

# EO Concept

Lowest carbon cargo ship in the world



Funded by the European Union  
Emissions Trading System  
Innovation Fund

Energy Observer Concept, awarded the European Union's Innovation Fund for its liquid hydrogen-powered container cargo ship project:  
Energy Observer 2 | EO2

**Saint-Malo - November 13, 2024 - Energy Observer, via its subsidiary EOConcept, a pioneer in sustainable maritime solutions, has launched the Energy Observer 2 project in 2022 with the ambition of designing the world's lowest-carbon cargo ship. EO2, an advanced demonstrator combining cutting-edge engineering and innovative technologies, aims to transform maritime transport towards low-emission solutions. This European funding marks a crucial step towards the construction and operation of the world's largest liquid hydrogen-powered cargo ship by 2029, supporting the transition to environmentally friendly maritime technologies.**



Energy Observer 2 - © Kadeg Boucher

## **The EO2 vessel project, was successfully assessed for the European Union's Innovation Fund**

Selected from among 85 projects in the European Union Innovation Fund's largest call for projects, EO2 has been awarded €40 million in financial support to encourage the development of clean technologies in sectors that are difficult to decarbonize. This €4.8 billion call for projects, extended to 18 countries, is the first to finance projects of various scales, including pioneering demonstrators, in areas such as industry, mobility and carbon management. EO2 is thus participating in this European Union initiative aimed at reducing emissions from these sectors by 476 million tonnes of CO<sub>2</sub> over ten years, helping to strengthen Europe's technological autonomy.

### **Committed partners to turn Energy Observer 2's ambition into reality**

The Energy Observer 2 project benefits from the support of strategic partners, with an early and decisive commitment from the Accor group, which provided initial seed funding of the project to turn this first large demonstration vessel running on liquid hydrogen in maritime transport into a reality. This support is aligned with the Accor group's decarbonization initiatives, notably with Silenseas, the world's largest sailing ship under construction under its Orient Express brand, powered by LNG and assisted by a sailing rig. Although LNG can improve air quality and reduce CO<sub>2</sub> emissions by 15-20%, Sébastien Bazin, Chairman and CEO of the Accor Group, recognizes the need to go much further to meet IMO targets.

Other players such as CMA CGM group, Air Liquide, Toyota, EODev, LMG Marin, Bureau Veritas, Dassault Systèmes and, more recently, Chart Industries, took part in the feasibility studies over a two-year period to define the optimum techno-economic model. Thanks to their expertise, they have helped select the technical and logistical solutions required for this pilot project.

### **A zero-emission interregional cargo ship**

The current design of the EO2 is a 160-meter container ship, capable of carrying up to 1,100 TEU containers on a 14 days, 1,600 nautical miles route. Equipped with electric propulsion powered by 4.8 MW of fuel cells developed by EODev and its industrial partner Toyota, this vessel represents a breakthrough in low-carbon maritime technologies. Scheduled for commercial operation from 2029 on Europe's Atlantic and Channel coasts, EO2 could reduce CO<sub>2</sub> emissions by 112,250 tonnes over ten years, equivalent to the annual absorption of 190,000 mature trees. This pioneering project aims to demonstrate the technical and economic viability of liquid hydrogen for maritime transport on short segments, consolidating Europe's position as a leader in the energy transition.

To achieve the full potential of this project, aside the financial support of the European Union, an efficient port ecosystem for liquid hydrogen bunkering is essential. EOConcept and Chart Industries are currently carrying out this work, with the aim of structuring liquid hydrogen bunkering infrastructures to achieve an attractive target price for shipowners, and to make the operation of such low-carbon ships accessible and competitive. The Brittany and Normandy regions are also playing a crucial role in this effort, providing active support to develop the necessary infrastructures and encourage the adoption of liquid hydrogen as a maritime fuel.



Fuel Cell Room - © Kadeg Boucher

**Victorien Erussard, founder of Energy Observer:** *“At the beginning of Energy Observer, many claimed that hydrogen technologies would not work in a marine environment, but we proved the contrary. Today, with EO2, we want to take a major step forward by adopting liquid hydrogen, an energy vector that presents challenges but also offers real advantages in terms of environmental performance. In the marine sector, there is no single path: each solution, whether biofuel, methanol or ammonia, has its advantages and disadvantages. Our aim is to help build a suitable energy mix, in which several technologies will have to coexist, depending on the type of flow and the distances to be covered. EO2 is part of this ambition.”*

**Didier Bouix, Managing Director of EO Concept:** *“EO2 represents an exceptional challenge, turning laboratory research into reality. With an on-board power of 4.8 MW, it's equivalent to managing a fleet of one hundred hydrogen-powered vehicles, which means we need to step up our skills and rigorous management. We're working at 360 degrees to integrate the ship's technologies, structure a port ecosystem dedicated to liquid hydrogen, and develop a digital twin, not forgetting team training.”*



# Energy Observer 2

an innovative breakthrough feeder

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## **About Energy Observer**

Energy Observer is a laboratory vessel launched in 2017, designed to accelerate the energy transition in the maritime sector. Thanks to a unique mix of renewable energies, velic propulsion and a complete hydrogen chain, it has demonstrated the viability of sustainable solutions in demanding maritime environments.

The group focuses its efforts on three missions: to experiment with cutting-edge technologies to reduce shipping emissions, to decipher and explain global energy issues, and to raise public awareness to achieve carbon neutrality.

To achieve these objectives, Energy Observer relies on several entities:

- EODev, the industrial spin-off, designs emission-free power generation systems for land and sea applications, with products such as the GEH2® and REXH2®, distributed in over 25 countries.
- EOConcept, an engineering office, develops innovative energy architectures such as Energy Observer 2 and Energy Observer 3, and structures port ecosystems around liquid hydrogen.
- EO Productions creates audiovisual content to raise public awareness of energy issues.
- The Energy Observer Endowment Fund supports educational and awareness-raising missions, highlighting initiatives detected around the world during the expeditions.

Energy Observer enjoys the support of prestigious institutions and a network of fifty partners, reinforcing its role as a pioneer in the energy transition.

[->www.energy-observer.org](http://www.energy-observer.org)

#EnergyObserver #EOConcept #EO2