TUBAF The University of Resources. Since 1765.

INSTITUTE OF ENERGY PROCESS ENGINEERING AND CHEMICAL ENGINEERING

PROFESSORSHIP OF ENERGY PROCESS ENGINEERING

Bio-HydroFuel

Energy efficient coupling of high-pressure gasification of biogenic sediments with green hydrogen for cost-efficient production of kerosene

CHALLENGE

An important role in reducing CO_2 emissions from air transport will be played by sustainably produced aviation fuels, known as SAF (sustainable aviation fuel). Biogenic sediments (dead algae and plankton) in seas and inland waters can be used as a cost-effective feedstock for SAF production. During their growth, algae and plankton absorb CO_2 from the air, which is ultimately deposited as organic carbon in the sediment sludge. Instead of allowing climate-damaging gases (CO_2 and methane) to escape again through uncontrolled sediment decomposition, the use of biogenic sediments for SAF production allows the organic carbon to be bound and utilized in the aviation fuel, thereby creating a closed CO_2 cycle.

OUR PROJECT

In this joint research project, a new process for producing aviation fuels from biogenic sediments is being tested. For this purpose, a company and a university from Saxony have joined forces with partners from Sweden and the Czech Republic. The process combines synthesis gas generation from processed biogenic sediments with subsequent use of the synthesis gas in a multi-stage synthesis process. TU Bergakademie Freiberg is investigating the production of long-chain olefins from methanol/DME mixtures in order to assess the influence of the feedstock composition on the yield and quality of the aviation fuels produced and to enable the integration of the synthesis process into the overall process chain.

PARTNERS

- KTH Royal Institute of Technology Stockholm, Sweden
- H&O Development AB, Sweden
- Teknikmarknad AB, Sweden
- CAC ENGINEERING GmbH, Germany
- DBI-Virtuhcon GmbH, Germany
- University of Chemistry and Technology Prague, Czech Republic

FUNDING

Sächsische Aufbaubank/European Regional Development Fund, FKZ 100782673

DURATION

December 2025 – July 2028

Co-funded by the European Union

This project is co-financed from tax revenues on the basis of the budget adopted by the Saxon State Parliament.