



WASTE2FUELS

*Sustainable production of next generation
biofuels from waste streams*

Project ID card

Funded under the European Union's Horizon 2020 research and innovation programme.

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Website: www.waste2fuels.eu



The project in brief

WASTE2FUELS project is devoted to the development of novel pretreatment methods for converting unavoidable agrofood waste to an appropriate feedstock for biobutanol production, thus dramatically enlarging current available biomass for biofuels production. In doing so, the project would make a major contribution to leading the EU into the next generation of sustainable butanol, domestic bioenergy production and advanced agrofood waste management.

Objectives

Waste2Fuels aims:

- To map, characterise and quantify the available agro-food waste (AFW) streams in Europe;
- To develop novel technologies for pre-treatment of agro-food biomass for fermentation;
- To develop methods and technologies to improve specific productivity and reliability of an integrated ABE fermentation process reactor system for the production of butanol from AFW streams;
- To optimize and demonstrate novel integrated ethanol to butanol catalytic conversion;
- To valorise post-process waste streams recovering energy added value by-products;
- To demonstrate the feasibility of the produced biobutanol to be burned in industrial systems and design the industrial up-scale;
- To perform environmental and economic sustainability assessments and to assess the biomass supply chain and rural development potential.

Milestones achieved

During the first 18 months, Waste2Fuels has achieved some relevant results:

At this stage a preliminary analysis has been conducted on agrofood waste, in order to select the most suitable AFWs wastes to be investigated for biobutanol production. The selected agrofood waste (potato peel, apple pomace, brewers' spent grain and coffee silverskin) have been chemically characterised and a conservation protocol established.

Activities aimed at recovery and concentration of the butanol mixture produced by fermentation have also been carried out. Obtained design parameters are used for modeling and comparing upgrading techniques, to select a suitable process to be coupled to the ABE fermenter.

Investigation has been conducted on novel green and environmentally friendly extraction technologies to obtain valuable components from food wastes and their fermentation by-products for their valorisation.

The test methodology, including the quantity and the origin of the butanol to be used in such tests, has been prepared as an initial part of the activities of experimental tests on engines and burners.

Risks, mainly associated with the commercialisation of the main W2F processes and products (biobutanol) and sub-products (proteins, biogas, etc) has been identified and assessed.

