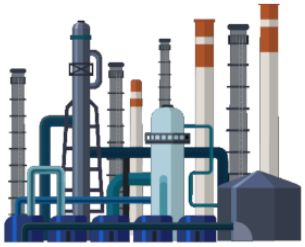
Broader Scope



Present Scenario: Fossil Feedstocks

Coke
CH_4
CO_2

Bio and city waste, black liquor, pulp mill, etc...
CO_2
H_2O

Industrial Syn Gas production

Direct CO_2 conversion

Electrolysis

Biomass

Solar Thermal

Artificial Photosynthesis

H_2

CO_2

CO

Synthesis Catalysis

CH_3OH

DME

Fischer-Tropsch Fuel

CH_4

H_2
Olefins
Gasoline

Future scenario: renewable energies - green power

image adapted from IASS

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Identified barriers

TECHNICAL factors

- Deactivation of catalysts due to agglomeration and particle sintering or coking
- Pressure drop, mass and heat transport limitations of conventional fixed and fluidised bed reactors

TECHNOLOGICAL/INDUSTRIAL FACTORS

- convincing carbon heavy and energy intensive industries to bring on board new technologies, adapt and substitute their conventional processes

CO2Fokus solutions

ADVANCE BEYOND THE STATE-OF-THE-ART

- Effective controlled deposition of catalyst particles
- Due to their large surface to volume ratio and controlled macrostructure, millichannel reactors offer enhanced mass and heat transfer and 10-20% increase in reaction performance

TECHNICAL ACCEPTANCE ENABLERS

- tackle potential technological and industries' concerns
- provide technical guidelines for companies
- tasks are put in place to provide analysis of environmental, financial and regulatory requirements

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Dissemination & Communication strategy

Prepared by Eleonora Vannuzzi

17/09/2019

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Target Audience & Messages

CHEMICAL & PETROCHEMICAL INDUSTRIES

Technical results: tech performances, business models, potential revenues

TECHNOLOGY PROVIDERS

Revenues and exploitation strategies of CO2Fokus processes

SCIENTIFIC COMMUNITY

Final results and key findings on catalysts performances and improvement, process optimization and modelling

POLICY MAKERS

Potential obstacles posed by regulatory barriers

Planned Activities

CONFERENCES, WORSKHOPS & PROJECT EVENTS

- Participation to sector conferences and fairs: > 1/year
- Workshop with key stakeholder and potential end users
- **Networking workshop with other EU CCU/CCS projects**
- Final project conference

TECHNICAL & SCIENTIFIC PUBLICATIONS

- Open-access scientific publications published by academic partners alongside the project
- Articles published in sectorial journals

MOTION GRAPHICS VIDEO

- To be showed also during sector fairs in the project partners' stand

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Common dissemination activities

Our dissemination WP includes a specific networking workshop with other EU projects sharing similarities and synergies with CO2Fokus in their research objectives.

Other ideas:

- joint common demonstration issues
- sharing project results/outcome combinations
- shared exhibition presentations
- educational materials

CO2FOKUS

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