

# OBIWAN

## Research and innovation



### Converting Organic Waste into Advanced Chemicals and Sustainable Aviation Fuels

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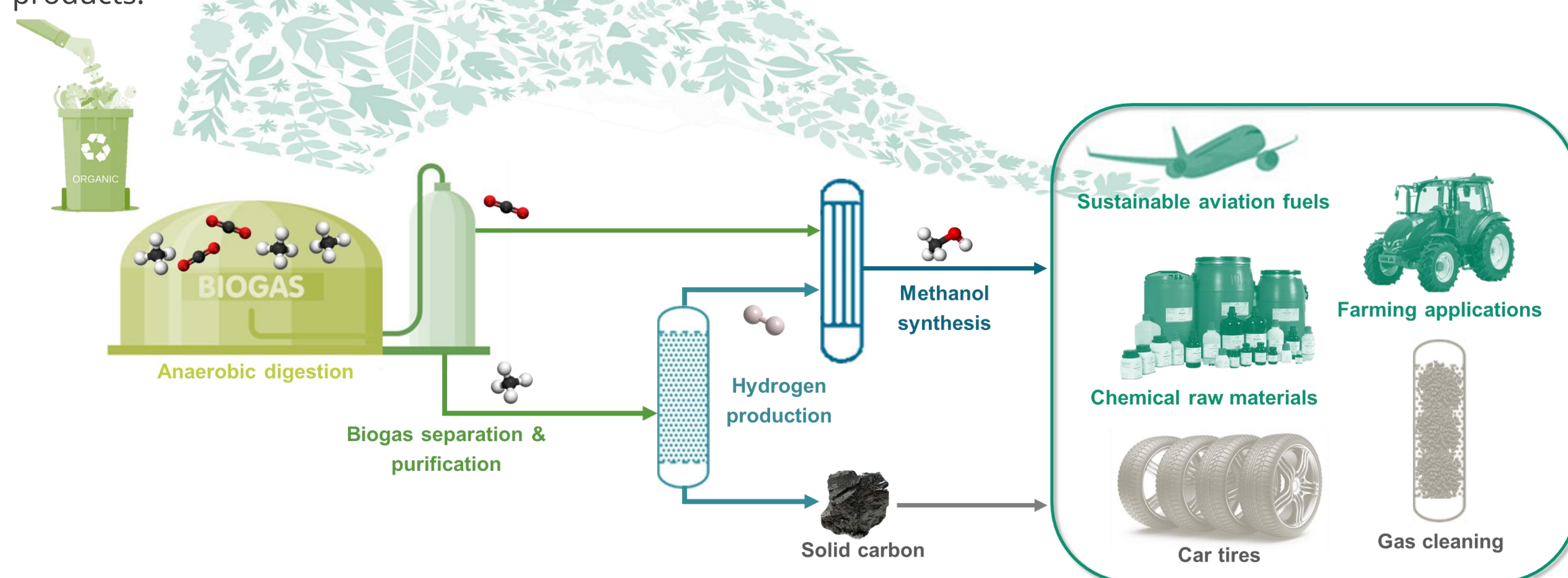
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#### OBIWAN Objectives

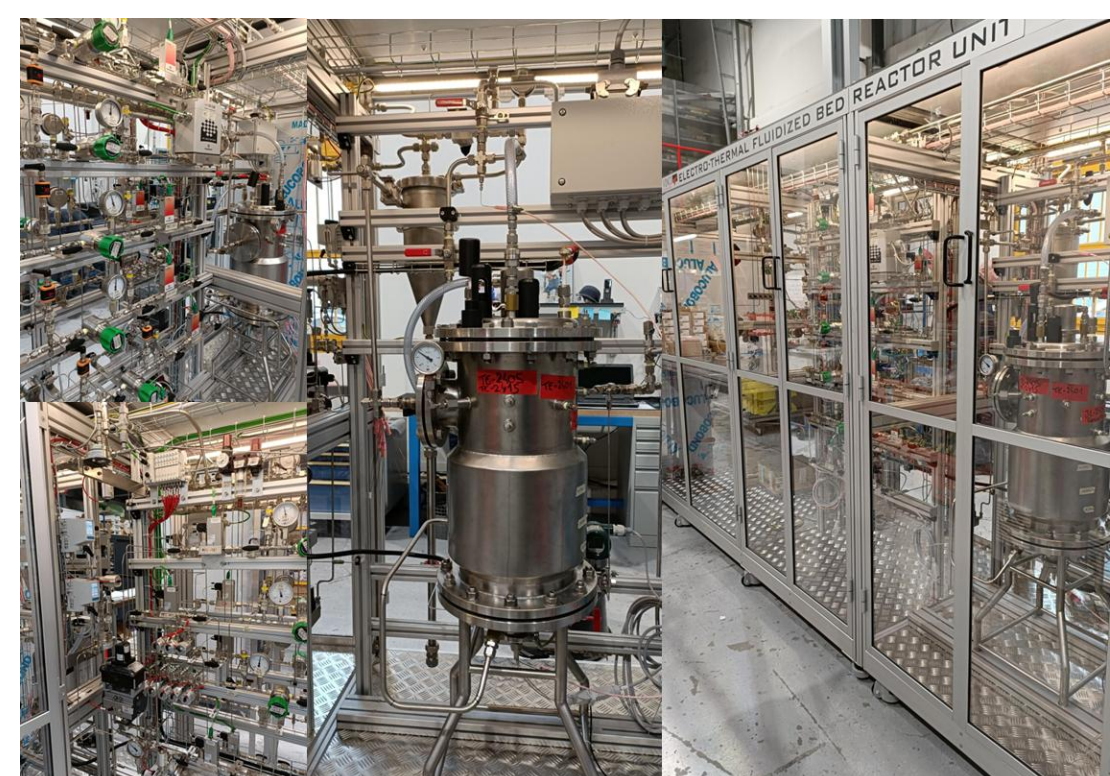
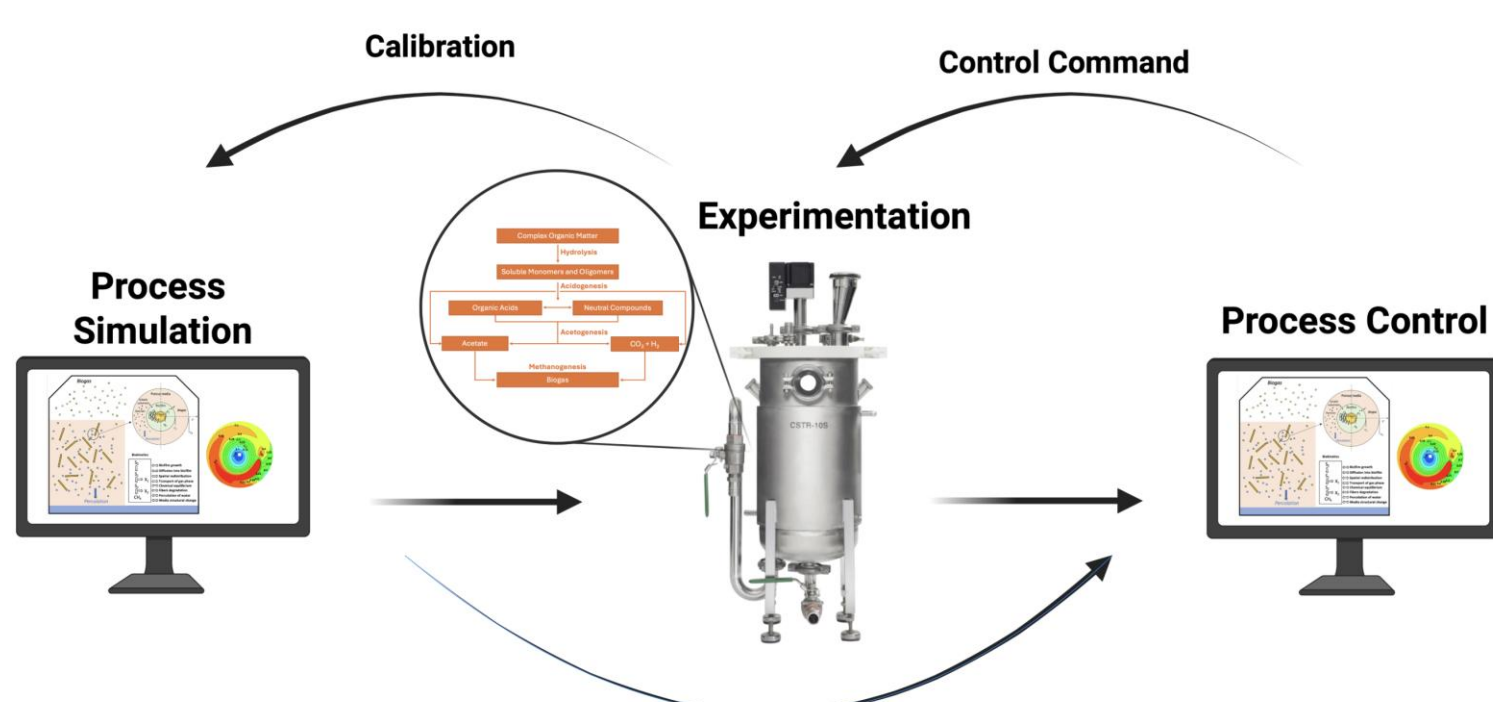
OBIWAN aims at converting organic waste streams into advanced chemicals and sustainable aviation fuels. After an initial anaerobic digestion for biogas production, a mixture of CH<sub>4</sub> and CO<sub>2</sub>, the further chemical conversion will harness the CO<sub>2</sub> in the final products. Excess carbon is then captured as solid carbon with applications in, e.g., gas cleaning and tires. In this manner, OBIWAN will generate technology to mitigate climate change, not only by avoiding greenhouse gas emissions but also by turning such gases into valuable products.



#### Two major innovations are targeted within the project:

1) The conversion of biogas into chemicals/fuels ideally requires a biogas composition of 60% CH<sub>4</sub> and 40% CO<sub>2</sub> with a minimum of impurities. Considering the variance in substrate types and their seasonal changes, it is a major challenge, even at laboratory scale, to produce biogas with a stable composition. That is why the experimental measurements will be complemented by the development of an innovative numerical tool to simulate the process and give relevant control of the reactors to ensure the stable biogas production in terms of both production rate and gas composition.

2) The catalytic decomposition of methane into solid carbon with a H<sub>2</sub> rich gas as a side product is lately gaining popularity for the production of so-called 'turquoise' hydrogen of high quality. However, this typically comes at the expense of the solid carbon properties. Within OBIWAN, the aim is to bring the hydrogen-focused process from the laboratory scale to an industrially relevant one for which the proof of concept will be demonstrated in an original Electrothermal Fluidized Bed Reactor (ETFB).



Other significant innovations will be made with respect to biogas purification/separation as well as CO<sub>2</sub> hydrogenation into methanol.

#### Partners:

#### Associated Partners:



[www.interreg-fwvl.eu](http://www.interreg-fwvl.eu)



**Total budget**  
€2.591.839,71



**ERDF budget**  
€1.555.103,82



**Duration**  
48 months

#### Cofinancing:

