

HYSHIP

DEMONSTRATING LIQUID HYDROGEN FOR THE MARITIME SECTOR



Project ID:	101007205
PRD 2023:	Panel 3 – H2 end uses – transport
Call topic:	FCH-01-6-2020: Demonstration of liquid hydrogen as a fuel for segments of the waterborne sector
Project total costs:	EUR 13 409 121.25
Clean H₂ JU max. contribution:	EUR 7 993 942.00
Project period:	1.1.2021–31.12.2025
Coordinator:	Wilh. Wilhelmsen Holding ASA, Norway
Beneficiaries:	Air Liquide Norway AS, Diana Shipping Services SA, DNV AS, DNV GL SE, Eidgenössische Technische Hochschule Zürich, Equinor Energy AS, Kongsberg Maritime AS, LMG Marin AS, LMG Marin France, Maritime Cleantech, Massterly AS, National Center For Scientific Research 'Demokritos', Norled AS, Norseas Group AS, Persee, Stolt Tankers B.V., University of Strathclyde, Wilhelmsen Ship Management Norway AS

<https://hyship.eu/>

QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives	Fuel cell power output	MW	3.0	
	Hours of operation of LH ₂ -powered propulsion	hours	3 000	
	Development of an intelligent energy management system that reduces the CAPEX of the energy system by > 5 %	%	5	
	Reduction of > 40 % of cost of design and ship integration cost related to the hydrogen/fuel cell systems themselves	%	40	

PROJECT AND OBJECTIVES

HyShip is building a vessel that will run on liquid hydrogen (LH₂). The vessel will transport goods from port to port along the west coast of Norway, and transport LH₂ for bunkering stations for other vessels/trucks running on hydrogen. The project aims to replace trucks on the roads between the ports, demonstrate the use of LH₂ on a vessel and distribute LH₂ to ports to facilitate a LH₂ supply chain. The main key performance indicator of the project is the demonstration of 3 000 hours of operation of 3 MW fuel cells. The design of the vessel is ongoing, and the vessel has not been ordered yet.

NON-QUANTITATIVE OBJECTIVES

- HyShip aims to conceptually design a full range of vessel and hydrogen systems.
- It aims to develop and describe a business ecosystem with a timeline for cost-efficient operation.
- It also aims to integrate the demonstrator into a larger sociotechnical system – with business models, policy models and LH₂ supply – that will help move towards use of LH₂.

- The project aims to use further robust holistic design approach (RHODA) ship design methods, lowering the cost of estimating complex projects with novel fuel and infrastructure, and allowing real-time data collection on the effects of the use of novel fuels (no real-time data provided yet).
- It aims to develop input to the International Maritime Organization, which will help the systems transition to its rules instead of following the alternative design approach.

PROGRESS AND MAIN ACHIEVEMENTS

The preliminary design of vessel and LH₂ propulsion systems is complete.

FUTURE STEPS AND PLANS

- The ship-building contract will be signed.
- The vessel will be delivered.
- Vessel operation will begin.