

Scaling up novel integrated oil recovery method in oil fermentation

Publieke samenvatting / Public summary

Aanleiding

A promising production method of advanced biofuels or biochemicals from lignocellulose is fermentative production. The advantage of this method is that the oil product can be produced more sustainable than the current fossil or natural based compounds (e.g. sesquiterpenes flavour or fragrances) that increase CO₂ emissions or are found rare in nature. However, this type of fermentation process is not optimized and is rather expensive. Besides yield improvement, the oil production and separation is complicated by emulsion formation. This forms, especially for the biofuel sector, one of the large bottlenecks to roll out advanced biofuel fermentation technology.

Doelstelling

Delft University of Technology (TUD) and Delft Advanced Biorenewables (DAB) developed a proprietary reactor concept to produce and separate, in one single process step, the aimed fuel compounds. The uniqueness of the integrated system is scalability, and the cost price reduction of 20-30%, as well as the environmental impact reduction of CO₂ emission by 60%. The project objective is to demonstrate and predict a cost efficient oil production method at pilot scale by: strain and fermentation optimisation and integrating an in-situ recovery method at pilot scale.

Korte omschrijving

The activities within this project are: 1. To develop a robust strain with a reproducible protocol

Projectinformatie / Project information

Projectnummer / Project number
TEBE116147

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Algemene informatie / General information

Penvoerder / Secretariat
Delft Advanced Biofuels B.V.

Publicaties en materialen / Publications and attachments

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(Firmenich, within the Swiss project) 2. To predict the performance of fermentation and product recovery processes of an integrated multiphase separation in an up-scaled fermenter. (TUD and DAB) 3. To demonstrate an in-situ recovery technology on pilot scale for fermentation of fuel-like compounds (BPF, DAB and Firmenich). 4. Techno-economical evaluation (DAB, TUD, SkyNRG)

Resultaat

The main result of the project is demonstration of a low cost, energy-efficient, integrated recovery technology for advanced biofuel and biochemical production, at relevant TRL level 6, so that out-licencing to companies in the biofuel industry such as Total, Amyris, REG and Lanzatech becomes within reach. Next to that, the project contributes to the installation of a missing innovative bioreactor in a well working Bioprocess Pilot Facility. The bubble column is a specific reactor type that is becoming the new standard for large scale fermentations due to its mixing capacity at lower energy input. The final demonstrated recovery technology will intensify new and existing bioproduction plants by enabling continuous production.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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