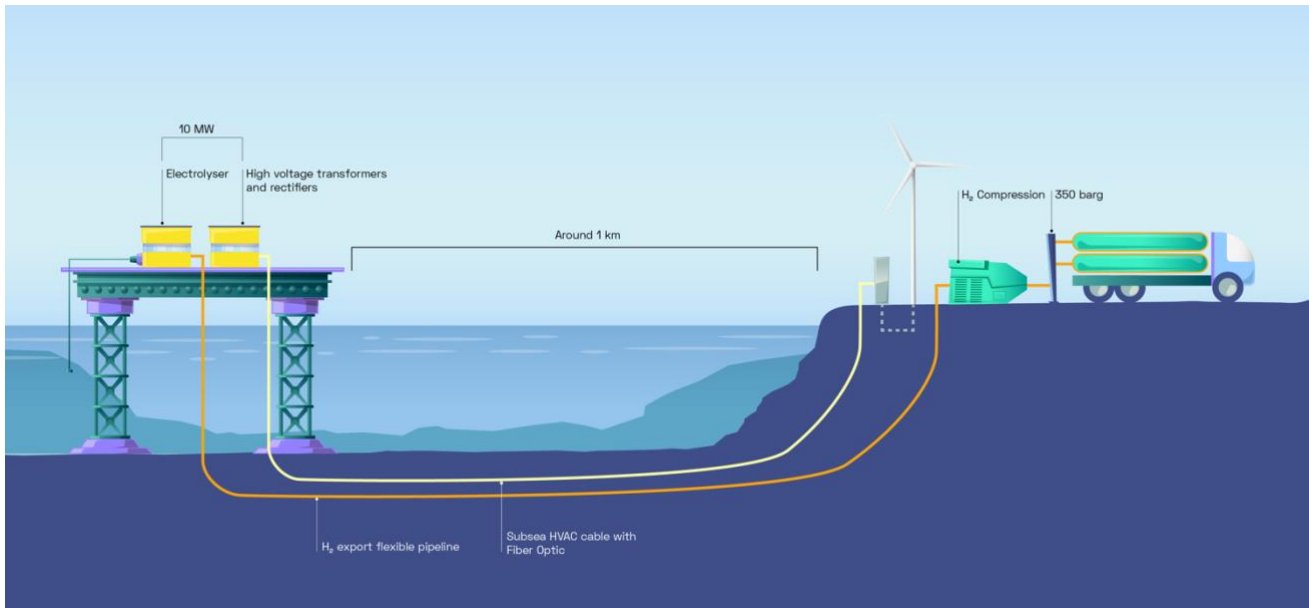


Offshore Hydrogen Production on a New Scale: HOPE Project and its Consortium Selected for a €20 Million European Commission Grant

- *The HOPE (Hydrogen Offshore Production for Europe) project is being coordinated by Lhyfe (France) and implemented by eight European partners: Alfa Laval (Denmark), Plug (the Netherlands), Strohm (the Netherlands), EDP NEW (Portugal), ERM (France), CEA (France), POM-West-Vlaanderen (Belgium) and DWR eco (Germany).*
- *This project of unprecedented scale (10 MW/up to 4 tonnes of green hydrogen produced a day) has been selected by the European Commission as part of the European Clean Hydrogen Partnership, under which it has been awarded a €20 million grant.*
- *HOPE will be located in the North Sea, off the port of Ostend, in an offshore testing zone aiming to be the nerve centre of the green hydrogen industry in Belgium.*
- *For the first time in the world, green hydrogen will be produced at sea and then exported ashore via a composite pipeline to supply the needs of the regional ecosystem.*

Brussels (Belgium) - 27 June 2023 – The HOPE (Hydrogen Offshore Production for Europe) project consortium has signed a €20 million grant agreement with the European Commission. This followed the positive evaluation of the proposal submitted by the partners in response to the call for proposals issued by the Clean Hydrogen Partnership, co-founded and co-financed by the European Union.

The consortium aims to pave the way for the deployment of large-scale offshore production of renewable hydrogen. The HOPE project involves developing, building and operating the first 10 MW production unit in the North Sea, off the coast of Belgium, by 2026. The aim is to demonstrate the technical and financial viability of this offshore project, and of pipeline transport for supplying onshore customers.



HOPE Takes Offshore Hydrogen Production to Industrial Scale

Lhyfe completed a first step in 2022 with a world first – the inauguration of Sealhyfe, the world’s first pilot production plant for offshore hydrogen already integrating Plug’s technology and powered by a 1 MW floating wind turbine.

With HOPE, the consortium partners are moving up a gear and aiming for commercialisation. This unprecedentedly large-scale project (10 MW) will be able to produce up to four tonnes a day of green hydrogen at sea, which will be exported to shore by composite pipeline, compressed and delivered to customers for use in industry and the transport sector. HOPE is the first offshore project of this size in the world to begin actual implementation, with the production unit and export and distribution infrastructure due to come on stream in mid-2026.

HOPE will benefit from an ideal location, one kilometre from the coast, in the offshore testing area in front of the port of Ostend (Belgium), which aims to be the central link in the hydrogen chain in Belgium and has contributed to the development of the project since its inception.

The production site will be powered by electricity supplied under PPA (Power Purchase Agreement) contracts that guarantee its renewable origin. The water used for electrolysis will be pumped from the North Sea, desalinated and purified.

The production site will comprise three units: production and compression (at medium pressure) at sea, export by composite pipeline, then compression (at high pressure), storage and distribution onshore.

The first kilos of HOPE hydrogen could be produced as early as 2026. They will supply mobility needs and small industries in Belgium, northern France and the southern Netherlands, within a 300-kilometre radius.

A Flagship Project for the European Commission and the Clean Hydrogen Partnership

This project has been selected for funding under the Clean Hydrogen Partnership call for proposals co-financed by the European Union. HOPE is thus recognised as a flagship project making a decisive contribution to energy transition. By means of a first large-scale demonstration, the project will make it possible to improve the technological solutions for the production of renewable hydrogen offshore and its export

onshore, helping to reduce the investment risks for much larger-scale projects in the years to come and paving the way for the production of massive quantities of renewable hydrogen in Europe.

The grant awarded by the European Commission covers a period of five years. This includes three years to develop the demonstrator, and then two years to demonstrate the technical reliability and commercial viability of the model. The commercial operation of the hydrogen production, export and distribution infrastructures developed in this context is intended to continue beyond the duration of the project.

The €20 million grant will be used to finance the design phases, the supply of equipment and the construction work, as well as research, development and innovation work focusing mainly on optimising technological solutions and the operation of this type of infrastructure. The techno-economic analysis of offshore renewable hydrogen production solutions on a much larger scale will be another of the areas of work.

Thanks to an ambitious plan to disseminate and utilise the results, the consortium intends to accelerate the deployment of large-scale offshore hydrogen solutions to help achieve the target set by the European Commission of 10 Mt of clean hydrogen produced in the European Union by 2030 to decarbonise the European economy.

First-Rate Partners for a Series of Technological Innovations

HOPE will combine the expertise and know-how of each of the nine partners involved, covering the entire renewable hydrogen value chain.

Main Key Innovations to be Developed in the Project

- **Recycled offshore barge:** The structure housing the production unit will be a second-hand jack-up barge, demonstrating that it is possible to transform infrastructure previously used for oil and gas and give it a second life for the production of renewable energy, while helping to reduce costs and lead times.
- **10 MW PEM electrolyser:** This highly compact electrolyser will be the first of its size to be installed offshore.
- **Seawater treatment system:** This low-energy system which is compact, economical and able to use the heat emitted by the electrolyser, will be used for the first time to produce green hydrogen from seawater purified by evaporation.
- **Underwater flexible hydrogen pipeline for hydrogen export:** The hydrogen will be exported ashore via a flexible thermoplastic composite pipeline of over a kilometre long, which for the first time will transport hydrogen produced at sea after having been technically certified for this specific use.

Expertise and Role of Partners (ranked by requested EU contribution):

- **Lhyfe (France):** Engineering, equipment procurement, works supervision, operation, optimisation of the overall production, export and distribution system, project coordination.
- **Plug (the Netherlands):** Supply and engineering of the 10MW electrolyser.
- **EDP NEW (Portugal):** Contribution to the optimisation of operations and impact analysis. Steering of techno-economic studies for large-scale developments.
- **POM West-Vlaanderen (Belgium):** Project implementation support in the testing area (studies, permits) and analysis of the social, economic and environmental impacts of the project.
- **CEA (France):** Optimisation of operations via digital simulation.
- **Strohm (the Netherlands):** Supply of the subsea flexible thermoplastic composite pipeline (TCP).
- **Alfa Laval (Denmark):** Supply of the seawater treatment system.
- **DWR eco (Germany):** Communication and dissemination of project results throughout Europe.
- **ERM - Element Energy (France):** Coordination support.

Acknowledgements

This project has received funding from the Clean Hydrogen Partnership under Grant Agreement No. 101111899. This Joint Undertaking receives support from the European Union's Horizon 2020 Research and Innovation programme, Hydrogen Europe and Hydrogen Europe Research.



Lhyfe is a European group devoted to energy transition, and a producer and supplier of green and renewable hydrogen. Its production sites and portfolio of projects intend to provide access to green and renewable hydrogen in industrial quantities, and enable the creation of a virtuous energy model capable of decarbonising entire sectors of industry and transport. In 2021, Lhyfe inaugurated the first industrial-scale green hydrogen production plant in the world to be interconnected with a wind farm. In 2022, Lhyfe inaugurated the first offshore green hydrogen production pilot platform in the world. Lhyfe is represented in 11 European countries and had 149 staff at the end of 2022. The company is listed on the Euronext market in Paris (ISIN: FR0014009YQ1 – LHYFE).

For more information go to www.lhyfe.com. [Access the Lhyfe media kit \(press releases, images\)](#)

Plug is building an end-to-end green hydrogen ecosystem, from production, storage and delivery to energy generation, to help its customers meet their business goals and decarbonize the economy. In creating the first commercially viable market for hydrogen fuel cell technology, the company has deployed more than 60,000 fuel cell systems and over 185 fueling stations, more than anyone else in the world, and is the largest buyer of liquid hydrogen. With plans to build and operate a green hydrogen highway across North America and Europe, Plug is operating a state-of-the-art Gigafactory to produce electrolyzers and fuel cells and is commissioning multiple green hydrogen production plants that will yield 500 tons of liquid green hydrogen daily by 2025. Plug will deliver its green hydrogen solutions directly to its customers and through joint venture partners into multiple environments, including material handling, e-mobility, power generation, and industrial applications.

EDP NEW is a subsidiary of the EDP Group with the mission to create value through collaborative Research and Development in the energy sector. EDP NEW is entirely committed to R&D with a strong focus in technology demonstration projects. Among other areas, EDP NEW is very active in the topics of smart energy systems, smart cities and buildings, renewable energy, storage and flexibility, green hydrogen and digitalization. EDP NEW has carried out work in several EU H2020 and Horizon Europe in all the energy value chain, adopting an integrated and sustainable approach towards disruptive solutions that empower its partners and bring value to the shareholders.

POM West-Vlaanderen is a regional development agency in Belgium that aims to further develop a sustainable and innovative economy by promoting partnerships between industry & SMEs, knowledge institutions, the public sector and the general public (with a quadruple-helix approach). Five cluster policies are being implemented, in alignment with regional, national and European strategies. One of these clusters focuses on blue energy, covering offshore wind, wave and tidal energy, floating solar PV, hydrogen and a range of hybrid solutions, such as multi-use and multi-source applications in a marine environment. The programme around the offshore test facility Blue Accelerator covers the entire value chain in all stages of innovation and development. The Blue Accelerator is owned and operated by POM West-Vlaanderen.

CEA is a leading European Research and Technology Organisation (RTO) with almost 20 000 employees. The CEA has positioned itself as a key player in building the European research area (ERA) through its involvement and recognition in numerous European research initiatives and bodies. Its actions are carried out in line with its strategies in four main areas: defence and security, low carbon energies (nuclear and renewable energies), technological research for industry, fundamental research in the physical sciences and life sciences. Through its Division of Technology and four institutes (LETI, LITEN, LIST and CTREG), the CEA develop a broad portfolio of Key Enabling Technologies for ICTs, energy, and healthcare. It leverages a unique innovation-driven culture and unrivalled expertise to develop and disseminate new technologies for industry, effectively bridging the gap between the worlds of research and business.

Strohmann is the leading composite pipe technology company and has the world's largest track-record for Thermoplastic Composite Pipe (TCP) after being the first to bring the technology to the oil and gas industry in 2007. TCP is a strong, non-corrosive, spoolable pipe technology delivered in long lengths reducing total installed and life cycle cost for subsea flowlines, jumpers and risers and has proven to reduce the CO2 footprint of pipeline infrastructures by more than 50%. The company is committed to driving sustainability with its

range of TCP solutions which enable clients towards their net-zero carbon emissions targets and supports the renewables sector. Strohm's shareholders are Aker Solutions, Chevron Technology Ventures, Evonik Venture Capital, Saudi Aramco Energy Ventures, Shell Ventures, Subsea 7, Sumitomo Corporation, HPE Growth, HydrogenOne Capital Growth, and ING Corporate Investments (a 100% subsidiary of ING Bank N.V.).

Alfa Laval is a world leader in heat transfer, centrifugal separation and fluid handling, and is active in the areas of Energy, Marine, and Food & Water, offering its expertise, products, and service to a wide range of industries in some 100 countries. The company is committed to optimizing processes, creating responsible growth, and driving progress to support customers in achieving their business goals and sustainability targets.

Alfa Laval's innovative technologies are dedicated to purifying, refining, and reusing materials, promoting more responsible use of natural resources. They contribute to improved energy efficiency and heat recovery, better water treatment, and reduced emissions. Thereby, Alfa Laval is not only accelerating success for its customers, but also for people and the planet. Making the world better, every day.

DWR eco is a cleantech strategy consultancy dedicated to positioning innovative and sustainable technologies. With 10 years of expertise in strategic communications, traditional and digital marketing, political positioning, and business development, the company has helped accelerate the growth of cleantech companies and markets throughout Europe.

ERM is the world's largest pure-play sustainability advisory firm, working with organizations to implement integrated low-carbon technology solutions that help solve their net zero and decarbonization challenges. With the acquisition of E4tech and **Element Energy**, ERM has 20+ years of technical, environmental and policy expertise in the hydrogen sector and a unique expertise of the management of large-scale innovative projects. ERM will build upon this unique understanding of the Clean Hydrogen Partnership's requirements to strongly ease the progress of the project, the reporting to the CHP and the grant management.

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