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# The Shipping Industry's Race to Achieve Zero-Emission Navigation with Hydrogen Technology

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The shipping sector is facing an enormous challenge: achieving zero-emission navigation. The urgency stems from [the latest directive](#) by the International Maritime Organization (IMO), which seeks to lower the overall annual GHG emissions from international shipping by at least 50% by 2050.

Achieving this target necessitates the adoption of novel sustainable and efficient technologies by the industry, and hydrogen is one of the most promising zero-emission fuels available today. However, the technology and logistics necessary to use hydrogen as a fuel are neither yet fully developed, nor regulated. That's where [sHYpS](#) comes into the picture.

**The project plans to create a new 40' ISO c-type container for hydrogen storage and assist the maritime industry in transitioning to a more environmentally friendly approach by establishing a logistics scheme based on exchanging pre-filled containers,** while also outlining a potential expansion of the storage capacity and supply, focusing on the Port of Bergen use case. This strategy **will enable the supply chain to begin without the need to wait for the full infrastructure to be completed.**

[sHYpS](#) has been funded in the frame of the Horizon Europe research and innovation programme and it is **coordinated by the Italian naval architect [Navalprogetti](#)**. To reach its objectives, the project **brings together 13 partners from 6 European countries**. The concept involves upgrading the state-of-the-art containers' technology and realizing the connection space to convert the stored liquid hydrogen into gas.

On top of that, the system will be ready to burn, including the full electric powertrain design as well as realizing the loading and unloading system. Finally, the project will demonstrate the LH2 storage technology onboard of a true newbuild cruise ship developed by Viking Cruise, operating in the Norwegian Fjords.

To overcome the absence of established regulations for approval for the utilization of hydrogen as a

marine fuel, **sHYpS will adopt a risk-based assessment and create a full-scale storage demo case.**

By designing, developing, and testing the use of 40ft ISO-sized cryogenic container tanks, **sHYpS will realize a shorter-term hybrid solution within Viking's next new building program** to be delivered by 2025, which is scalable to comply with IMO 2030 and eventually IMO 2050 (50% emissions cut), with a fast-track market potential, but **it will also extend the preliminary design to both passengers and freight transport vessels, in view of a next demonstrator by 2027.**

[CiaoTech – part of the PNO Group](#) – supports EU industries achieving Zero-Emission. We are at the core of the maritime innovation and during sHYpS, we will complete market studies, supporting the business replication potential of the project, also leveraging on our data-driven methodologies and IT tools. ●



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