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MAN Energy Solutions SE
Stadtbachstraße 1, 86153 Augsburg
GermanyPostal address:
86224 Augsburg, Germanywww.man-es.com

Group Communications
Jan Hoppe
P +49 821 322 3126
Jan.hoppe@man-es.com

MAN Energy Solutions team up with Hydrogenious LOHC Technologies and Frames Group to build hydrogen storage systems

Cooperation agreement on industrial-scale hydrogenation plants

MAN Energy Solutions, Hydrogenious LOHC Technologies and Frames Group B.V. have signed a cooperation agreement in order to jointly design and build large scale hydrogen storage systems based on the Liquid Organic Hydrogen Carrier (LOHC) technology.

Developed by Hydrogenious the LOHC technology uses heat transfer oil as a carrier for hydrogen, thus allowing it to be stored under ambient conditions. The process also triples the amount of hydrogen that can be transported compared to standard pressurized containers. The LOHC technology offers a safe and efficient solution for storing and distributing hydrogen on a large scale

The new partners are ready to meet the needs for the future hydrogen market in respect to bulk hydrogen storage and transportation. As a first step, the companies have developed systems with hydrogen capacities of 5 and 12 tons per day. Such large hydrogen processing capacities will be crucial for the decarbonisation of Europe's energy needs.

"We strongly believe that the global goal to build a climate neutral economy largely depends on the future use of green hydrogen and other gases produced from renewable energy", says Dr. Uwe Lauber, CEO of MAN Energy Solutions. "Hydrogen will play a crucial role in the decarbonisation of those sectors that cannot be electrified directly. The LOHC technology is a game changing and powerful innovation by a great company and this partnership is an important step to further build our profile with regards to a future hydrogen economy."

"We are very satisfied to have gained such important players from the plant engineering sector for this cooperation" states Daniel Teichmann, CEO of Hydrogenious LOHC Technologies. "Since our technology uses the existing infrastructure for conventional fuels, it makes import and transportation of large amounts of green hydrogen, for example from Scandinavian wind parks to Central Europe, feasible. This partnership will contribute to creating a simple and efficient transport network for green energy at European and global level."

"We see an increased demand for green fuels and are investing in the development of hydrogen solutions, like electrolyzers and hydrogen storage. Hydrogen is the vital link in the energy transition", says Frans Roozendaal, CEO at Frames. "At Frames, we convert process and control concepts into skid-mounted solutions. Although the oil & gas industry has historically been the target market, we have also seen a strong expansion of our renewables activities."

Hydrogenious LOHC Technologies is specialised in the development of the LOHC technology and thus contributes its core process know-how to the cooperation. Frames Group B.V. designs and builds solutions for renewable energy and oil and gas processing equipment, and will be responsible for the overall realization of the hydrogenation plant. MAN ES completes the consortium with its experience in design and fabrication of reactor systems for chemical and petrochemical applications. The company will deliver the reactor and related steam generator equipment to the projects.

MAN Energy Solutions strategy implementation on track

The new partnership is part of MAN Energy Solution's strategic and technological transformation aimed to expand its business with sustainable technologies and solutions such that they become its main source of revenue by 2030. This realignment includes the expansion of the company's product range to include hybrid, storage and digital service technologies. The production of synthetic fuels and gases from renewable energy via the Power-to-X technology plays a crucial role in MAN's concept for the decarbonization of global maritime logistics.

In March the company had acquired 40 % of the shares of the electrolysis technology company H-TEC SYSTEMS. H-TEC SYSTEMS develops and produces stacks and electrolyzers for manufacturing hydrogen with electricity.



*Analysis of the hydrogen carrier oil –
Picture by Hydrogenious LOHC Technologies*

**About Hydrogenious LOHC Technologies GmbH**

Hydrogenious LOHC Technologies GmbH was established in 2013 as a spin-off of Friedrich Alexander University Erlangen – Nuremberg with the aim of commercializing the LOHC technology. Backed by strong investors and partnerships with companies and institutes such as Framatome, Clariant, the Helmholtz Institute Erlangen - Nuremberg and Eastman Chemicals, Hydrogenious LOHC Technologies is positioned very well to make its vision of a LOHC-based hydrogen infrastructure a reality. The company, which is based in Erlangen, has 65 employees. Hydrogenious LOHC Technologies is a global pioneer in the field of hydrogen storage technologies based on Liquid Organic Hydrogen Carriers (LOHC) and builds plants for the hydrogen logistics industry and hydrogen refueling stations based on the LOHC technology.

**About Frames**

Frames has been offering systems and solutions in the international energy market since 1984. We design, build and deliver oil & gas processing equipment, separation technologies, flow control & safeguarding systems, renewable energy and water solutions. For more information: www.frames-group.com.

MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level. Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 14,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.