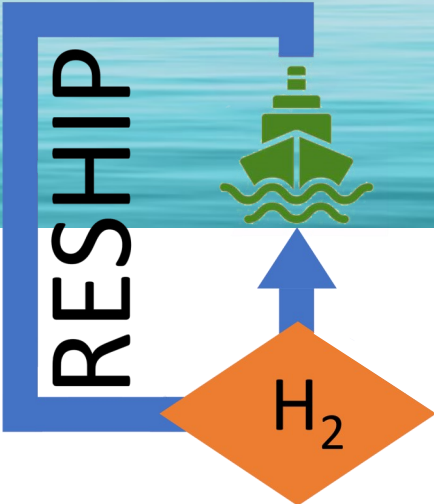


RESHIP consortium gathers world-leading multidisciplinary experts and key patent holders with 14 partners from 9 EU countries, forging a complementary stakeholder group. The consortium covers two industrial sectors, shipping and ships together with hydrogen.

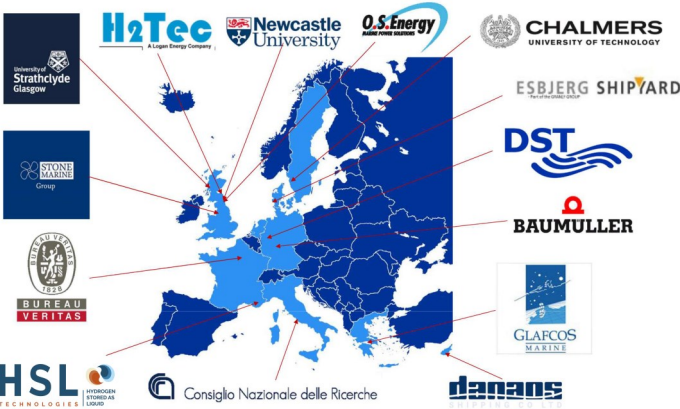
# Who are the key contacts in RESHIP?



# RESHIP

**Coordination**  
**HYSILABS, France**  
 Mr. Damien Gomez

**Project Office**  
**CNR, Italy**  
 Dr. Mario Felli



- BAUMULLER, DE
- BUREAU VERITAS, FR
- CHALMERS UNIVERSITY, SE
- DANAOS, CY
- DST, DE
- ESBJERG SHIPYARD, DK
- GLAFCOS, GR
- H2TEC, UK
- HYSILABS, FR
- NATIONAL RESEACH COUNCIL OF ITALY, IT
- O.S. ENERGY, UK
- STONE MARINE PROPULSION, UK

[www.reship-project.com](http://www.reship-project.com)



Redefine energy Efficiency solutions for hydrogen powered SHIPs in Maritime and Inland Transport



Co-funded by the European Union



# WHAT IS RESHIP ABOUT?

Under the framework of Zero Emission Waterborne Transport (ZEWt), hydrogen as the future fuel for ships offers an opportunity to zero the GHG emission. Nevertheless, the challenges for onboard hydrogen storage and utilisation obstruct this long desired revolution. Novel and effective technology solution is urgently needed.

The project, RESHIP, aims to redefine the onboard energy saving solutions for newbuilds and retrofits in marine and inland waterway with disruptive technologies in two distinct areas, Energy Saving Devices (ESDs) and onboard hydrogen utilisation. Regarding the ESDs, the project proposes to research and develop hydrogen compatible ESD solutions in standalone/combined applications, centered around Tubercle Assisted Propulsors (TAPs), to improve the vessel's propulsive energy efficiency and to optimise towards hydrogen power and drive system. With the novel and energy efficient hydrogen carrier technology HydroSil, RESHIP links the ESD technology to the research of the energy efficient onboard hydrogen utilisation technology to systematically reshape the hydrogen driven ships with a holistic energy saving solution.

Together, RESHIP aims to achieve a minimum overall 35% energy saving and to half the hydrogen storage demands on space and/or weight, comparing to the state-of-the-art hydrogen powered vessels.

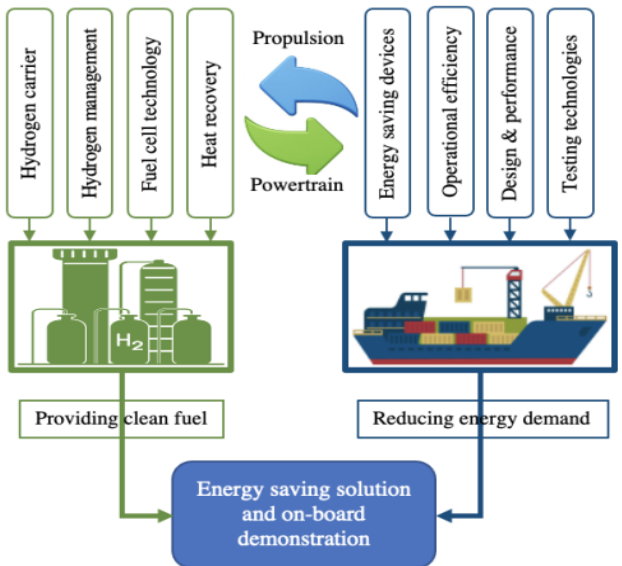


## KEY DATA

Start date: September 2022  
 Run time: 3 years,  
 Structure: 7 Workpackages  
 EU funding: 3 758 910 €

## WHO SUPPORTS RESHIP

RESHIP has received funding from the European Union's HORIZON EUROPE Research and Innovation Programme under Grant Agreement 101056815



# OBJECTIVES OF RESHIP

 <b>PROPELLER</b> Redesign open and ducted propellers with novel bio-inspired features, Tubercle Assisted Propulsors (TAPs), using multi-objective design and optimisation methods to be hydrogen compatible and widely applicable to different vessel types.	 <b>ESD</b> Review the currently developed energy saving solutions and identify hydrogen preferred standalone and combined solutions for inland, short-sea and ocean-going shipping for both new builds and retrofits to reduce the energy & storage demand and smooth shaft power.	 <b>OPERATION</b> Investigate operational energy efficiency of developed energy saving solutions during manoeuvring and harsh sea conditions with development in the novel and hydrogen compatible automation and control strategy.	 <b>CARRIER</b> Research novel onboard hydrogen solution with energy efficient liquid inorganic hydrogen carrier HydroSil, to reduce the energy consumption in the process of storage, release and utilisation.
 <b>RECOVERY</b> Develop energy recovery solution with combined heat and power to revalorise the energy output (waste heat) in the release process from the onboard carrier HydroSil.	 <b>WATER</b> Validate the use of river/sea water as a reactant for the carrier at large scale; exploit the fresh water circulation onboard using the output from the fuel cell as the reactant for hydrogen release.	 <b>BALLAST</b> Investigate the impact on ship operation in ballasting and operational propulsion efficiency, due to the weight changes of the hydrogen carrier during release, two times heavier after release.	 <b>DEMONSTRATION</b> Perform prototype development and demonstration using the selected target vessel for a fullscale exploitation to investigate performance at sea.
 <b>IMPACT</b> Research the potential impacts in technical, environmental, economic, safety and regulatory for the applications to marine and inland waterway ships and fleets.		 <b>UPSCALE</b> Develop and standardise the developed technological solution; upscale the technology for high power application; communicate with regulatory bodies for wider uptake.	

*"RESHIP project aims to redefine energy efficiency solutions not only from the hydrodynamics point of view but also re-searching on the whole hydrogen to power process to redesign the power and propulsion system for hydrogen powered*