

Bremen, 21 April 2021

Lürssen installs first fuel cell on a yacht

Lürssen is building its first yacht with fuel cell technology for a pioneering and technology driven client. The fuel cell is flanking the conventional generators and is a big step to an emission free Lürssen yacht. This innovative technology makes it possible to anchor emission-free for 15 days or cruise 1000 miles at slow speed.

Peter Lürssen states: „My grandfather built the world’s first motorboat in 1886, my dream is to be the first to build a yacht without a combustion engine.”

In the meantime Lürssen sets-up an Innovation Laboratory to simulate and test the integration and operation of a Marine Hybrid Fuel Cell System on board a yacht powered by methanol.

Since 2005 Lürssen has been involved in research projects aimed at using fuel cells on ships in order to advance sustainable shipbuilding. “We don’t just want to use the latest technology on our yacht – we want to advance the status quo. And in order to change things, you have to be active. That is why we have teamed up with several top partners,” says Peter Lürssen.

Since 2009 Lürssen is partner in the national research project which is called PaXell. In addition to Lürssen the other partners are: Besecke, Carnival Maritime, DLR, DNV, EPEA, Freudenberg and Meyer Werft. The aim is the development and testing of a hybrid energy system with a new generation of PEM fuel cells for yachts and seagoing passenger vessels.

Dr. Justus Reinke, managing director of Lürssen confirms: “The Innovation Laboratory will be ready in summer 2021 and under real life ambient conditions and with all required auxiliary systems we consider this demonstration plant to be the final preparations to bring fuels cells on board a yacht successfully. It will definitely bring us a step closer to a CO₂ emission free Lürssen yacht.”

Lürssen has committed to a strategic partnership with Freudenberg, one of the leading experts for maritime fuel cells and a global technology group with around 48.000 employees in 60 countries. Peter Lürssen says: „With Freudenberg we have a strong partner at our side. We both have the aim to bring fuel cells on-board ships in the near future and revolutionise the yacht’s energy and propulsion system.”

Claus Moehlenkamp, CEO of Freudenberg Sealing Technologies. “We are pleased to enter into a long-term partnership with Lürssen, the leading, innovative shipyard in the yacht sector. Together we will set standards for a sustainable, emission-free mobility for yachts.”

Lürssen's and Freudenberg's concept is a fuel cell driven by hydrogen which is continuously reformed from methanol. The choice of methanol rather than elemental hydrogen has been made due to its higher energy density, the simplicity of handling and easy world wide availability. But most important, methanol can be stored in structural tanks in the double bottom of a yacht in contrast to pressurized or liquefied hydrogen which requires valuable space above the tank top and extensive tank structures.

Dr. Manfred Stefener, Head of the Lead Center Fuel Cell Systems of Freudenberg Sealing Technologies explains: "Based on our vast knowledge in Fuel Cell Systems and Hydrogen generation by reforming methanol in connection with Freudenberg's proven industrialization expertise, we are committed to realize innovative power and propulsion solutions for the maritime industry. We are happy to have Lürssen as partner for bringing the combination of the mature polymer electrolyte fuel cells (PEMFC) with an efficient conversion process of methanol into hydrogen on the first yacht worldwide. "

Methanol is an important base material for the chemical industry and has been an option to be used as clean fuel for decades. When produced from renewable sources like by CO₂ capturing from the atmosphere, methanol, is completely climate-neutral. Peter Lürssen comments: "Due to the low dynamic capability of fuel cells the system layout and the combination with other energy converters and storages is the key for a successful fuel cell power system. The yacht, which is currently under construction, will be able to stay more than 15 days at anchor with the night time power supply being a zero emission mode. And the yacht can reach more than 1000 miles slow cruising with zero emission."

Thanks to the modular construction the methanol fuel cell system can be adjusted to a customized yacht to keep space requirements and costs as low as possible and the total efficiency of the system as high as possible. Fuel cells cause almost no noise or vibrations, need only minor maintenance and are more efficient than diesel engines.

But most important emissions like nitrogen oxides, sulphur oxides, soot and even CO₂ can be avoided when green methanol is used.

Lürssen - Sustainable Yachting makes the difference!

Lürssen Live! – Episode 2 "Future Propulsion Technologies"

<https://www.lurssen.com/de/news-media-friends/live/>

About Lürssen

The German yacht builder Lürssen has earned an international reputation as the specialist in exclusive, bespoke yachts of outstanding engineering mastery.

The privately run company was founded in 1875 and remains solely in the hands of the fourth generation of the Lürssen family. With a workforce of 2,800 employees, Lürssen maintains eight state-of-the-art facilities in northern Germany. The headquarters are located in Bremen.

About Pa-X-ell

The research and development project Pa-X-ell (which stands for a combination of acronyms Pax (=Passengers) with Cells (=Fuel Cells) is part of the e4ships cluster and supported by the Federal Ministry of Transport and Digital infrastructure within the framework of the National innovation Programme Hydrogen and Fuel Cell Technology. The funding guideline is coordinated by NOW GmbH and implemented by Project Management Jülich (PtJ).

About the Freudenberg Group

Freudenberg is a global technology group that strengthens its customers and society long-term through forward-looking innovations. The company started first fuel cell R&D activities in the beginning of the 1990ies. Since 2018, Freudenberg is accelerating this business by several cooperations on the development of fuel cell systems for heavy duty applications. In 2020, the Freudenberg Group employed some 48,000 people in around 60 countries worldwide and generated sales of more than €8.8 billion. For more information, please visit www.freudenberg.com.

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