



GLAMOUR



GLycerol to Aviation and Marine prOducts
with sUstainable Recycling

LET'S MEET THE PROJECT PARTNERS!

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: 1) Syngas generation with inherent CO₂ removal using gas solid reactions, and 2) Compact Fischer-Tropsch process with using 3D printed catalysts.

THE CONSORTIUM

The consortium includes two universities, three large research centers and 5 industries (including SMEs) which will combine fundamental knowledge on gas-solid and catalytic reactions, material design and engineering process design, economics, environmental analysis, societal and policy making decision.

UNIVERSITY OF MANCHESTER



The University of Manchester is the largest university by student enrolment number in the United Kingdom (~40.000 students). UNIMAN is one of the world's top 50 universities. Research is at the heart of the University, no fewer than 20 former staff and students have gone on to be Nobel laureates and the university currently has 4 Nobel laureates as members of the academic staff.

The University of Manchester is leading the GLAMOUR project. Apart from the management role, the University of Manchester is leading also WP6 on life cycle and sustainability assessment. Also, it is contributing to WP2 on Industrial Applications by performing the full-scale integration of the technology and in WP3 studying the lab-scale feasibility of the syngas generation concept.

EINDHOVEN UNIVERSITY OF TECHNOLOGY (TU/E)



Eindhoven University of Technology is a research university specializing in engineering science & technology. The main objective of the research group is the development of novel integrated reactor concepts (such as membrane reactors, micro reactors, dynamically operated reactors, structured catalysts and reactors) based on improved fundamental knowledge using validated advanced (multi-phase) reactor models.

Eindhoven University of Technology has the role of Technical Manager of the project; TU/e is contributing to both building block of GLAMOUR, the Chemical Looping syngas generator and the FTS reactor, and will demonstrate the complete process at TRL5. Additionally, TU/e is leading the WP5 on demonstration.

NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK



The Netherlands' Organisation of Applied Scientific Research is an independent not-for-profit research organization in the Netherlands. TNO's mission is to support industry and society in general by transforming scientific know-how into commercially and sustainable products and processes.

In the framework of the project, TNO will lead Work Package 4. The overall objective is to develop a customised structured (3D printed) Fischer-Tropsch catalyst with maximum kerosene production from chemical looping-based syngas generation. TNO will produce, test and analyse Fischer-Tropsch catalysts for kerosene production. Together with the WP4 partners (TU/e, INERATEC, C&CS, VITO) the optimal 3D structured catalyst will be selected for scale-up in WP5.

INSTITUTO DE CARBOQUÍMICA-SPANISH NATIONAL RESEARCH COUNCIL



The Spanish National Research Council is the largest public institution dedicated to research in Spain and the third largest in Europe. Belonging to the Spanish Ministry of Science, Innovation and University, its main objective is to develop and promote research that will help bring about scientific and technological progress. CSIC plays an important role in scientific and technological policy, since it encompasses an area that takes in everything from basic research to

the transfer of knowledge to the productive sector.

CSIC within the GLAMOUR project will be coordinating the WP dedicated to syn-gas generation from the chemical looping reforming of glycerol. Within this WP there will be an important effort on materials development and testing, crude glycerol reforming and process modelling. CSIC will also contribute to demo WP5.

VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK NV (VITO)



The Flemish Institute for Technological Research (VITO) is a leading independent European research and technology organisation and consulting centre that develops innovative products and processes and delivers client-oriented research projects, building on its decades-long experience of multidisciplinary research. VITO plays a vital economic and social role acting as a conduit between stakeholders from business, government and the research community.

More specifically, VITO's research and industrial consultancy is directed towards solving problems and technology transfer related to in the areas of energy efficiency, new materials, sustainable chemistry, environmental protection and resource scarcity. Technical contribution of VITO to the project will be focused on the development, fabrication and characterisation of the 3D printed and co-printed catalyst monoliths for the Fischer-Tropsch synthesis reaction as part of WP4 and WP5.

CIAOTECH S.R.L.



CIAOTECH S.r.l., as a wholly owned company and Italian branch of the PNO Group, is specialized in Innovation Management and funding, providing support services to private and public organizations in Innovation processes, Technology Transfer, IT solutions and funding for research, development and innovation. The PNO Group, established in 1984, is a European group, made up of a pool of more than 400 professionals across 7 Member States (direct presence).

In the framework of the project, CTECH will lead Work Package 7: Exploitation & Dissemination. The overall objective of this WP is to maximize the visibility and impact of the GLAMOUR project, ensuring an effective exploitation strategy and a correct dissemination of the project results. In particular, CIAOTECH will develop communication and dissemination tools and strategy which will be used to disseminate the project progresses throughout the project lifetime to the scientific and industrial community as well as public at large. CIAOTECH will also map and engage relevant stakeholders and categorize them for subsequent exploitation and dissemination activities, by the production of an exploitation plan to effectively deliver project results to the market.

SIIRTEC NIGI S.P.A



Siirtec Nigi is an Italian limited joint-stock company, privately owned, with almost 80 years of activities in the energy business. Its activities relate mainly to the Engineering & Contracting for the design and supply of natural gas processing plants with a special focus on gas-conditioning technology, acid gases removal and sulfur recovery plants. For the GLAMOUR project, Siirtec Nigi will elaborate a benchmark (WP2) for liquid synthetic fuels production via syngas generation and Fisher&Tropsh process. The state of the art of the current synfuel production through biomass and natural gas gasification will be investigated with a focus on the key performance indicators (unit capex, unit opex, specific energy consumption/export, carbon dioxide balance, and others). Siirtec Nigi will also prepare the design basis (WP5) and data collection for designing a full-scale industrial plant and will elaborate a preliminary design of a full-scale industrial facility. Moreover, the capital expenditure of the industrial plant will be worked out and the GLAMOUR process profitability, relative to the benchmark, will be assessed (WP6).

ARGENT ENERGY



Argent Energy is a waste-based biodiesel producer with plants in Scotland, England and the Netherlands. Argent now manufactures over 220k tonnes of biodiesel per year. Argent is the largest waste-based biodiesel producer in Europe. Argent uses challenging waste feedstocks such as Cat 1 tallow, used cooking oil, sewer grease, food waste oil. Argent Energy pioneered the large-scale commercial production of biodiesel in the UK.

Argent Energy will lead WP2. Supply of glycerine. Market knowledge of glycerine. Analysis of glycerine. Glycerine refining. Industrial strategy.

INERATEC GMBH



INERATEC's business purpose is the development, manufacturing, implementation, and distribution of modular chemical plants equipped with an innovative chemical reactor technology. The compact chemical reactors are the company's core technology and are characterized by microstructured inner surface areas and high conversion rates, resulting in process intensification, simplification, and load flexibility. The current product portfolio covers Power-to-Liquid (PtL), Power-to-Gas (PtG) and Gas-to-Liquid (GtL) applications. INERATEC has delivered literature research and benchmarks on the Fischer-Tropsch reaction in the industry vs. the microstructured reactors by INERATEC. Furthermore, IC is currently conducting a catalyst screening ongoing in IC's testing bench. For this campaign, IC is also performing a reference campaign between two industrial catalysts. The results will serve the consortium as benchmark to evaluate the performance of the novel catalysts developed in GLAMOUR. Until the end of the year, IC will continue the campaign to further define the optimum process parameters for the project from a set of proposed parameters, which will be used as benchmark for the project.

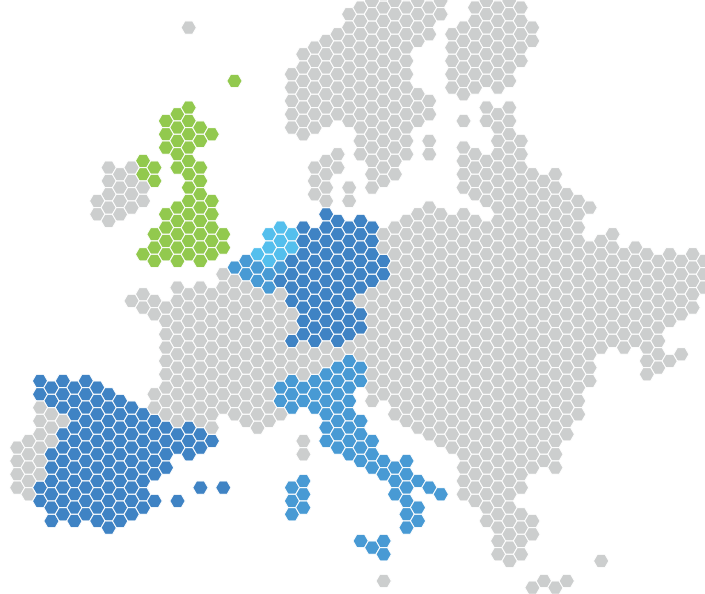
CATALYSTS AND CHEMICAL SPECIALTIES GMBH



C&CS catalysts and chemical specialties GmbH distributes catalysts, sorbents and chemical specialties for more than 17 years. C&CS started inside an applied material science laboratory - GWP Gesellschaft für Werkstoffprüfung GmbH – with experience in developing heterogeneously catalyzed processes for applications like DeNO_x, reforming, VOC, toxic waste and edible oils. Successful developments are “Ad Blue” active components, non-precious metal total oxidation catalysts, full metal catalysts for reforming, NF₃ capture and PSA.

Within the frame of the project C&CS will develop functional materials in collaboration with the partner CSIC in WP3. C&CS will then scale-up the most suitable system in WP5. Complete characterisation of the developed systems in terms of their structural and mechanical properties at different stages of the scaling process before and after performance testing is planned.

CONSORTIUM



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Eindhoven University of Technology
NETHERLANDS
www.tue.nl/spe



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