



RH2IWER | Renewable Hydrogen² for
Inland Waterway Emission Reduction



Co-funded by
the European Union

The project is supported by the Clean Hydrogen Joint Undertaking and its members Hydrogen Europe and Hydrogen Europe Research. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Clean Hydrogen Joint Undertaking. Neither the European Union nor the granting authority can be held responsible for them.

VTT currently coordinates ~50 M€ project portfolio on hydrogen ships



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MARANDA

H₂+PEMFC based hybrid powertrain system is developed and validated for marine applications



SHIP-AH₂OY

Demonstrate safe and scalable solution for zero-emission shipping using LOHC and FC technology.

MiNaMi aims to develop a MW-scale PEM fuel cell system with a lifetime >80,000 operating hours, enabling operation over more than one million nautical miles.



2017

2026 →



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FLAGSHIPS

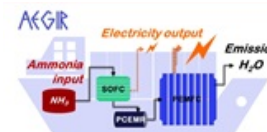
Development and deployment of two commercially operated hydrogen fuel cell vessels.



Deployment of six commercially operated hydrogen fuel cell vessels.
Standardization of H₂&FC containers



Plus many more...



14/04/2026

Mission:

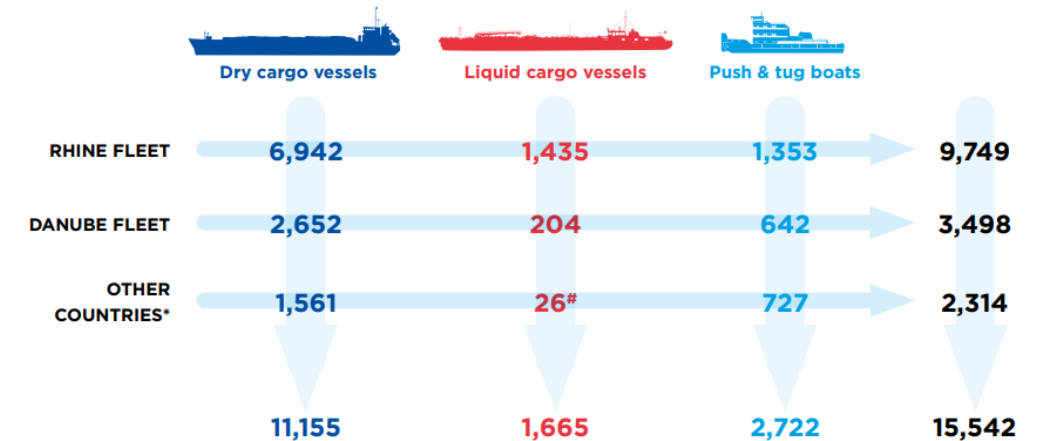
- ❖ Create a solid basis for accelerating hydrogen & fuel cell technologies in inland vessels
- ❖ Help the shipping industry reduce its environmental footprint
- ❖ In simple terms, RH2IWER is about using clean hydrogen to power river barges and ships, instead of diesel, to eliminate pollution on Europe's rivers.



Credit: Future Proof Shipping

Why?

- ❖ Over 15,000 vessels operate on Europe's rivers moving goods across the continent. (Inland) shipping is the most efficient way to transport heavy goods.
- ❖ Most vessels run on diesel, decarbonising this sector is critical, yet challenging.
- ❖ RH2IWER focuses on vessel types which represent ~80 % of the typical inland cargo fleet



Sources: 1) Rhine countries: VNF (France), CBS/Rijkswaterstaat (Netherlands), ITB (Belgium), Waterway Administration of Germany, National fleet register of Luxembourg, Swiss Waterway Administration. 2) Danube countries: Danube Commission. 3) Other countries: Eurostat [iww_eq_loadcap], [iww_eq_age], Czech Ministry of transport, Statistics Poland, Statistics Lithuania.
* Other countries = Poland, Czech Republic, Italy, United Kingdom, Finland, Lithuania.
[#] comprises 9 tanker vessels in Poland, 1 in the Czech Republic and 16 in Lithuania, but an unknown number in the other countries.

Project Goals & Objectives:

- ❖ RH2IWER's main goal is to fast-track the adoption of hydrogen fuel cells in inland waterway transport.
- ❖ Demonstrating 6-7 hydrogen Vessels
 - ❖ Fuel cell systems ranging from ~400 kW up to 1.2 MW in power.
 - ❖ Ships will operate commercially on European waterways, showing that hydrogen can handle heavy-duty shipping needs.
- ❖ By meeting its targets, RH2IWER will create a blueprint for zero-emission inland shipping.

Approach:

- ❖ Full-scale demonstrations – proving the concept in day-to-day service
- ❖ Data & Analysis – The project team carefully monitors each hydrogen ship's performance
- ❖ Collaboration – The consortium coordinates with other green shipping initiatives (like FLAGSHIPS, Synergetics and RH2INE) in Europe to share best practices and align on infrastructure and safety standards.
- ❖ Dissemination & Engagement



Consortium:

Shipowners and operators



Technology Providers



Knowledge & Research Partners



Scale:

- ❖ €20.5 million total budget
- ❖ €15 million of funding from Clean Hydrogen Partnership

Innovation – Standardization:

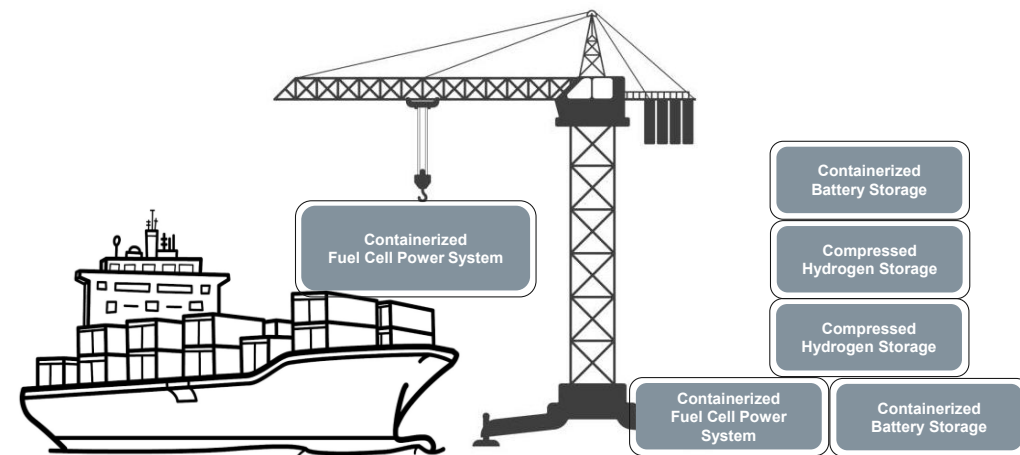
❖ Making Hydrogen Easier to Adopt

- ❖ Standardization is crucial to make the technology as a “plug-and-play” solution for the whole industry
- ❖ Hydrogen fuel storage containers
- ❖ Fuel cell power units

❖ Why does this matter?

- ❖ Lowering costs and simplify the adoption of hydrogen - Easy Integration & Interoperability
- ❖ Compatibility with other energy modules like swappable battery containers

❖ Clear standards and guidelines will give both industry and authorities confidence in the technology, smoothing the path for regulatory approval.



Conclusion & Outlook:

- ❖ Pioneering Green Inland Shipping
- ❖ From Demonstration to Transformation – Project's success will pave the way for many more hydrogen vessels.
- ❖ Long-Term Impact: RH2IWER helps build the ecosystem for green hydrogen in shipping.
- ❖ Call to Action: Together, we can make fossil-free inland shipping a reality.



Credit: Gauthier Mignot / Sogestran