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Project co-financed by European Union through LIFE programme LIFE+17 ENV/ES/000331

High performance multiphase anaerobic reactor for agroindustrial wastewater treatment



Project co-financed by European Union through LIFE programme: LIFE+17 ENV/ES/000331 Total budget: 2,177,143 € (EU contribution: 60%)

Duration: 01/09/2018 – 30/06/2023





THE PROJECT

LIFE Multi-AD aims to design and industrialise a high performance multiphase anaerobic reactor that generates methane-rich biogas, tailormade for treating wastewater generated in Food and Drink (F&D) Small and Medium Enterprises (SMEs).

Aerobic process (Baseline)







Indicators

- Pollutant concentration
- GHG emission
- Chemical consumption
- Energy consumption
- Operating cost



treated water

Multi-AD (Prototype performance)

OBJECTIVES

- The scale-up of the eco-innovative anaerobic reactor (patent ES-2541078-B1) from our current prototype of 100 L to 25-500 m³.
- Optimisation and automatisation of the control
- 3. Construction and validation of a 1:1 scale demonstration unit of Multi-AD reactor in a Spanish winery.
- 4. Development of the "Anaerobic Reactor Design Tool", software to be used for dimensioning ad-hoc Multi-AD technological solution.

system, to maximise the stability of the anaerobic process, and make it robust changes in the wastewater composition or operational conditions.

5. Population of the software's data-base with data generated by treating of different kind of F&D indutrial wastewater using our 100 L Multi-AD prototype.





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THE TECHNOLOGICAL SOLUTION

The technological solution is based on Multi-AD reactor, a high performance multiphase anaerobic reactor. The innovative technology includes four chambers, each act as independent reactor where the whole biological anaerobic process takes place. Granular anaerobic biomass is able to degrade organic matter and produce biogas, treating wastewater and generating a renewable energy source.



EXPECTED RESULTS

High efficient wastewater treatment. 90% COD reduction. Reduction of CO₂ emissions. Around 13% compared to aerobic treatment.

Self-sufficient innovation and fully





Low operating costs. 50% reduction compared to aerobic treatment

automated. 4.0 solution.

Design *ad-hoc* on demand. Reactor capacity from 25-500 m³.





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