Press Release

Successful LIGNOFLAG project completion: EU-funded large-scale commercial plant produces bioethanol from agricultural residues

Planegg (Germany), 25 May 2023 - The Swiss specialty chemicals company Clariant has built the first large-scale commercial plant for the production of cellulosic ethanol based on its sunliquid® technology in Podari, in southwestern Romania, and commissioned it. The European Union supported the project with around 25 million euros as part of the LIGNOFLAG project. At today's final conference of LIGNOFLAG in Planegg, the project partners presented the results of six years of successful cooperation.

Cellulosic ethanol helps decarbonize transportation in Europe

Clariant's sunliquid® technology converts unused agricultural residues into cellulosic ethanol, an advanced, highly sustainable biofuel that can already be used as a drop-in solution in fuel blending. Compared to fossil fuels, CO_2 savings of up to 95% can be achieved. "Biofuels from agricultural residues play a key role in achieving the European Union's ambitious goal of becoming climate-neutral by 2050. The investment in Romania thus makes an important contribution on the way to decarbonizing transport in Europe and building a more sustainable future," says Dr. Stefan Brejc, coordinator of the LIGNOFLAG project and Head of the Business Segment Biofuels & Derivatives at Clariant.

Creating a domestic source of renewable energy

The sunliquid® plant in Podari is in the ramp-up phase. The plant can process 250,000 tons of straw per year to produce 50,000 tons of cellulosic ethanol (nominal plant capacity) if the targeted technical parameters are achieved. The straw is sourced from local farmers, with whom Clariant has already signed more than 300 contracts to ensure the supply of the necessary feedstock to the plant. The use of agricultural residues from the immediate vicinity promotes the production of biofuels in Europe. This reduces dependence on fossil fuels and ensures a competitive domestic source of renewable energy for Europe.

New green jobs along the entire value chain

The bioethanol plant in Podari, a structurally weak area in southwestern Romania, will help to strengthen the local economy when it is in permanent commercial operation. The construction of the plant, co-funded by LIGNOFLAG, will not only provide farmers with an additional source of income, but also create green jobs along the value chain. Currently, about 120 employees work at the plant, and nearly 300 people are employed in connected businesses such as collection, storage, and transport of the feedstock. The construction of the plant employed around 800 workers.

Energy-efficient production process through utilization of co-products

One objective of the LIGNOFLAG project was also to establish an energy-efficient and highly sustainable production process for cellulosic ethanol by recycling the two co-products lignin and vinasse. Lignin can be utilized energetically in a combined heat and power plant for the production of

steam and green electricity, a tangible example of a circular economy. For this purpose, a CO_2-neutral biomass cogeneration plant based on lignin was built in Podari to supply the sunliquid® production plant with energy and steam. The use of vinasse as a fertilizer also was the subject of research within LIGNOFLAG and turned out to be promising in field trials. Alternatively, vinasse can also be used as an energy source. Furthermore, a "Life Cycle Assessment" was carried out in LIGNOFLAG for the entire production process of the Podari plant and the potential socio-economic impact of an advanced biofuel market in Europe was researched.

Commercialization of the sunliquid® technology

Together with the EU-funded LIGNOFLAG consortium, Clariant has developed a commercialization strategy for cellulosic ethanol based on the sunliquid® technology. This strategy includes a licensing business, which has already started. The aim of the technical optimization work at the sunliquid® plant is to ensure the commercial attractiveness of the technology. Potential customers intend to integrate the sunliquid® technology into their own production processes and thus expand their service portfolio of sustainable fuels.

The planning and construction of the plant in Podari received a total of €48 million in funding from the European Union, including around €25 million from the BBI-JU-funded LIGNOFLAG project.

About the EU project LIGNOFLAG

LIGNOFLAG started on June 1, 2017 and will end on May 31, 2023. The LIGNOFLAG consortium, with Clariant as coordinator, consists of six other companies and research institutions from Germany (Bavarian Research Alliance GmbH, Fliegl Agrartechnik GmbH), Austria (Energy Institute at Johannes Kepler University in Linz), Romania (BDR Associates Romania, Clariant RO SRL) and Hungary (ExportHungary kft). The EU provided funding of €24.7 million for the project from the Bio-Based Industries Joint Undertaking (BBI JU) under the EU's Horizon 2020 research and innovation programme. The main objective of the project was to build a commercial flagship plant for the production of cellulosic ethanol from agricultural residues based on Clariant's sunliquid® technology. The new plant was built in Podari in southwestern Romania and has been in operation since June 2022.

Clariant's flagship sunliquid® cellulosic ethanol plant in Podari, Romania.
(Photo: Clariant)

About the Bavarian Research Alliance (BayFOR)

The Bavarian Research Alliance took an active role in the development and professional preparation of the application for EU funding.

As a project partner, BayFOR was head of the work package "Dissemination and Stakeholder Interaction" and as such responsible for all project-related press and public relations activities for LIGNOFLAG.

The Bavarian Research Alliance, which is supported by the Bavarian State Ministry of Science and the Arts, provides advice and comprehensive support to Bavarian stakeholders from science and industry (in particular SMEs) on acquiring European funding for research, development and innovation. The focus is on the EU's current framework programme for research and innovation, Horizon Europe. BayFOR is a partner in the Enterprise Europe Network and in the Bavarian Research and Innovation Agency. This excellent European and regional network enables it to successfully support internationalization projects.

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