



Glycerol to Aviation and Marine prOducts with sUstainable Recycling

PROJECT

The objective of the GLAMOUR project is the design, scale-up and validation of an integrated process that converts the waste bio-based feedstock such as crude glycerol into aviation and marine diesel fuels. The focus of the project will be a combination of high pressure, auto-thermal reforming/gasification using chemical looping to produce syngas and the integration of Fischer-Tropsch compact reactor integrated with 3D printed structured catalyst. The GLAMOUR process will achieve full conversion of the crude glycerol into syncrude which is later upgraded to synthetic paraffine kerosene (FT-SPK) to be used as jetfuel and into marine diesel oil (MDO) with an energy efficiency of 65%. These improvements would increase the overall revenue of existing 2nd generation bio-diesel plants reducing the cost for large scale biomass-to-liquid production processes up to 35% and the CO₂ emissions up to 70%. The project will focus on the scale up of the two processes to achieve a final TRL5 demonstration for 1000 hours by using 2 kg/h of glycerol in a packed bed chemical looping system and a downstream FT reactor.



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

LATEST PROGRESS

The Project has received a six-month extension to complete the demonstration stage.

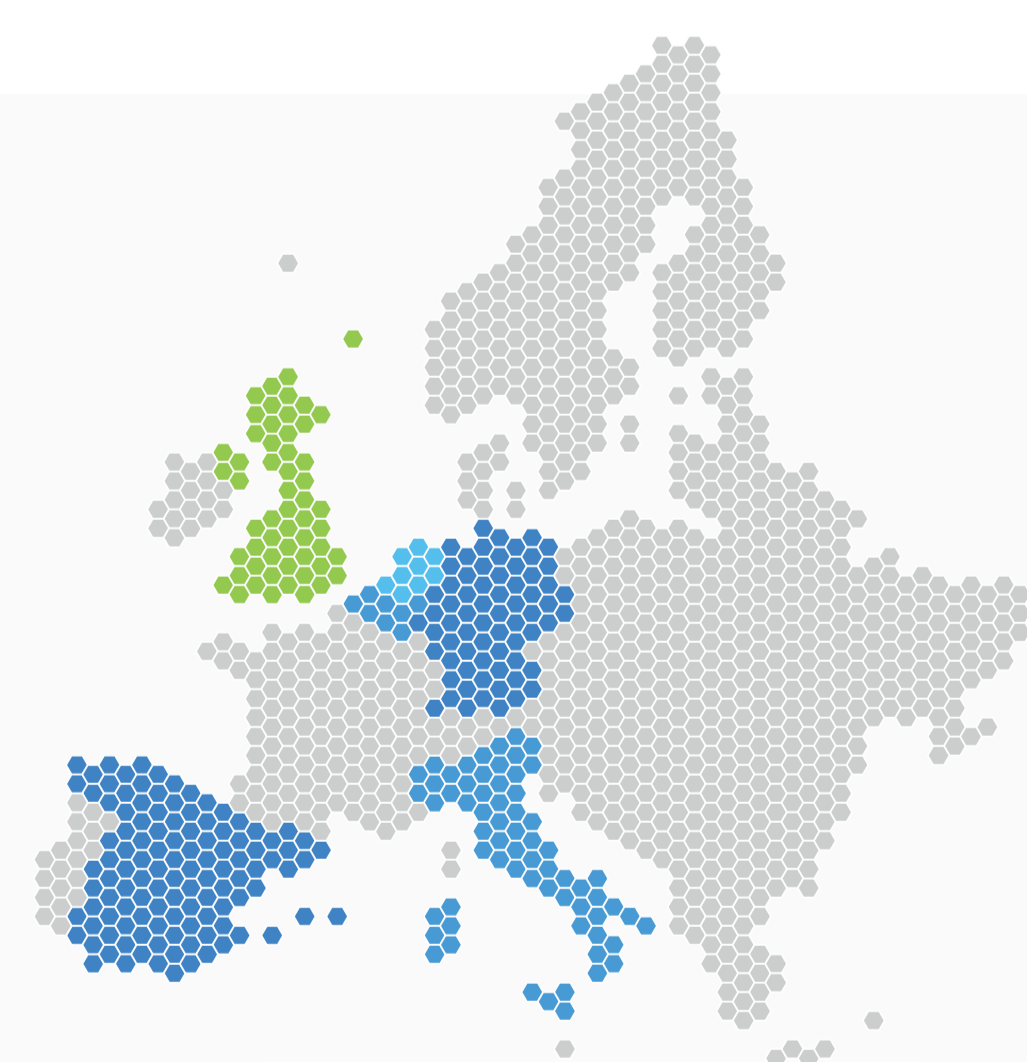
The research activities on Industrial Applications in WP2 are now completed and partners are looking at the engineering and costs of the fully integrated plant. Low-quality waste-derived glycerol has been purified to reach less than 1% ash content.

The materials for syngas generation and liquid fuel synthesis have been scaled and integrated into the pilot plant for the final demonstration. The Eindhoven University of Technology is now ready to start the TRL5 testing.

Finally, during the next M48 general assembly, CIAOTECH will run an industrial workshop in order to put the GLAMOUR technology in the context of biofuel production and existing R&D experiences in Europe.

CONSORTIUM

The GLAMOUR Consortium comprises 10 partners from 6 countries with strong multidisciplinary competences required for carrying out the work plan and match project objectives.



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