



INNOVATION FUND

Deployment of net-zero and innovative technologies

GreenH2: Small-scale green hydrogen production facility

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

| Project Factsheet

The Green H2 project, plans to produce green hydrogen using a 1 megawatt (MW) electrolyser system, strategically located next to the refinery in Gdańsk, Poland. The project's objective is to build a modular and scalable hydrogen production system, that includes an electrolyser powered by solar panels along with energy management and residual heat recovery systems. The green hydrogen produced will be used by the nearby refinery. The system will also include a storage facility for compressed hydrogen, so that the hydrogen produced can also be used for other sectors. The project aims to achieve a 100% relative greenhouse gas (GHG) emission avoidance over its first ten years of operation.

The Green H2 project plans to modernise and decarbonise the current method of industrial hydrogen production. Hydrogen is currently produced through steam reforming of methane, a

COORDINATOR

LOTOS GREEN H2 SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA

LOCATION

Poland

CATEGORY

Energy intensive industries (EII)

SECTOR

Hydrogen

AMOUNT OF INNOVATION FUND GRANT

EUR 4,492,131

EXPECTED GHG EMISSIONS AVOIDANCE

9,375 tonnes CO2 equivalent

STARTING DATE

01 June, 2023

ENTRY INTO OPERATION DATE

01 January, 2028

FINANCIAL CLOSE DATE

30 September, 2025

fossil fuel. This project will replace the current technology with electrolysis, powered by renewable electricity. The pilot project will therefore be producing hydrogen without the need for fossil fuels. Moreover, the project involves not only the integration of the electrolyser, but also an energy management system, heat recovery and a dedicated renewable energy source, which will maximize the energy and cost efficiency of the green hydrogen production process.

The main innovation of the project is an unprecedented integration of these subsystems and their application in a full-scale installation. The green hydrogen that is produced will be connected to a refinery in Gdańsk. However, the installation will enable the creation of dispersed hydrogen production points, which can be tailored for other locations and applications. This will allow the green hydrogen that is produced to be used in other locations and sectors of the economy.

Globally, hydrogen is produced primarily through the high-emission methane steam reforming process, which has an emission intensity of

approximately 8.85 kg of CO₂ equivalent per 1 kg of hydrogen. The Green H₂ project replaces this technology with a zero-emission and energy efficient process, with the option to re-use the waste heat produced by the electrolysis. It will directly contribute to reducing the GHG emissions of the refinery industry and create the possibility of producing emission-free hydrogen for use in other sectors of the economy. Implementation of the project will directly result in the avoidance of approximately 9 375 tonnes CO₂ equivalent over a period of ten years.

The Green H₂ project has a modular design with the option to scale up, which allows the operation of a distributed hydrogen production systems and thus the supply of hydrogen to local consumers. Such independence not only allows the development of a dispersed network of installations, but also the dissemination of green hydrogen as a decarbonised alternative to conventional fuels.

| Beneficiaries

LOTOS GREEN H₂ SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA

Poland