

Oct. 19, 2023

## **Hydrogen-fueled Vessel Wins AiP Towards Demonstration Operation**

Mitsui O.S.K Lines, Ltd.  
MOL Drybulk, Ltd.  
Onomichi Dockyard Co., Ltd.  
Kawasaki Heavy Industries, Ltd.  
Japan Engine Corporation

Mitsui O.S.K Lines, Ltd. (MOL), MOL Drybulk, Ltd., Onomichi Dockyard Co., Ltd., Kawasaki Heavy Industries, Ltd. (Kawasaki) and Japan Engine Corporation (J-ENG) conducted a risk assessment of a Multi-Purpose Vessel powered by hydrogen, zero-emission fuel and has been granted Approval in Principle (AiP) of parcel layout concept (\*1) from Nippon Kaiji Kyokai (ClassNK).

This is the world's first AiP certification for a ship equipped with a low speed two-stroke hydrogen-fueled engine as the main propulsion engine.



Image of Hydrogen-fueled Multi-Purpose Vessel (D/W 17,500 M.T.)



### AiP Certificate Handover Ceremony

(From left)

Hiroyuki Motoya,	Executive Officer/General Manager, Design Department, Onomichi Dockyard
Terumi Moriguchi,	Managing Executive Officer, MOL Drybulk
Yoshihiko Sugimoto,	General Manager, Technical Division, Technology Innovation Unit, MOL
Masaki Matsunaga,	Corporate Officer/Director of Plan Approval and Technical Solution Division, ClassNK
Hideaki Murata,	Associate Officer/General Manager, Marine Machinery Business Division, Kawasaki
Seiji Shindo,	Representative Executive Managing Director of Technology, J-ENG

Demonstration operation of the vessel will be conducted for two years from around FY2027 as part of the “Development of marine hydrogen engines and MHFS (\*2)” which was adopted by Green Innovation Funding Program of the New Energy and Industrial Technology Development Organization (NEDO). Prior to the demonstration operation, J-ENG’s large low-speed two-stroke hydrogen-fueled engine and Kawasaki’s MHFS will be installed in the vessel by FY2026. MOL and MOL Drybulk will be in charge of ownership and operation management of the vessel and Onomichi Dockyard will be in charge of the development and building of the vessel, and they will cooperate toward the demonstration operation.

The five companies held a Pre-HAZID meeting (\*3) on June 28-29, 2023, together with ClassNK and the National Maritime Research Institute, National Institute of Maritime, Port and Aviation Technology. The parties completed identification of the risks and issues to be considered in further design for the parcel layout concept of liquefied hydrogen fuel tank and fuel supply system, and confirmed that the design of the vessel can proceed further based on the current parcel layout.

MOL, MOL Drybulk, Onomichi Dockyard, Kawasaki and J-ENG will contribute to reducing GHG (Greenhouse gas) in the maritime industry and achieving carbon neutrality by 2050 through the demonstration operation of the vessel.

\*1 Parcel layout concept:

Proposed layout of liquefied hydrogen fuel tank and other hydrogen fuel related equipment onboard and the design concept.

\*2 MHFS:

Marine Hydrogen Fuel System (Marine Hydrogen Fuel Tank and Fuel Supply System)

\*3 Pre-HAZID meeting:

Risk assessment meeting held to review the parcel layout concept of the marine hydrogen fuel tank and the fuel supply system prior to the HAZID (Hazard Identification Study) meeting that will be held for whole vessel in this project.

HAZID meeting: Risk assessment meeting in which experts discuss the magnitude and frequency of potential system hazards to ensure that the system as a whole is sufficiently safe.

【Related press release】

“Development of marine hydrogen engines and MHFS” is adopted by NEDO, part of Green Innovation Funding Program ~Moving to Realize a Zero Emissions Vessel~  
(Oct. 26, 2021)

MOL, MOL Drybulk, J-ENG Sign Agreement for Trial of Hydrogen-fueled Engine equipped Onboard ~Aiming to Realize a Zero Emissions Vessel ~ (Nov. 9<sup>th</sup>, 2021)  
[https://www.j-eng.co.jp/en/news/2021/te8a72000000mjj-att/J-ENGPressRelase20211109\\_EN.pdf](https://www.j-eng.co.jp/en/news/2021/te8a72000000mjj-att/J-ENGPressRelase20211109_EN.pdf)

Testing of hydrogen fuel injection device for a large low-speed two-stroke engine has begun.  
(May 16, 2023)  
<https://www.j-eng.co.jp/en/news/20230516.html>