

## EU Project TITAN – 915 MHz Microwave-Assisted Catalytic Production of Green Hydrogen

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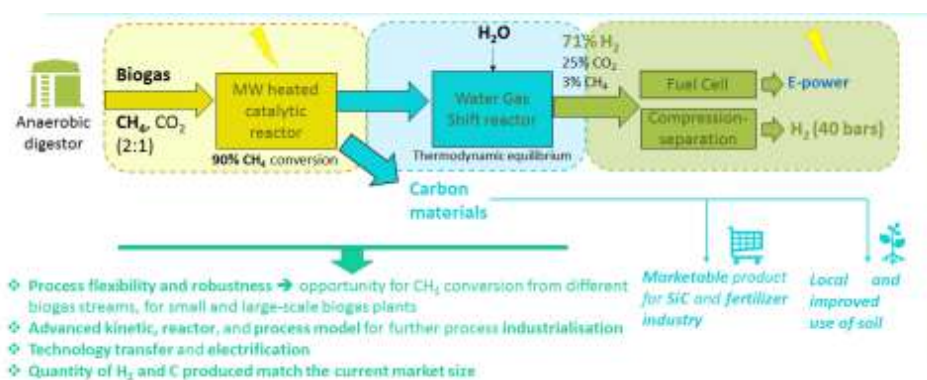
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Microwave Technologies Consulting is pleased to announce its participation in the EU HORIZON-CL5-2021-D2-01, Cross-sectoral solutions for the climate transition, with project TITAN - Direct biogas conversion to green H<sub>2</sub> and carbon materials by scalable microwave heated catalytic reactor for soil Amendment and silicon carbide production (<https://titan.cnrs.fr/>). TITAN is a Research & Innovation project (Grant agreement 101069474) funded by the European Climate, Infrastructure and Environment Executive Agency (CINEA).

Started in September 2022, the 48-month project aims to develop an innovative 915 MHz microwave-assisted catalytic process for the

production of cost-competitive hydrogen from biogas together with integrated carbon sequestration.

With a consortium of seven partners from France – CNRS-IRCELYON and Microwave Technologies Consulting, the Netherlands – Process Design Centre bv and ESD SIC bv, Belgium – European Biogas Association, Germany – University of Hohenheim, Soil biology & Biogeophysics team, and Poland – Warsaw University of Technology, Faculty of Chemical and Process Engineering, TITAN addresses the direct conversion of biogas (~40-50% CO<sub>2</sub> and 50-60% CH<sub>4</sub>) *via* dry reforming + water shift reaction into valuable carbon materials and a H<sub>2</sub>-rich stream using a 915 MHz heated fluidised bed catalytic reactor, see **Figure 1**.



**Figure 1.** TITAN concept for the conversion of biogas using 915 MHz microwave-assisted catalytic processing.

The main objectives of the project are:

- Development of suitable non-toxic catalysts and electrified microwave enhanced fluidised bed reactors for energy efficient conversion of biogas to hydrogen.
- Develop models for process design, optimisation and scale-up;
- Validate techno-economic solutions and environmental, resource and social acceptability;
- Investigate the economic potential of the resulting carbon materials for use in

agriculture for soil improvement and for the production of silicon carbide materials;

- Elaboration of a roadmap for the long-term reduction of greenhouse gas emissions.



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