



# ATENA

FUTURE TECHNOLOGY

SCHEMA PROGETTO

*Titolo:*

Clean Sailing with Organic Liquid Hydrogen for Ultra-Efficient Maritime Transport

*Acronimo:*

COLUMBUS

*Ente Finanziatore:*

EU FCH JTI

*Call:*

2019 Call: H2020-JTI-FCH-2019-1

*Coordinatore:*

Teknologian tutkimuskeskus VTT Oy Finland

*Partner:*

SIEMENS AS Norway, HYDROGENIOUS TECHNOLOGIES GMBH Germany, Johannes Østensjø DY AS Norway, Powercell Sweden AB Sweden, ATENA SCARL, ASTILLEROS GONDAN SA Spain, EQUINOR ENERGY AS Norway, SIEMENS AKTIENGESELLSCHAFT Germany

*Durata prevista:*

Data inizio:

Data Fine:

*Budget:*

	Totale	Atena	Parthenope
Budget Progetto	13.866.408	250.000	
Agevolazione			

*Stato:*

Non Finanziato

*Obiettivi:*

The main aim of the COLUMBUS project is to demonstrate fuel cells and hydrogen as a means to zero-emission waterborne transport and raise the technical, regulatory and business readiness of such systems. The aim will be achieved by developing and operating an offshore vessel with appropriate hydrogen storage and bunkering systems in the North Sea.

The consortium consists of partners representing all relevant stakeholders: knowledge providers (VTT, ATENA), technology providers (PowerCell, Hydrogenious, Siemens AS, Siemens AG), a vessel owner (Østensjø), a vessel operator (Equinor) and a shipyard (Gondan). This project is driven by industrial partners operating in maritime



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business and their aim to move towards zero-emission shipping. Statutory authority (Norwegian Maritime Authority) and independent, maritime oriented research organisation (SINTEF Ocean AS) are completing the consortium as external advisors.

In the project liquid organic hydrogen carrier (LOHC) based hydrogen storage solution is demonstrated. The LOHC-FC powered vessel concept opens a completely different and novel path towards zero-emission shipping. The demonstration of the safe and reliable power supply line on ocean-going long-distance vessels in unprecedented 2 MW scale will confirm the technology's potential. The capability to integrate the proposed fuel supply chain into existing infrastructure (both in harbours and in vessels) will further close the missing link of a safe and cost-effective integration of renewable energies into maritime business.

The LOHC-FC powered vessel will be demonstrated in commercial operation for at least 3,000 h including winter and summer season. During the project, 100 % greenhouse gas emission, SOx emission and particulate reduction and 80-90 % reduction of NOx emissions compared to conventional diesel based system will be demonstrated. After successful demonstration in the COLUMBUS project, the vessel owner intends to include the vessel in their portfolio.