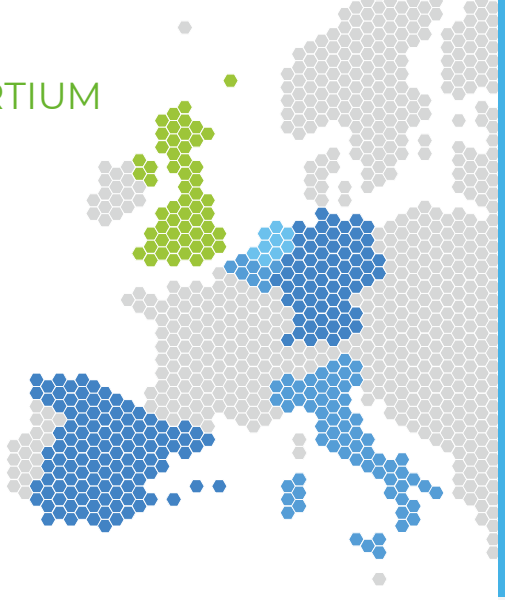
CONSORTIUM



MANCHESTER 1824 The University of Manchester

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

TNO innovation for life

CSIC Consejo Superior de Investigaciones Científicas

vito

CiaoTech

Siirtec Nigi

ARGENTENERGY

INERATEC

C&CS catalysts & chemical specialities

CONTACT US

PROJECT COORDINATOR

Vincenzo Spallina,

- Lecturer in Chemical Engineering Department of Chemical Engineering and Analytical Science
- School of Engineering
- The University of Manchester

vincenzo.spallina@manchester.ac.uk

linkedin.com/company/glamour-horizon-2020

twitter.com/GlamourH2020

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 884197

GLAMOUR

GLycerol to Aviation and Marine prOducts with sUstainable Recycling

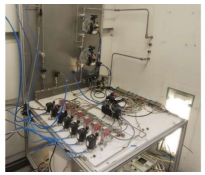
PROJECT

GLAMOUR (GLycerol to Aviation and Marine prOducts with sUstainable Recycling) is a H2020 research project to demonstrate the conversion of bio-waste feedstock such as glycerol into jetfuel and marine diesel oil by combining two technologies: Syngas generation using gas solid reactions and compact Fischer-Trospsch process with 3D printed catalyst.

OBJECTIVES

- To develop, test and scale-up new catalyst formulations for chemical and calcium looping reforming
- To select, test and scale-up a new 3D-printed structured catalyst for FT synthesis
- To integrate and demonstrate the glycerol-to-syngas conversion and fuel synthesis in a single process prototype at TRL5 after 1000 hrs of operation
- To perform the overall techno-economic analysis and optimisation of the process for full scale applications
- To assess the overall economics of the process
- To implement the business plan of the GLAMOUR process of the entire value chain
- To improve the social sustainability of bio-fuels and inform policy makers

Reactor used for chemical looping reforming of methane



Gas feeding system

Gas-solid reaction lab at the Unversity of Manchester

First 3D printed GLAMOUR catalysts produced by VITO

PROJECT PROGRESSES & UPDATES

During the first year of research and development, GLAMOUR has already reached some interesting results. Argent Energy has made significant progress in the purification of glycerol. Tests of different glycerol feedstocks were conducted at the University of Manchester and progresses were made in improving quality with a simple purification step. Current technologies to produce liquid synthetic fuels on an industrial scale has been reviewed by Siirtec Nigi and Gas to Fischer-Trospsch liquid (GTL-FT) was chosen as a commercial benchmark. C&CS is developing Ni-based reforming catalysts with compositions and surface properties tailored to the intended application conditions. An initial sample has been sent for catalytic activity testing at CSIC, showing promising results in initial glycerol reforming tests. TNO, together with TU/e, VITO, INERATEC, C&CS, is developing a tailor-made (3D printed) Fischer-Tropsch (FT) catalyst. TU/e started with modelling and created a first FT-2D model, which represents a starting point to study a variety of geometries and optimise heat management within the structure. INERATEC has performed the testing on stat-of-the-art FT reactor to benchmark the performance with different syngas composition. In parallel, VITO started with the first 3D prints using commercial catalyst powder and using bi-functional catalysts prepared by TNO. CiaoTech is focusing both on the identification of stakeholder and market and technology trends for a successful exploitation of the project results and on the dissemination of the GLAMOUR progresses.