Project partners

Eindhoven University of Technology

Vertoro B.V.

TEC4FUELS GmbH

Bloom Biorenewables Ltd

Uniresearch B.V.

Winterthur Gas & Diesel Ltd.

GoodFuels B.V.

Thyssenkrupp Marine Systems GmbH

OWI Science for Fuels gGmbH

Agencia Estatal Consejo Superior de Investigaciones Científicas

Varo Energy Netherlands B.V.

Facts and Figures

Acronym: IDEALFUEL

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Duration: 48 months

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Website

www.IDEALFUEL.eu

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IDEAL FUEL

Lignin as a feedstock for renewable marine fuels

Lignin is the key

Nowadays one of the key challenges of the shipping industry is to become greener and take a tangible step towards decarbonization. More and more trading and shipping companies are convinced of the urgency to act on climate and that there is a need to join forces. Here the EU H2020 IDEALFUEL project comes into play that aims to develop methods to convert lignin – the polymer found in the structural materials of plants and trees – from dry plant matter into renewable marine fuels. To achieve this goal, the IDEALFUEL consortium plans to devise an efficient and cost-effective two-step chemical process. In the first step, lignin is extracted from lignocellulosic biomass in the form of Crude Lignin Oil (CLO), leaving behind a solid cellulose material that can be used in the paper industry or converted into ethanol. In the second step, the CLO is refined and converted into Bio fuel for HFO drop-in (Bio-HFO) that can be used in combination with traditional fossil fuels in a fuel blend or neat in the engines of the world's maritime fleet without technical modifications.

IDEALFUEL's overall objectives

1. To develop and validate lignin oil extraction processes leading to CLO

2. To develop and validate a selective, low temperature, and efficient hydrotreating process for CLO

3. To assess the compatibility of the Bio-HFO with existing fuel supply systems and engines

4. To define a blending strategy for hydrotreated CLO products

5. To develop strategies for regional/local extraction of CLO from lignocellulosic biomass and processing of CLO in a central bio-refinery to a drop-in renewable Bio-HFO.

6. To perform a Life Cycle Assessment on the supply and value chain in order to quantify the overall impact of the process(es) on the environment.

7. To develop a blueprint for stepwise implementation of Bio-HFO in the shipping sector.

The IDEAL route from Well to Propeller

The ambition of the IDEALFUEL project is to develop the new technologies and processes from the current lab-scale (TRL3) via bench-scale (TRL4) to pilot scale (TRL5) to prove the performance and compatibility of the Bio-HFO over the whole blending range in maritime fuel systems and marine engines. In addition, IDEALFUEL will carry out Well to Propeller impact assessment and Life Cycle Analysis (LCA) to check and proof the soundness of the environmental, society, and sustainability aspects of the developed technologies, processes, products, solutions, and logistics.