

THYME Project

Teesside, Hull and York - Mobilising Bioeconomy Knowledge Exchange

Improving productivity in energy generation from biowaste

The THYME Project is driving productivity through process improvements in the generation of energy from bio-feedstocks. Bio-based energy production is a growing element of the renewable energy mix with massive potential for economic growth via sustainable divestment from fossil fuels.



“ Through THYME we are bringing together regional partners, to accelerate bio-based technologies that improve the performance of local industry ” Jenny Spear, University of Hull.

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Improving energy production from biomass

The University of Hull is exploring the use of catalysts in the gasification of biomass feedstocks to produce low carbon fuels with cleaner emissions. This novel process reduces costly tar blockages that currently cause production stoppages. The team are also investigating the treatment of waste tar molecules as 'platform chemicals' that can be converted into high value by-products.

Low energy production of biofuels

High-value products such as acetone, ethanol and particularly n-butanol (butane gas) can be produced by the distillation of fermented bio-waste. However, this is an expensive, high-energy process. The THYME Project is trialling innovative low-energy methods to separate out these high-value green chemicals.

Converting biofuel production waste into a new bioenergy source

Current production methods for making bioethanol from biomass, although efficient, result in a lignin-rich sludge that is usually discarded. The THYME Project is investigating various pre-treatment technologies for this waste with the aim of generating an additional solid fuel for energy production.

Maximising income streams from biofuel production

Argent Energy specialise in the manufacture of commercial biofuels. Advanced chemical process simulations and mathematical modelling are developing a method for the extraction and purification of short-chain methyl esters from their own bio-waste stream to create high-value chemicals for the flavours and fragrances market.

Optimising biomethane production via anaerobic digestion

The universities of York and Teesside are working with Amur Energy to optimise their South Milford Anaerobic Digestion installation, which processes 50,000 tonnes of food waste a year to produce upgraded biomethane. The researchers are using a 'digital twin' to recommend process interventions that have been pre-tested in a metabolic model.

Improving bioethanol productivity

THYME researchers are genetically altering yeast strains to improve the efficiency of ethanol production via biomass fermentation. Their lab-based results are being applied to manufacturing processes by Industry partner Ingenza, to assess commercial viability.

Driving future research in Bioenergy, Solid Fuels and Catalysis

The University of Hull and the Biorenewables Development Centre are creating a new Special Interest Group (SIG) bringing together international academia and industry to explore future research activity, as a legacy to the THYME Project. The SIG uses green chemistry to address key challenges around the shift away from fossil fuels. A symposium on Bioenergy, Solid Fuels and Catalysis will help shape future collaborative research to address these challenges.

Key facts

Five proof of concept projects funded

Total of £251,769 funding

28 research partnerships instigated

Network launched with international reach



For more information please visit:

www.thyme.biovale.org