

INNOVATION FUND

Deploying innovative net-zero technologies for climate neutrality

HYODE: HYdrogen Offshore DunkerquE

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

| Project Factsheet

The project aims to develop innovative solutions for securing renewable hydrogen production, storage, offloading and transport in marine environment and delivery to industrial offtakers. For the first time, the unique venture employs disruptive approaches to offshore hydrogen generation and solutions for components, notably in the design and implementation of a compact marine proton exchange membrane (PEM) electrolyser, subsea storage and compressed hydrogen vessel transport solutions. HYODE will produce 46 189 tons of renewable hydrogen during its first ten years of operation and completely avoid greenhouse gas (GHG) emissions relative to fossil-based hydrogen production through steam methane reforming. HYODE will develop, test, validate, and continuously refine its centralised offshore renewable hydrogen production. The pilot is expected to run at a novel scale of 30 megawatts (MW) and tackle pivotal technological, operational, and regulatory challenges. Indeed, HYODE is set to bridge the gap between

COORDINATOR

EDF RENOUVELABLES

LOCATION

France

CATEGORY

Energy intensive industries (EII)

SECTOR

Hydrogen

AMOUNT OF INNOVATION FUND GRANT

EUR 40,000,000

EXPECTED GHG EMISSIONS AVOIDANCE

315,930 tonnes CO₂ equivalent

STARTING DATE

01 April, 2025

ENTRY INTO OPERATION DATE

31 March, 2031

FINANCIAL CLOSE DATE

31 March, 2028

** 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.*

current small-scale endeavours (smaller than 10 MW) and upcoming utility-scale commercial ventures (larger than 500MW), thus encompassing the entire renewable hydrogen industrial value chain from offshore production sites to ports. HYODE's production will avoid 315 930 tons of CO2 emissions over its first ten years of operation, the equivalent to emissions of over 150 000 flights from Paris to New York. The project is fully aligned with industrial and decarbonisation policy priorities, contributing to the Net-Zero Industry Act and the REPowerEU Plan. Through close collaboration with industrial and academic partners, it will support the emergence of a European offshore renewable hydrogen value chain, positioning the continent as a technological frontrunner. With a replication potential estimated at over 100 gigawatts (GW) by 2050, HYODE will lay the

groundwork for its solution's widespread replication and scaling. HYODE will be located off the coast of Dunkirk in the north of France. The project will leverage a dynamic environment, existing skills, and infrastructures, as well as local authorities' support to participate in decarbonising one of Europe's leading industrial clusters. Scale-up of the HYODE pilot approach and innovative solutions at other sites will create new and qualified jobs (requiring engineering and technical capabilities) in engineering, manufacturing, operation, and maintenance. HYODE will also contribute to the creation of a European industrial value chain for offshore hydrogen, capable of supporting the ramp-up of the industry, thereby adding value to the local or regional economy and enhancing the resilience of the European economy.

| Participants

EDF RENOUVELABLES

France