

OPTISOCHEM

OPTimized conversion of residual wheat straw to bio-ISObutene for bio based CHEMicals

Summary

The OPTISOCHEM project will demonstrate the feasibility of transforming excess wheat straw into bio-Isobutene (bio-IBN) derivatives. It will develop and scale up the demo production of bio-IBN from straw. Ultimately this will lead to production and validation in pilot facilities.

The process will provide two different groups of chemical compounds derived from bio-IBN. These compounds, oligomers (DIB, TIB, TeIB) and polyisobutylenes (PIBs) are currently used in a wide range of applications such as lubricants, adhesives, sealants, flavours and fragrances and substituted phenols. Currently, this market relies on products derived from fossil-based isobutene.

By sourcing products from bio-based IBN while using the same process as fossil-based IBN, and with comparable performances, would provide a renewable supply for what is a sizeable and valuable market.

Objectives

The OPTISOCHEM project has set the following objectives.

- To optimise the wheat straw hydrolysate fermentation processes.
- To demonstrate the feasibility of scaling up bio-IBM production to commercial levels.
- To evaluate and validate the end products of the IBN fermentation process in the planned industrial applications.

To define an approach that will allow the scaling up of the formation process, including financial and engineering parameters.

Expected impacts

The OPTISOCHEM project aims to deliver the following impacts:

- Increase the yield of targeted bio-based product(s) by more than 20 percent compared to state-of-the-art processes.
- Reduce the production costs of bio-based products by 10-20%, compared to current market situation.
- Reduce energy consumption by more than 30% for bio-catalytic processes as compared to state-of-the-art production processes.
- Deliver savings, in terms of CO₂ emissions per kg product by more than 20% for bio-catalytic as compared to state-of-the-art production methods.
- Increase innovation capacity and integration of new knowledge.

Strengthen the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets and where relevant, by delivering such innovations to the market.



Optisochem

<http://optisochem.eu/>

Type of Action:
Innovation Action -
Demonstration

Value Chain: Across VCs

Start date: 01 June 2017

End date: 31 May 2021

BBI JU contribution: €
9,755,493.63

Achievements & milestones

How to convert wheat straw waste into green chemicals

05 April 2019

An EU initiative has produced renewable bio-isobutene for use in various applications ranging from cosmetics to fuels. [Read more](#)

Converting residual wheat straw into renewable bio-isobutene

16 February 2019

Under OPTISOCHEM project, residual wheat straw is being converted into 2nd-generation renewable bio-isobutene, and will be transformed into oligomers & polymers, which can be used in lubricants, rubbers, cosmetics, solvents, plastics & fuels applications. [Read more](#)

Project coordination

- Global Bioenergies (France)
- Clariant Produkte (Deutschland) GmbH (Germany)
- INEOS Services Belgium (Belgium)
- Technip France SAS (France)
- Energieinstitut an der Johannes Kepler Universität Linz Verein (Austria)
- IPSB (France)

Organisation name: Global Bioenergies (France)