

INNOVATION FUND

Deploying innovative net-zero technologies for climate neutrality

BioOstrand: Biorefinery Östrand – The first commercial deployment of solid biomass- and power-to- Sustainable Aviation Fuels technology line-up

The Innovation Fund is 100% funded by the EU Emissions Trading System

| Project Factsheet

Biorefinery Östrand will contribute to the decarbonisation of the transport sector by creating a long-lasting solution for producing advanced biofuels and electro-fuels (e-fuels) from sustainable solid biomass and renewable electricity. The project will design, build and operate the world's first commercial scale biorefinery producing sustainable aviation fuel (SAF) and naphtha from solid forest residues. The project will deploy a breakthrough Anything-to-Liquid (XTL) pathway, solid biomass gasification and Fischer-Tropsch synthesis, with an electrolyser utilising renewable electricity. This will result in 100% relative greenhouse gas (GHG) emission avoidance compared to the reference scenario of fossil fuels.

The project is pioneering solid biomass-to-biofuels production at commercial scale. It goes beyond the state-of-the-art in utilising sustainable solid biomass as a feedstock in SAF production, and also delivers scale of operations, creating a major leap towards industrial production and leading the way for the future SAF industry. The technology set-up expands

COORDINATOR

BIOREFINERY OSTRAND AB

LOCATION

Sweden

CATEGORY

Energy intensive industries (EII)

SECTOR

Refineries

AMOUNT OF INNOVATION FUND GRANT

EUR 166,648,512

EXPECTED GHG EMISSIONS AVOIDANCE

8,762,169 tonnes CO₂ equivalent

STARTING DATE

01 January, 2024

ENTRY INTO OPERATION DATE

30 June, 2029

FINANCIAL CLOSE DATE

30 June, 2025

* Calculated vs. the 2021-2025 ETS benchmark of 6.84 tCO₂e/tH₂, not taking into account additional carbon abatement due to substitution effects in the H₂ end use application, i.e. conservative estimate.

the feedstock base of SAF production to include solid forest industry residues – which helps to break the SAF industry’s dependency on the limited pool of oleochemical feedstocks that are in use today. To increase the hydrocarbon yield, renewable hydrogen is added to the process, facilitating a more efficient use of the feedstock by turning more carbon into final product. The project showcases a cutting-edge integration of a biorefinery with a modern pulp mill, resulting in significant efficiency gains. This will lead to SAF and naphtha production, of which half are e-fuels half are advanced biofuels, with an accumulated GHG emission avoidance of 8.7 million tonnes of CO₂ equivalent over the first ten years of operation. For reference, this is equivalent to twice the annual emissions from domestic aviation in Sweden.

Biorefinery Östrand will contribute to the climate-neutrality target under the European Green Deal by bringing renewable fuels and a commercial solution

for decarbonising transport to the market, particularly the hard-to-abate aviation segment. Notably, the Biorefinery Östrand project contributes directly to achieving the SAF targets proposed in the ReFuelEU Aviation Initiative, as well as the renewable hydrogen and self-sufficiency targets outlined in the REPowerEU Action Plan and the EU Hydrogen Strategy.

The project contributes to the European value chain for advanced biofuels, starting with forest residues and locally produced renewable electricity and ending with filling the fuel tanks of the end-users with sustainable fuels. This provides both sustainability and robustness for the vital European transport economy – while simultaneously showcasing both a technology and a business model that can be replicated across Europe and beyond. The project is estimated to generate 60 direct and 660 indirect full-time equivalent per year of new green jobs which will also benefit the local economy.

| Participants

BIOREFINERY OSTRAND AB

Sweden