e4ships
Fuel cells in marine applications
A lighthouse project within the National Hydrogen and Fuel Cell Technology Innovation Program

Press Release / September 7, 2016

e4ships – Fuel Cells in the Maritime Sector
Clean Energy Supply on board of Seagoing Vessels

Fuel cells are an environmentally-friendly alternative to conventional aggregates onboard of ships. Today, on the occasion of the international exhibition for the shipping industry (SMM), the summarized results of the lighthouse project e4ships are presented to the public for the first time. With the use of climate-friendly fuel cells on ships the project e4ships aims to reduce pollutant emissions significantly. At the same time, questions regarding efficiency and development of international safety standards and regulations will be answered. This is done by testing fuel cell systems on board of seagoing vessels. The project is funded by the Federal Government under the National Innovation Program Hydrogen and Fuel Cell Technology (NIP).

In two demonstration projects under the lead of Meyer Werft and thyssenkrupp Marine Systems, the e4ships partners have developed fuel cell systems for seagoing vessels for the market, to implement them and to test them under everyday conditions.

In the project e4ships, the use of fuel cells on ships has been successfully demonstrated. The tested systems provide the opportunity of a highly efficient cogeneration (CHP) also on board of ships. Compared with conventional systems that are operated with marine diesel or heavy oil, significant reductions of noise and emissions could be proved. In addition, the modular approach offers a flexible and safe design on board. The results of the project have gone into the international regulation development to enable basically the use of alternative fuels and fuel cells in international shipping in the future.

State Council Dr. Ralf Bösinger, Hamburg Ministry for Economy, Transport and Innovation, Achim Wehrmann, representing the Federal Ministry of Transport and Digital Infrastructure, Bernard Meyer, Managing Director MEYER WERFT, Dr. Reinhard Lüken, Managing Director German Shipbuilding and Ocean Industries Association (VSM) and Dr. Klaus Bonhoff, Managing Director National Organization Hydrogen and Fuel Cell Technology (NOW) present the current state of developments and an overview of the future activities in this sector.

State Council Dr. Rolf Bösinger, Ministry for Economy, Transport and Innovation of the Free and Hanseatic City of Hamburg:
"The project e4ships is an ideal addition to the development of innovative infrastructure for ships in ports like LNG as new technological solutions for the reduction of emissions for ships are tested for the first time. The use of fuel cells results in a significant improvement of the air quality, which is particularly important for ports and coastal areas. Hamburg very much welcomes these activities as they provide a relevant contribution to a better quality of life in the city."

Enak Ferlemann, Parliamentary State Secretary in the Federal Ministry of Transport and Digital Infrastructure:
"The use of fuel cell technology in the shipping industry within the lighthouse project e4ships is another step to answer the question how to reduce emissions of ships. It has become clear that the German shipbuilding industry is on the right track. With the achieved technological lead the German industry becomes safe and more sustainable. The project e4ships has reached a milestone in the use of climate-friendly systems for ships."

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ZBT Zentrum für Brennstoffzellen Technik

funded by:
Federal Ministry of Transport and Digital Infrastructure

coordinated by:
NOW National Organisation Hydrogen and Fuel Cell Technology

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Bernard Meyer, Managing Director MEYER WERFT:
„In the demonstration project Pa-X-ell methanol operated high temperature PEM fuel cells for seagoing passenger vessels are developed, adapted and tested. A demonstration plant on the premises of the Meyer Werft shipyard has been used for first technical examinations to test reliability and suitability for the maritime sector. For a first maritime demonstration, a 90 kW system has been installed in addition to the conventional energy supply on the Scandinavian ferry MS Mariella. The fuel cell system is based on standardized modular units which can be scaled by connecting to any performance capacities. This way, the new resulting energy modules are supposed to be the basis of a decentralized network on board in the future."

Keno Leites, Project Manager e4ships at thyssenkrupp Marine Systems:
„The focus of the demonstration project SchIBZ is the development of a diesel-operated hybrid fuel cell system with a scalable capacity of 100 to 500 kW for seagoing ships. As the main power source it is supposed to assume the power supply of all kinds of seagoing vessels. For a practical testing at sea a 50 kW system has been built in a container and is tested on the MS Forester in real operations as a power supply system. Low-sulfur diesel, as already used in road traffic, is employed as a fuel. In the medium term it is aimed to use alternatively natural gas as an energy source too."

Dr. Reinhard Lüken, General Managing Director German Shipbuilding and Ocean Industries Association (VSM):
„On the international level, shipbuilding and shipping are highly regulated. Therefore the e4ships results have been successfully introduced into the relevant instruments of the International Maritime Organization (IMO). Herewith the international legal basis to use fuel cells commercially has been created. The German shipbuilding industry thrives on environmental innovation and its commercialization. However, in order to fully exploit the potential of the fuel cell technology other alternative fuel sources must be approved."

Dr. Klaus Bonhoff, Managing Director National Organization Hydrogen and Fuel Cell Technology (NOW):
„The hydrogen and fuel cell technology is developing real alternatives for the specific needs of the shipping industry and is a technologically innovative response to climate protection issues. Especially in ports and coastal areas fuel cell systems on board of ships can contribute significantly to the improvement of the air quality. In the future, it makes sense to use the drive for smaller vessels too. The success of the project is based on the National Innovation Program for Hydrogen and Fuel Cell Technology (NIP). In 2017, the NIP enters a new phase which especially aims to create the framework conditions necessary for the commercial market breakthrough of the technology."

Dr. Heike Deggim, Deputy Director of International Maritime Organization (IMO):
"Alternative fuels and energy converters as, for example fuel cells, can certainly play an important part in promoting green shipping. The IMO welcomes the technical input of NGOs, as for example the European Shipyards' Associations CESA, which, with the results of F&E projects, can contribute to an industry-tailored development of regulations."

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