

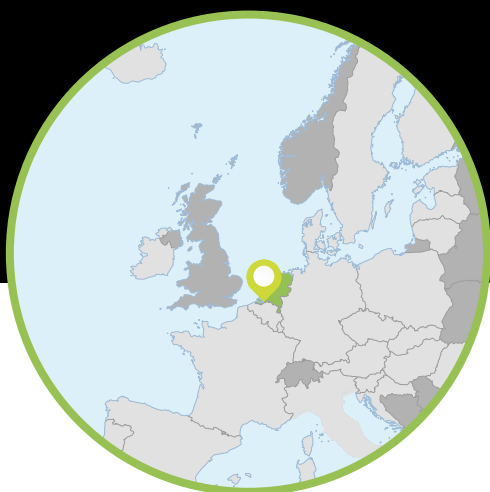


INNOVATION FUND

Driving clean innovative technologies towards the market

ELYgator – Kick-starting a renewable hydrogen value chain for industry and mobility: highly integrated, flexible large-scale 200MW water electrolyser producing renewable hydrogen and oxygen

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



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Project summary

The ELYgator 200 megawatt (MW) electrolyser will be one of the largest in Europe. With a capacity to produce 15 500 tonnes of renewable hydrogen annually, its impact in terms of relative greenhouse gas (GHG) emission avoidance will be about 200% compared to the reference scenario in the first ten years of operation. This renewable hydrogen will supply the so-called “hard-to-abate” sectors, such as industry and mobility.

The project will demonstrate the feasibility and replicability of large-scale electrolysis and will combine two electrolysis technologies: proton exchange membrane and alkaline. The hydrogen production will follow renewable energy production, in order to maximize efficiency and participate in stabilizing the electric grid.

COORDINATOR

Air Liquide Industrie BV

BENEFICIARY

Air Liquide Industrie BV

LOCATION

Terneuzen, The Netherlands

SECTOR

Hydrogen

GHG EMISSION AVOIDANCE

3.3 Mt CO₂ eq

AMOUNT OF THE INNOVATION FUND GRANT

EUR 99 000 000

STARTING DATE

01 April 2022

PLANNED DATE OF ENTRY INTO OPERATION

30 June 2026

A highly flexible electrolyser flagship contributing to the electricity grid stability

The ELYgator project will enable a next generation renewable hydrogen production facility. This hydrogen project flagship involves innovation across multiple aspects:

- Large-scale hydrogen electrolyser (ten times the size of current electrolysers in operation) producing 15 500 tonnes of renewable hydrogen per year.
- Renewable hydrogen will be produced in line with all European requirements and fully traceable from source to end-user. This will enable the avoidance of up to 3.3 million tonnes of CO₂ eq. emissions over the first ten years of operation, which is comparable to 5% of Dutch road transport emissions.
- Flexibility: ELYgator will be the first electrolyser that can follow the production of renewable power in real time - intermittent by nature - hence improving the stability of the electricity grid. It also combines two leading electrolysis technologies to lower investment costs, while still responding swiftly to fluctuations in the energy supply stream for maximum production.

ELYgator will be at the forefront of the energy transition in Europe

ELYgator's objective is to demonstrate the scaling up of the currently available capacities of electrolysers, while ensuring full traceability of the hydrogen carbon footprint along the full supply chain. Thanks to the versatility of hydrogen, this flagship project will put the Terneuzen cluster, located in the centre of Europe, at the forefront of the energy transition, in particular to decarbonize industry and mobility. The project also aims to be an inspiring, replicable and scalable model to contribute to the ambitious objective of climate neutrality by 2050 set by the EU.

Over time, technology transfer to other Air Liquide sites is envisaged, with estimates of future offtakes showing the potential for expansion, both on the project site and nearby. This potential is based not only on future opportunities in the hydrogen mobility market, but also the Zeeland province's economic policy, which focuses on the energy transition and circular economy. Moreover, ELYgator can be connected to a future local district heating network, which will reduce the region's reliance on natural gas. Economic activities flowing from industry in the region will therefore be more future-proofed, creating a positive impact on regional economic growth and jobs.