ISSUE 1 | JULY 2024

REFOLUTION PROJECT NEWSLETTER

REFOLUTION
Unlocking the potential of biofuels

Refinery integration, scale-up and certification for aviation and marine biofuels production

CONTENT

1. Introduction to the project

The REFOLUTION project is a 4-year Horizon Europe Innovation Action, launched on 1st January 2023 whose consortium is composed by 14 partners from 8 countries.

This project focuses on the transformation of bio-oils produced from fast pyrolysis (FP) into advanced biofuels, through intermediate process steps (fractionation, stabilization) combined with downstream coprocessing technologies at different levels of severities (temperature, hydrogen cons consumption, carbon yield) for targeting different applications:

- Fluid Catalytic Cracking (FCC) co-processing for aviation and marine sectors
- Co-hydrotreating for marine.

REFOLUTION will build the basis of the increased incorporation of advanced biofuels production in existing plants, enhancing the potential of Europe's 93 operating refineries in accelerating the transition to a greener economy and delivering up to 30% reduction in CO_2 emission from their core FCC units.

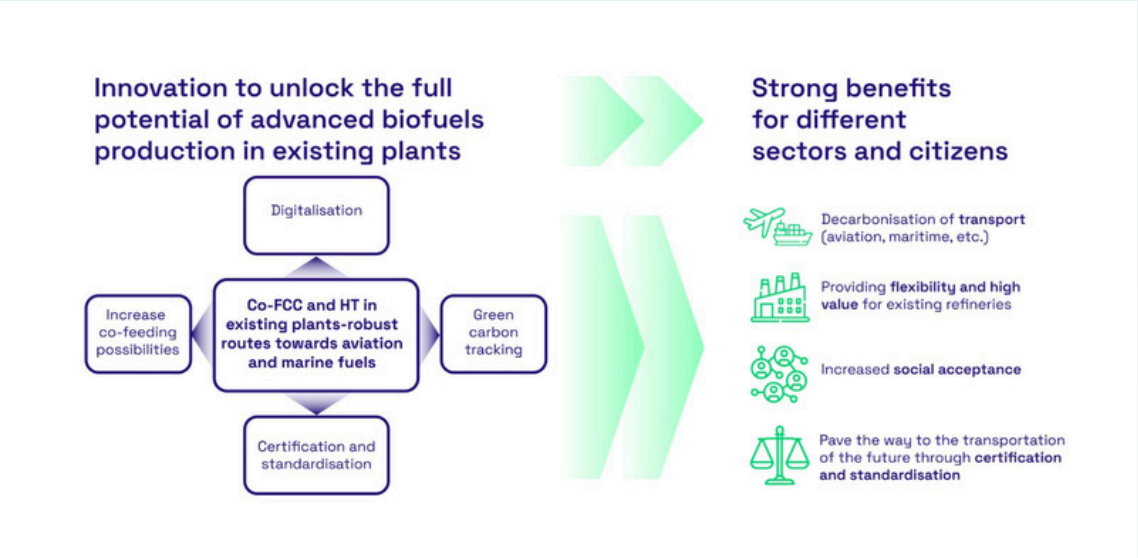


Figure 1. Refolution Process
Credit to: Refolution Website

2. Project Advantages

For the last 12 years, many FCC refineries producing gasoline are closing as the demand is shifting to kerosene and the gasoline market is declining, with the IEA projecting a potential 14% reduction in capacity by 2030.

Some of the goals we want to achieve with this research are:

- Discover innovative processes for the conversion of lignocellulosic biomass into biofuels
- Discover innovative tools for green carbon tracking, following the green carbon all along the process allowing validation of existing standards
- Increase digitalisation, with the aim to provide scenarios for implementation of bio-liquid into existing archetype refineries
- Structure/build a path for fuel certification for aviation application, and standardisation for both aviation and marine applications
- Create high-quality knowledge and improving innovation capacity, strengthening human capital in research and innovation and fostering diffusion of knowledge

Thanks to REFOLUTION project we can demonstrate an innovative FCC co-process through which reduce the investment costs, CAPEX, by at least 50%, thanks to the use of existing EU refineries with their FCC units.

The results of the project will also allow reduction of the OPEX by at least 45% compared to stand-alone hydrotreater, improving processing conditions and catalysts; optimized to maximize conversion to the most valuable products (aviation fuel).

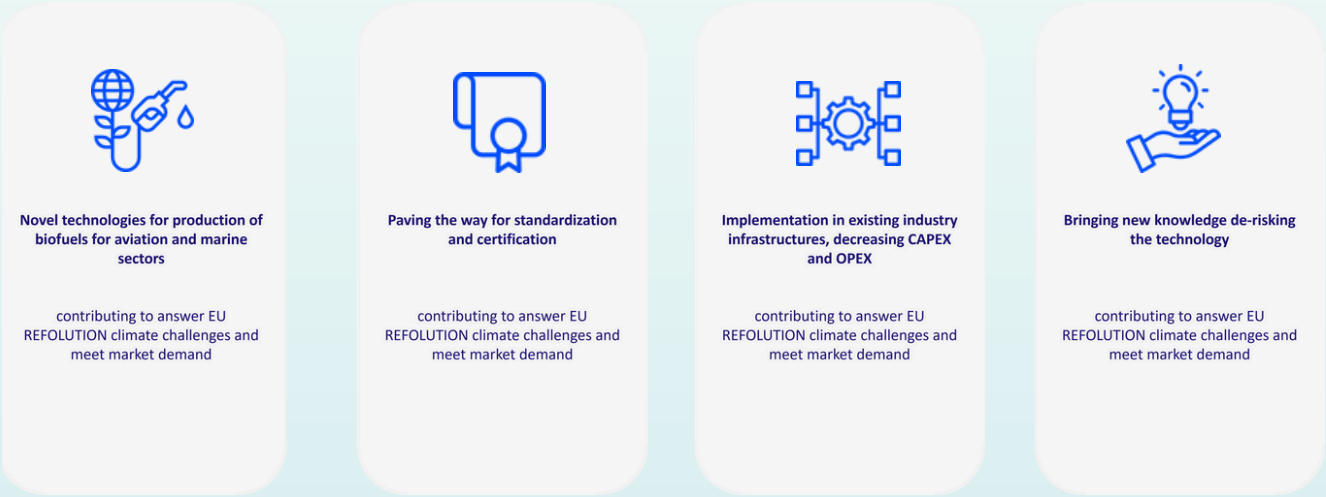


Figure 2. Refolution Advantage
Credit to: Refolution Website

3. EUBCE 2024

The EUBCE is a scientific event organized and established by the European Commission in 1980 (Brighton, UK).
In 2024 the conference was held in Marseille, at Chanot Convention Centre, from 24th to 27th June, and the presentations (about 200 oral presentations, and at least 500 posters) are selected from a Call for Papers, and as of today more than 750 papers have been received.
The REFOLUTION project was present at the 32nd European Biomass Conferences & Exhibition thanks to the REFOLUTION partner VTT and the coordinator of the project, Duncan Akporiaye from Sintef.

EUBCE 2024

3. 1 VTT Project Workshop and Poster Presentation

The REFOLUTION partner VTT has organized a workshop to discuss the sustainability and responsibility questions based on the Refolution Responsible Research and Innovation framework.

Nina Wessberg and Hanna Saari (VTT) introduced the project and its main aims, the RRI framework, facilitated the discussion about sustainability and responsibility issues of biofuels in aviation and marine contexts and welcomed comments and interactions on the Refolution RRI process.

Another events to be held on the 32nd European Biomass Conferences & Exhibition by VTT was the poster presentation of Nina Wessberg and Hanna Saari on the “Responsible Research and Innovation in Advanced Biofuel Research Project Refolution”.

This visual session was also an opportunity for discussion on the topic “Monitoring and methods in social assessments in bioenergy and bioeconomy”.

EUBCE 2024 Marseille, France.
Nina Wessberg and Hanna Saari Parallel Event.
Source: ETA Florence

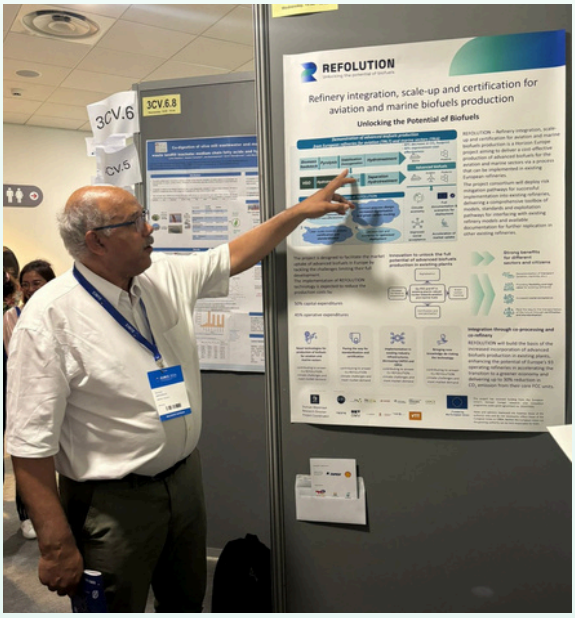
EUBCE 2024 Marseille, France.
Nina Wessberg and Hanna Saari Poster Presentation.
Source: ETA Florence

DISCOVER MORE ABOUT VTT

3. 2 SINTEF Poster Presentation and REFOLUTION Visibility Point

During the 32nd EUBCE the REFOLUTION coordinator Duncan Akporiaye (SINTEF) presented through a poster the "Refinery Integration, Scale-up and Certification of Biofuels Production for Aviation and Marine Sectors".

Furthermore, in the exhibition area of the conference there was a visibility point composed by a roll up, a QR Code linked to the website and the threefolds relating to the project.



EUBCE 2024 Marseille, France.
Duncan Akporiaye Poster Presentation.
Source: ETA Florence

EUBCE 2024 Marseille, France.
REFOLUTION Visibility Point.
Source: ETA Florence

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4. GLAMOUR Workshop

Another event where the REFOLUTION project was presented was the GLAMOUR workshop.
The aim of the GLAMOUR project is the design, scale-up and validation of an integrated process that converts the waste bio-based feedstock such as crude glycerol into aviation and marine diesel fuels.

Silje Fosse Håkonsen, a research Scientist at SINTEF and the co-coordinator of REFOLUTION, was the speaker at the workshop and presented the characteristics and the aims of the project.

The workshop, organized by the GLAMOUR consortium, had the purpose to connect industry stakeholders and related european project for a discussion on the developments towards the demostration of advanced biofuels and clean energy technologies.

Figure 3. Glamour Workshop
Credit to: Linkedin - GLAMOUR Horizon 2020

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Funded by the European Union

This project has received co-funding from the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement N° 101096780.