





Consortium

Under the coordination of Clariant Produkte (Deutschland) GmbH, five other companies and research institutes from Germany, Austria and Hungary are participating in SUNLIQUID. The expertise offered by the SUNLIQUID consortium covers the entire value chain required to manufacture cellulosic ethanol – from feedstock sourcing to product marketing.

SUNLIQUID project partners

CLARIANT  Clariant Produkte (Deutschland) GmbH, Germany

BayWa BayWa AG, Germany

ENERGIE INSTITUT  Energy Institute at the Johannes Kepler University Linz, Austria

ExportHungary ExportHungary, Hungary

IBB  Industrielle Biotechnologie Bayern Netzwerk GmbH, Germany

Bavarian Research Alliance  Bavarian Research Alliance GmbH, Germany

Project Profile

Project

SUNLIQUID (sunliquid® large scale demonstration plant for the production of cellulosic ethanol)

Funding programme

The SUNLIQUID project receives funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 322386.

Project duration

April 2014 – March 2018

EU contribution

EUR 23 million

Coordination

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sunliquid® large scale demonstration plant for the production of cellulosic ethanol



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EU project SUNLIQUID: cellulosic ethanol from agricultural residues ready to market

The transport sector consumes about half of the world's increasingly scarce oil resources, while, at the same time, transport-generated CO₂ emissions are also regarded as one of the causes of global warming. Over the next few years, this sector will register the largest growth in demand for liquid energy sources. According to the parameters set by the EU Commission, 10% of the energy needs in the transport sector should be met by renewable energy by 2020 and greenhouse gas emissions reduced by 6%.

The aim of the EU project SUNLIQUID is to confirm the commercial maturity of the sunliquid® process used to produce cellulosic ethanol from agricultural residues – an advanced, sustainable and climate-friendly biofuel. In the case of this innovative process developed by Clariant Produkte (Deutschland) GmbH, by-products resulting from current agricultural practice, such as cereal straw or corn stover, serve as feedstock, whereby these products are neither used in foodstuffs nor compete for cropland. The virtually carbon-neutral process converts the difficult to access C5 and C6 sugars contained in this plant material almost entirely into ethanol. Since 2012, a prototype plant has been demonstrating the technological maturity of the production process.

Objectives

The EU project SUNLIQUID intends to demonstrate that the production of cellulosic ethanol on the basis of the sunliquid® technology is economically viable on a commercial scale by constructing and operating a large scale production plant. At the same time, this project lays the foundation for wide-scale implementation of advanced biofuels production in Europe and for more sustainable energy supplies in the European transport sector.

SUNLIQUID covers the entire value chain:

- Supplying feedstock to the plant
- Logistics system for feedstock transportation
- Design, construction and commissioning of the plant, as well as training qualified staff
- Fuel testing and distribution, including the development of sales and marketing models
- Life cycle analysis to obtain a full-scale assessment of the product's sustainability over the entire value chain
- Information campaigns to promote public acceptance of cellulosic ethanol

Benefit for European society

The project is a decisive step towards establishing the innovative sunliquid® technology on the European market. The biofuel produced on this basis has the potential to pave the way for supplying Europe with more sustainable and climate-friendly fuel. Approx. 240 million tons of straw are produced each year in the EU, about 60% of which are available for manufacturing ethanol.* This means that by 2020, 25% of the demand for petrol in the EU could be met by cellulosic ethanol.

In the long term, local production of liquid energy sources could reduce dependence on fossil fuels in the form of imports from oil-exporting countries. As a matter of fact, as much as 94% of the energy required today in the European transport sector currently comes from oil, of which 84% is imported from politically unstable regions.*

Cellulosic ethanol plants are erected in largely rural areas, close to the feedstock. Here they spur economic growth and create new jobs due to an increasing demand for skilled labour to operate the plants and process local feedstocks. They also create additional earnings possibilities for the agricultural sector.



The sunliquid® process for the production of cellulosic ethanol from agricultural residues

Main features of the sunliquid® process

- Process can be flexibly adapted to different feedstocks (e.g. wheat straw, corn stover, sugarcane bagasse)
- Highly efficient process thanks to feedstock-specific enzymes and efficient fermentation organisms
- Energy self-sufficient production of cellulosic ethanol with greenhouse gas savings of up to 95% compared with fossil fuel
- Expansion of regional feedstock base with no conflict of use due to utilising agricultural residues

*Source: Eurostat