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BIOFUELS

Biofuels are solid, liquid or gaseous fuels obtained from biomass. They serve as a renewable alternative to fossil fuels in the transport sector, helping to reduce greenhouse gas emissions and improve the security of supply. Bioethanol, biodiesel and biogas are examples of biofuels.



Research at the University of Bologna includes the development and characterization of biomass crops and agricultural residues, sustainability assessment models and the optimization of conversion technologies to produce advanced biofuels.

- New lignocellulosic and oil crops, and innovative and resilient cropping systems to be developed in marginal land
- New industrial catalytic processes, operating on a laboratory or pilot plant scale, for the production and upgrading of biofuels
- Production of H₂ or syngas from biomass through reforming
- Logistics and conversion technologies of biomass
- Development of hybrid thermochemical/biological methods for the production of energy, biofuels and bio-materials from residual biomasses
- Cultivation of algae strains adapted to the production of biofuels
- Participation into large pre-commercial demonstration plants for the production of automotive, aviation and maritime biofuels from lignocellulosic or waste biomass
- Risk analysis, risk assessment and legal compliancy in biofuel production
- Environmental and social sustainability of advanced biofuels, including analysis of Indirect Land Use Change (ILUC) in the production of biomasses

HIGHLIGHTS

At the Industrial Crops Lab activities focus on herbaceous lignocellulosic and oil crops dedicated to biorafinery, bioenergy and biofuels.

At the Laboratory of Algal Biology a photobioreactor systems is used for the controlled growth of algae to be transformed in plastic materials, biofuels, biomasses for gasifiers or pyrolysers, fertilizers, or for the treatment of waste water.

At the Pyrolysis Lab agricultural byproducts and sludge are valorized thanks to the application of small scale pyrolysis to screen process conditions and catalyst for the biomass and waste conversion.

European Projects

GOLD - *Bridging the gap between phytoremediation solutions on growing energy crops on contaminated lands and clean biofuel production H2020*

FlexJET - *Sustainable Jet Fuel from Flexible Waste Biomass H2020*

BECOOOL - *Brazil-EU Cooperation for Development of Advanced Lignocellulosic Biofuels H2020*

TO-SYN-FUEL - *The Demonstration of Waste Biomass to Synthetic Fuels and Green Hydrogen H2020*

SWEETFUEL - *Sweet Sorghum: An alternative energy crop FP7*

S2Bio - *Delivery of sustainable supply on non – food biomass to support a “resource-efficient” Bioeconomy in Europe FP7*

OPTIMA - *Optimization of Perennial Grasses for Biomass Production FP7*