
TMEIC Receives First Order as System Integrator for Electric Propulsion System for Liquefied Hydrogen Carrier

**- Enables Delivery of One of Japan's Largest Electric Propulsion Systems
with Total Output Exceeding 10 MW -**

TMEIC Corporation (President & CEO Akira Kawaguchi; hereinafter, "TMEIC" or "the Company") announces that it has received an order for an electric propulsion system for a 40,000 m³ liquefied hydrogen carrier*¹ to be newly constructed by Kawasaki Heavy Industries, Ltd. (hereinafter, "Kawasaki Heavy Industries"). As the system integrator, TMEIC will provide this electric propulsion system, one of the largest in Japan, including major electrical equipment.

The vessel adopts an electric propulsion system that effectively utilizes boil-off gas*² generated from liquefied hydrogen as propulsion and power energy, and will play a key role in establishing a logistics infrastructure for the full-scale operation of the liquefied hydrogen supply chain in the 2030s.

TMEIC leverages the extensive expertise and advanced technologies it has cultivated over many years across a wide range of industrial fields to provide electrification solutions for marine vessels. For this vessel, TMEIC will supply various electrical equipment as part of the electric propulsion system, including high-efficiency, large-capacity motors and drives, high-voltage main switchboards and main propulsion control systems, while also undertaking system engineering. The electric propulsion system adopted for this project, with a total output exceeding 10 MW, will be one of the largest in Japan.

The key features of the electric propulsion system ordered in this project are as follows.

1. Optimal integration of the entire electric propulsion system to ensure stable operation

Leveraging its integrated engineering capabilities that link and optimize design, control and power conversion, cultivated through extensive experience in large-scale plants across a wide range of industrial fields, TMEIC will act as the system integrator to provide a complete package of major electrical equipment, including propulsion motors and drives, main switchboards, main propulsion control systems and propulsion transformers.

This electric propulsion system is designed with redundancy and protection and control functions for abnormal conditions in mind and achieves overall system optimization from power conversion and control to propulsion. As a result, it enables stable vessel operation in response to varying operating conditions and load fluctuations.

2. High-reliability propulsion performance supported by large-capacity motors and drives for one of Japan's largest electric propulsion systems exceeding 10 MW

At the core of this electric propulsion system is TMEIC's motor and drive system, which consists of a large-capacity motor designed with high reliability to deliver stable propulsion performance even under high-torque conditions*3 and continuous long-duration operation, together with the high-performance drive system TMdrive-70e3. The TMdrive-70e3 offers approximately 98% class conversion efficiency and propulsion control with fast response capability that enables instantaneous motor startup and adjustment. It maintains high levels of stability, responsiveness and efficiency even under fluctuations in load and output during vessel operation, thereby delivering highly reliable propulsion performance.

Comments by Director and Executive Officer Masayuki Tobita, General Manager, Industrial and Energy Systems Division I:

“This project represents an important initiative toward the realization of an international liquefied hydrogen supply chain at commercial scale. As the integrator of the electric propulsion system that supports this initiative, TMEIC will provide an electric propulsion system that contributes to stable vessel operation, leveraging its proven track record in large-capacity motors and drives. Going forward, as an electric propulsion system integrator, we will continue to contribute to the realization of carbon neutrality in the maritime industry.”



40,000 m³ liquefied hydrogen carrier (artist's rendition) Source: Kawasaki Heavy Industries, Ltd.

*1 Kawasaki Heavy Industries, Ltd. press release: https://global.kawasaki.com/news_260106-1e.pdf

*2 Boil-off gas refers to hydrogen that is liquefied, stored and transported at cryogenic temperatures (−253°C) and evaporates due to heat ingress from the surroundings, generating hydrogen gas.

*3 Operating conditions that require high torque. These include marine-specific high-load conditions where strong propulsion is required even at low rotational speeds, such as during berthing and unberthing, low-speed maneuvering, startup and re-acceleration, and rough sea conditions.

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In order to respond to the needs of manufacturing sites that serve as a foundation for supporting society, TMEIC always sets its eyes on the future of industry, society and the environment as an industrial systems integrator striking a balance between the sustainable development of society and the global environment. TMEIC will contribute to manufacturing and environmental management through leading-edge technologies based on its core technologies of rotating machinery, power electronics and engineering.