

First production of isobutene from wheat straw at demo scale

New phase for the H2020 Optisochem project after 18 months of activity

Sugars from wheat straw produced at Clariant's Sunliquid® pre-commercial plant have been shipped to Global Bioenergies' Leuna demo plant

Successful test runs for production of straw-based isobutene, batches delivered to INEOS for evaluation

Evry (France), 06 February 2019 - Global Bioenergies today announces that runs using wheat straw hydrolysate provided by its partner Clariant were successfully performed in its Leuna demo plant, leading to the production of cellulosic isobutene for the first time at this scale. These runs were part of OPTISOCHÉM, a project which started in June 2017 and was granted €9.8 million by the Bio Based Industry- Joint Undertaking (BBI-JU) as part of the H2020 program. The aim of the project is to demonstrate a new value chain combining Global Bioenergies bio-Isobutene process with technologies developed by Clariant and INEOS, two of Europe's leading chemical companies: currently underutilized residual wheat straw has been converted at demo scale into second generation renewable bio-isobutene, and will eventually be transformed into oligomers and polymers usable in lubricants, rubbers, cosmetics, solvents, plastics, or fuels applications. The intense R&D cooperation will continue until May 2021.

OPTISOCHÉM focuses on the demonstration of a new value chain, based on the combination of the technologies and know-how of the participants from four EU member states:

- Conversion of straw into glucose- and xylose-rich hydrolysates by Clariant sunliquid® technology (Germany),
- Fermentation of the straw hydrolysates into bio-isobutene by Global Bioenergies (France and Germany),
- Conversion of bio-isobutene into oligomers and polymers by INEOS (Germany and France),
- Preliminary engineering of an hydrolysate-to-isobutene plant and overall integration with a straw-to-hydrolysate plant, by TechnipFMC and IPSB (France), and
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- Assessment of the sustainability and environmental benefits by the Energy Institute at the JKU Linz (Austria).

The BBI-JU, a public-private partnership between the European Union and the Bio-Industries Consortium (BIC), is dedicated to realizing the European bio-economy potential, turning biological residues and wastes into greener everyday products through innovative technologies and bio-refineries expected to become the heart of the bio-economy.

The BBI-JU selected this project under the name OPTISOCHEM (N°744330), in the frame of the European HORIZON 2020 programme for research and innovation, following a very selective and competitive process led by independent experts.

Markus Rarbach, Head of Biofuels & Derivatives of Clariant comments: "OPTISOCHEM is demonstrating a key value chain within the bio-economy: advanced bio-refineries based on agricultural residues. From our pre-commercial plant in Straubing (Germany) we have supplied cellulosic sugars in tons scale to Global Bioenergies' facilities for conversion to bio-isobutene during the first period of the project. We are very pleased with the excellent results from all partners and will continue to provide additional quantities in the next phases so as to prepare for eventual commercial production in the future."

Frederic Pâques, COO of Global Bioenergies declares: "During this first period, we successfully increased the performances of our micro-organism on traditional substrate such as sucrose and adapted our best microbial chassis to straw hydrolysates. We successfully run our pilot facility in Pomacle (France) and our Demo facility in Leuna (Germany) both with straw hydrolysate and sucrose as a benchmark. We expect to produce several tons of bio-isobutene on this new non-conventional feedstock in the remaining periods of the project"

Jean-François Boideau, EMEA Commercial General Manager at INEOS Oligomers, said: "Our sites have over fifty years of experience in the production of oligomers and polymers of isobutene which are used in lubricants, rubbers, cosmetics, plastics, solvents, and fuels. To date, we received several batches of bio-isobutene from Global Bioenergies for qualification purpose, and the quality is promising. During the next phase of the project, INEOS is ready to evaluate conversion of additional quantities of bio-isobutene into downstream products in order to assess the potential of this bio-based feedstock as a building block for end consumer applications."

This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 744330

Disclaimer: this press release reflect only the author's view and the BBI-JU is not responsible for any use that may be made of the information it contains



About GLOBAL BIOENERGIES

Global Bioenergies is one of the few companies worldwide, and the only one in Europe, that is developing a process to convert renewable resources into hydrocarbons. The Company initially focused its efforts on the production of isobutene, one of the most important petrochemical building blocks that can be converted into gasoline, jet fuel, cosmetic ingredients, plastics and elastomers. Global Bioenergies continues to improve the performance of its process, to operate its demo plant in Germany, and to prepare the first full-scale plant through a joint venture with Cristal Union, named IBN-One. Global Bioenergies is listed on Euronext Growth Paris (FR0011052257 – ALGBE)

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