

PRESS RELEASE

Hydrogenious LOHC Technologies and Østensjø Group join forces and tread a novel path towards safe zero-emission shipping

- Hydrogenious LOHC Maritime AS to develop new emission-free onboard propulsion system with promising LOHC/fuel cell solution for global shipping industry
- Norway's Enova funding agency supports initial project HyNjord with 2.5 million Euros

Haugesund/Norway - Erlangen/Germany, 2 July 2021. Hydrogenious LOHC Technologies GmbH and Johannes Østensjø dy AS have founded the joint venture company Hydrogenious LOHC Maritime AS. The aim is to develop and market emission-free propulsion systems for the global shipping market based on liquid organic hydrogen carrier (LOHC). The company is aiming to have a megawatt scale commercial product ready by 2025. By binding the hydrogen to the LOHC, this will be a particularly safe and low-cost technology. Enova, owned by the Norwegian Ministry of Climate and Environment, announced today to support the joint venture's initial project HyNjord with NOK 26 million (about 2.5 million Euros).

LOHC is suitable for storing and transporting maritime hydrogen

LOHC is an organic oil loaded with hydrogen. German based Hydrogenious LOHC Technology has developed and patented the LOHC technology, which is a process of loading hydrogen in a thermal oil as well as releasing it where and when it's needed. An important challenge for using hydrogen in shipping is safety. LOHC solves this, as it is neither inflammable nor explosive. This makes the technology a particularly safe, easy and efficient way of storing and transporting hydrogen. This is expected to revolutionise the supply chain for hydrogen, as LOHC can be used to store and transport large quantities of hydrogen under ambient conditions, using the already existing fossil fuel infrastructure. The carrier oil – Benzyltoluene – can be loaded and unloaded with hydrogen many hundreds of times and is recyclable many times over. The energy density of LOHC is also favourable, as a vessel can store 2-3 times more energy compared to compressed hydrogen.

“Our technology is very suitable for maritime use. It is optimal for us to bring our stationary systems, not first on the road, but sensibly on the water. Thus, we are very happy to have found the ideal partner in the Østensjø Group. The Østensjø Group, which is well established not only in Norway but also internationally, has seen LOHC as the game changer for the decarbonisation of shipping for some time”, comments Dr Daniel Teichmann, CEO and founder of Hydrogenious LOHC Technologies.

“The Østensjø Group is committed to take part of the energy transition and to find ways to cut emissions. Of all the potential zero-emission technologies, we find LOHC the most promising one. That is why we have prepared all six service operation vessels under construction in our subsidiary, Edda Wind, for LOHC-based propulsion. Safety is of course very important for us in these evaluations. However, the fact that we can use existing fuel infrastructure and are able to use familiar fuelling procedures is of importance. In addition, we can easily carry enough energy

onboard our vessels in order to operate in normal intervals of up to four weeks without refuelling”, says Håvard Framnes, Investment Director in Østensjø.

Huge market potential for the new company

The joint venture has an exclusive worldwide license agreement with Hydrogenious LOHC Technologies for maritime use of the technology.

“Hydrogenious LOHC Maritime AS will make our proprietary LOHC technology available for onboard solutions for sustainable maritime traffic”, comments Dr Daniel Teichmann.

“In Østensjø, we are very excited about this joint venture and the cooperation with Hydrogenious LOHC Technologies. We believe the technology provided by the joint venture can be suitable for most shipping segments, which makes the market potential huge for the company”, says Håvard Framnes.

Receives funding from Norwegian government enterprise Enova

Enova SF has decided to fund the development of a 200 kw pilot of the LOHC/fuel cell propulsion system – the focus of the first joint venture project HyNjord – with NOK 26 million (about 2.5 million Euros). The planned application will integrate three core components on-board: The LOHC Release Unit, which releases hydrogen from the liquid organic carrier Benzyltoluene on demand on the ship, as well as a fuel cell and an interface to the ship's power management system.

“We see a need to develop technologies for the use of various zero-emission energy carriers. LOHC will be a new alternative to compressed and fluid hydrogen, and the different energy carriers will probably have different advantages and areas of application. The HyNjord LOHC-project will give us valuable information in order to contribute for hydrogen to become a real alternative to fossile fuels”, says Øyvind Leistad, Marketing Director in Enova.

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(1) Dr Daniel Teichmann, CEO and founder of Hydrogenious LOHC Technologies, and Chairman of the Board of the newly founded joint venture Hydrogenious LOHC Maritime AS. © Hydrogenious LOHC Technologies GmbH.

(2) Håvard Framnes, Østensjø Group Investment Director as well as board member in Hydrogenious LOHC Maritime. © Østensjø Group.

About Hydrogenious LOHC Maritime AS

Hydrogenious LOHC Maritime AS treads a new path towards safe zero-emission shipping. The joint venture of Hydrogenious LOHC Technologies and Østensjø Group develops and markets an emission-free onboard propulsion system, based on a first of its kind LOHC/fuel cell solution. One compelling competitive advantage besides its special safety: Hydrogenious' Liquid Organic Hydrogen Carrier allows for utilizing existing bunkering facilities onboard as well as in the ports. Based in Norway, the arising supplier for a global sustainable shipping industry brings together congenial strengths of its two shareholders for the benefit of very safe, easy and cost-efficient decarbonisation of shipping: With its proprietary LOHC technology, the German Hydrogenious LOHC Technologies GmbH is changing the way to handle hydrogen, revolutionising the supply chain for green hydrogen also for the global shipping industry. The international market-leading pioneer holds a 70 percent stake Norwegian shipping group Johannes Østensjø dy AS contributes its international maritime expertise that has grown over decades and holds 30 percent of the company. www.hydrogenious-maritime.net

About Hydrogenious LOHC Technologies GmbH

Hydrogenious LOHC Technologies adds the missing link to high-performing hydrogen value chains globally. Based on its proprietary and proven Liquid Organic Hydrogen Carrier (LOHC) technology with Benzyl toluene as carrier medium, Hydrogenious allows for superior, flexible hydrogen supply to consumers in industry and mobility across the globe – utilizing conventional liquid-fuel infrastructure. The leading LOHC pioneer offers (de-)hydrogenation plants and O&M services, ensuring safe, easy and efficient hydrogen storage, transport and distribution. The German-based SME was awarded with i.a. “The Innovation Prize of the German Economy” as well as has been recognized on the "Global Cleantech 100" list since 2018 and as “Technology Pioneer 2021” by the World Economic Forum. With its >120 staff members and strategic investors AP-Ventures, Covestro, Hyundai Motor Company, Mitsubishi Corporation, Royal Vopak and Winkelmann Group, the midstream player is a major enabler and accelerator for the energy transition. www.hydrogenious.net

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About Østensjø Group

Johannes Østensjø dy AS (the Østensjø Group) is a privately owned company, established in 1974. Østensjø is a leading provider of offshore services, and the Group owns and operates vessels within offshore wind, terminal towage, offshore oil & gas and offshore accommodation. Management of the fleet is done by Østensjø Rederi AS. The group also provides crewing services to shipping companies. Østensjø is headquartered in Haugesund, Norway with offices in United Kingdom, Poland and Malta. <https://ostensjo.no>

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