4AirCRAFT

Air Carbon Recycling for Aviation Fuel Technology

What is **4AirCRAFT?**

4AirCRAFT combines hybrid catalytic conversion and process intensification to bring out an efficient, precise, flexible and scalable unique technology to direct convert recycled CO_2 into sustainable and clean liquid fuels, thus **making flying carbon neutral**.

https://4aircraft-project.eu/

The main goal is the process intensification by a single cascade reactor and the effective low temperature synthesis of alternative long-chain hydrocarbons from residue materials/streams and renewable feedstocks.

A“At the core of 4AirCRAFT innovation is the synergetic combination of tuned electro-, chemo- and bio[1]catalysts and their controlled spatial distribution within application tuned catalyst carrier structures. This will enhance the activity of catalytic phases and materials allowing high CO_2 conversion rates and selectivity towards jet fuels ($C_8 - C_{16}$). The unique process requires much less energy, potentially reducing the cost of sustainable fuel for the aviation sector.

4AirCRAFT will develop and proof (TRL3) a flexible, energy-efficient, environmentally friendly, economically viable, and socially affordable reactor technology for the production of clean and sustainable fuel. The unique reactor technology will convert precisely and efficiently CO_2 into C_8- C_{16} hydrocarbons.”

PHASE 1.

NEXT-GENERATION CATALYST

Rational design of catalyst/porous carriers. Structural, mechanistic investigations and kinetics in terms of CO_2 conversion and C_8-C_{16} selectivity.

PHASE 2.

MICRO-STRUCTURED REACTOR

Design and manufacturing of hierarchical reactor.

CFD simulation.

PHASE 3.

PROOF-OF-CONCEPT

Lab-scale experimental proof of concept, process conditions and environmental assessment.

The 4AirCRAFT technology uses an innovative catalytic reactor to conduct the conversion in:

Product.
Precise synthesis and high yield of jet fuel

Integration.
Single cascade reactor

Mild conditions.
Unprecedented low temperature

Rational design.
Hybrid catalyst integration & synergetic approach

Disruptive technology.
Validated at lab scale

Innovative technology

The project aims to develop innovative technology for the direct conversion of CO_2 to C_8-C_{16} under much milder and greener conditions as compared to conventional synthesis routes. This will be achieved through the cooperative development, validation and exploitation of the rational design of catalytic materials and its environment tunning.

Energy challenges

The 4AirCRAFT technology will reduce overall CO_2 emissions by creating a closed carbon fuel cycle contributing to a circular economy and the replacement of fossil fuels, which will strengthen the EU energy security and allow creation of a sustainable transportation sector while helping to solve worldwide energy challenges.

This project addresses the European Grean Deal as well as the 2030 Agenda for Sustainable Development Goals (SDGs)

It indirectly contributes also to

NEW BOARD MEMBERS WELCOME TO THE INDUSTRIAL ADVISORY PANEL

4AirCRAFT currently has a very diverse advisory board, industry related from sustainable fuels to chemicals, materials, from aviation sector.

Consortium

International Cooperation with Japan and Brazil

DISCOVER MORE ABOUT THE PROJECT

Send us an email and we will keep you informed:
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