

Press Release

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e4ships – Fuel cells in maritime applications

Shipping industry heads for innovative technology

Hamburg, 8 September 2022

Innovation is nothing new to the shipping sector. But the scope of the transformation process that has been initiated to decarbonise nearly all shipping traffic opens up entirely new dimensions. Green hydrogen, its derivatives converted to e-fuels and PtX fuels, and the fuel cell systems operating on these fuels on board ships are in focus at the international trade fair for the shipping industry, SMM, where the maritime industrial and innovation cluster 'e4ships' highlights application concepts, scientific findings and practical experiences.

Facing the escalating climate and energy crisis, the global shipping industry must meet the massive challenge of positioning itself for the evolving technology transformation process. The focus is on developing green technologies and application concepts for various energy sources to achieve market maturity while creating safety regulations for approval and operation of ships using innovative energy conversion systems and alternative fuels. International technical standards allowing fast, consistent certification without requiring individual prototype approvals are a prerequisite for broad, industry-wide implementation.

Through its multifaceted project e4ships – Fuel cells in maritime applications, Germany has made substantial progress in its efforts to make shipping sustainable. Leading German shipyards and ship-owners began cooperating with fuel cell manufacturers at an early time, developing fuel cell systems for the specific needs of ocean-going and inland ships in the demonstration projects Pa-X-eII2, ELEKTRA, MultiSchIBZ and RiverCell2. The resulting technical findings were incorporated into the safety regulations for the approval of ships with on-board fuel cell systems developed recently by the international shipping organisations IMO and CESNI.

In april 2022 the IMO Maritime Safety Committee approved the Interim guidelines for the safety of ships using fuel cell power installations, defining requirements for installation of these systems in commercial vessels. These guidelines establish a regulatory framework for emission-free operation of ships using efficient energy conversion systems and carbon-neutral fuels while paving the way for a successful market ramp-up of fuel cell systems for the maritime sector.

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The insights gained by the partners of the e4ships initiative, with funding provided by the National Hydrogen and Fuel Cell Technology Innovation Programme (NIP), were major contributions to this achievement.

The NIP is coordinated by NOW GmbH and implemented by Project Management Jülich (PtJ). For more information on the demonstration projects and the e4ships innovation cluster please refer to the new brochure which may be accessed using the [link](#) or QR code below.



The following stakeholders commented on the programme during the e4ships & Zero-Emission Shipping Symposium:

- Bingbing Song, Technical Officer, International Maritime Organization (IMO)
- Susanne Henckel, State Secretary, Federal Ministry for Digital and Transport (BDMV)
- Hermann Josef Mammes, Head of Department Research and Development (RD), Meyer Werft
- Dr. Ralf Sören Marquardt, General Manager, German Shipbuilding and Ocean Industries Association (VSM)
- Kurt-Christoph von Knobelsdorff, CEO, National Organisation for Hydrogen and Fuel Cell Technology (NOW)

Bingbing Song, Technical Officer, International Maritime Organization (IMO):

“Combating climate change is one of IMO's main priorities but also one of the biggest challenges, in particular for shipping. To reach a low- and zero-carbon future for shipping, we will require safe technologies and/or fuels, and innovation. The safe use of alternative fuels on ships continues to provide important means for the shipping industry to reduce atmospheric pollution originating from ships and to improve the health of residents in port cities in particular. Various promising solutions have been developed which have the potential to pave the way to reaching the GHG reduction goals, as set out in IMO's Initial GHG Strategy. Currently, IMO's Sub-Committee on Carriage of Cargoes and Containers, is intensifying its efforts in accordance with the work plan for LPG, low-flashpoint oil fuels, hydrogen, ammonia, providing feasible solutions to meet sulphur oxide (SOx), nitrogen oxide (NOx) and carbon reduction targets, most importantly, to ensure safety implications and potential risks associated with the use of low flashpoint fuel are properly addressed. “

Susanne Henckel, State Secretary, Federal Ministry of Digital and Transport (BDMV):

“The e4ships demonstration projects are outstanding lighthouse achievements and a blueprint for climate-neutral and eco-friendly shipping. ELEKTRA, for example, has already become a model for other ship newbuilds, marking a major success for the support strategy pursued by our ministry. Considering a useful life of 50 years or more, these kinds of incentives are of enormous importance if we are to accelerate the transition to climate-neutral propulsion systems in shipping. But these are not only trailblazing technology ventures but also true pioneering accomplishments on the regulatory front, paving the way to tomorrow’s climate-neutral shipping.”

Hermann-Josef Mammes, Head of Department Research and Development (RD), Meyer Werft:

“The implementation and integration of fuel cell technology in ships is not possible without demonstration projects. The running und finalized projects are the first important milestones on this journey. Further large-scale projects are needed to qualify this future oriented technology for shipping. “

Dr. Ralf Sören Marquardt, General Manager, German Shipbuilding and Ocean Industries Association (VSM): “I am convinced that the German Maritime Industry will convert technological leadership into turnover and employment. “

Kurt-Christoph von Knobelsdorff, CEO, National Organisation for Hydrogen and Fuel Cell Technology (NOW): “We at NOW are convinced that the demonstration projects for fuel cells in maritime use and the accompanying innovation cluster e4ships are pioneering the market entry of fuel cell technology. However, the switch to climate-friendly shipping can only succeed if the question of propulsion systems is answered together with the question of fuel. Only with a holistic political strategy, can the energy transformation in shipping be realized and technological advances, such as those achieved with e4ships for the fuel cell, be secured. The further development of the innovation cluster with the involvement of stakeholders along the entire e-fuel supply chain for fuel cells in maritime applications is a necessary step in this direction and we are looking forward to accompanying it. “

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