

PROJECT **MEET** NEWS

Mitsubishi Marine Energy & Environment Technical Solution-System

29

Apr. 2026 Vol.29

The Path to Decarbonization of the Maritime Industries – Season 11

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New Organization
CEO Message



Mitsubishi Heavy Industries
Marine Machinery & Equipment Co., Ltd

MOVE THE WORLD FORWARD  MITSUBISHI
HEAVY
INDUSTRIES
GROUP

Special Feature

The Path to Decarbonization of the Maritime Industries

- Season 11 -

EST: Energy Saving Technologies

The decarbonization of the maritime industry is at a turning point, with the adoption of the IMO's fuel intensity regulations postponed, increasing uncertainty regarding international regulations. Although there are pioneering examples of alternative fuels, concerns remain about large-scale investment and supply, and significant hurdles persist for widespread adoption. Meanwhile, there is little time left to meet the 2030 and 2040 targets, and the shipping industry is under pressure to implement rapid emission reduction measures. In this environment, Mitsubishi Heavy Industries Marine Machinery & Equipment is continuing product and business development in anticipation of future fuel intensity regulations and vessels using alternative fuels. At the same time, taking into account the current market environment and needs of the shipping industry, the company is strengthening the market introduction of "Energy Saving Technologies (EST)"—technologies that offer immediate and reliable GHG reduction.

A representative example is the propeller retrofit projects our company has undertaken. We have carried out numerous retrofit projects for shipowners and operators, and by applying newly designed propellers optimized for operational conditions such as hull shape and vessel speed, we have made significant contributions to improving fuel efficiency and reducing CO₂ emissions. In recent years, the effectiveness of these retrofits has been highly evaluated with strong reproducibility in actual vessel operations.

As a result, the number of our propeller retrofit projects has been increasing year by year, and by the end of 2025, we have received orders for approximately 300 vessels.

Due to their immediate effectiveness and short investment payback period, these retrofits are highly regarded as a very practical decarbonization solution.

Additionally, by combining them with propeller caps and ducts with fins (stern flow improvement devices), we can offer solutions to improve propulsion efficiency for a wide variety of vessel types. Furthermore, our company is proposing Engine Partial Load Optimization (EPLO), which improves fuel efficiency and reduces emissions in the actual operational range by optimizing the specifications and operation of turbochargers in accordance with main engine derating (output limitation/optimization) and adjusting combustion and air supply characteristics in partial load ranges. In recent years, there has been a strong trend toward operating vessels mainly in low-load ranges, and synergistic effects can be expected when combining EPLO with propeller retrofits.

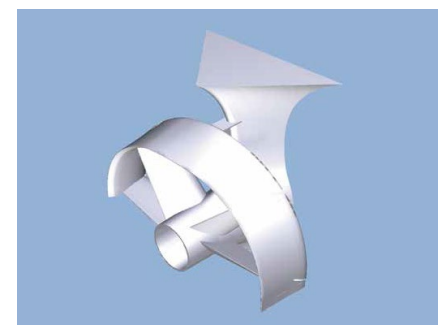
In addition to conventional main engine waste heat recovery solution proposals, our company is offering solutions that optimally combine multiple Energy Saving Technologies (ESTs) tailored to the vessel type, main engine, and operational conditions. This approach goes beyond individual improvements, enabling the maximization of overall energy efficiency for the vessel. Furthermore, by making medium to long-term proposals that also take into account future fuel conversions and new regulatory requirements, we contribute to maintaining the long-term asset value for shipowners.

Even amidst increasing global regulatory uncertainty, technologies that can reliably reduce GHG emissions hold true value. Through the deployment of ESTs, Mitsubishi Heavy Industries Marine Machinery & Equipment will continue to steadfastly support the decarbonization of the shipping industry from the ground up.

We will also advance the development and market introduction of technologies that offer both immediate effectiveness and future potential, contributing to the creation of a sustainable future for maritime transport.



Propeller Retrofit



Duct with fins
(MARF: Mitsubishi Advanced Reaction Fin)

Development of a Safe Operation Function “BIOFUEL Mode” for Auxiliary Boilers

— Supporting GHG Emissions Reduction through Biofuel Compatibility —

Mitsubishi Heavy Industries Marine Machinery & Equipment has newly developed the “BIOFUEL Mode,” a new function for its MAC auxiliary boilers that enables safe and stable operation when using biofuels.

Traditionally, marine boilers have operated on fuels such as Heavy Fuel Oil (HFO), Low Sulphur Heavy Fuel Oil (LSFO), and Low Sulphur Marine Gas Oil (LSMGO).

In recent years, due to stricter environmental regulations, biofuels have attracted attention as alternative fuels. However, because the properties of biofuels vary greatly depending on their raw materials and production methods, it is essential to fully understand and appropriately address the characteristics and handling precautions of each fuel.

The newly developed “BIOFUEL Mode” optimizes operating conditions based on these fuel characteristics, thereby reducing the risks associated with using biofuels and providing a safe environment for their use.

By adding the “BIOFUEL Mode” to existing control systems, MAC auxiliary boilers can be operated safely and stably even when using biofuels.

The adaptation of MAC auxiliary boilers to biofuels not only addresses global challenges such as environmental burden reduction and greenhouse gas (GHG) emissions reduction but also brings further benefits. In ships, the main engine generally determines the type of fuel used; therefore, when the main engine uses biofuel, having the auxiliary boiler operate on the same fuel simplifies fuel cost management.

We will continue to accurately identify market trends and customer needs and remain committed to further enhancing our technological development and services to support the safe and environmentally conscious operation of marine boilers.

For inquiries, please contact: marine.machinery.service@mhi.com

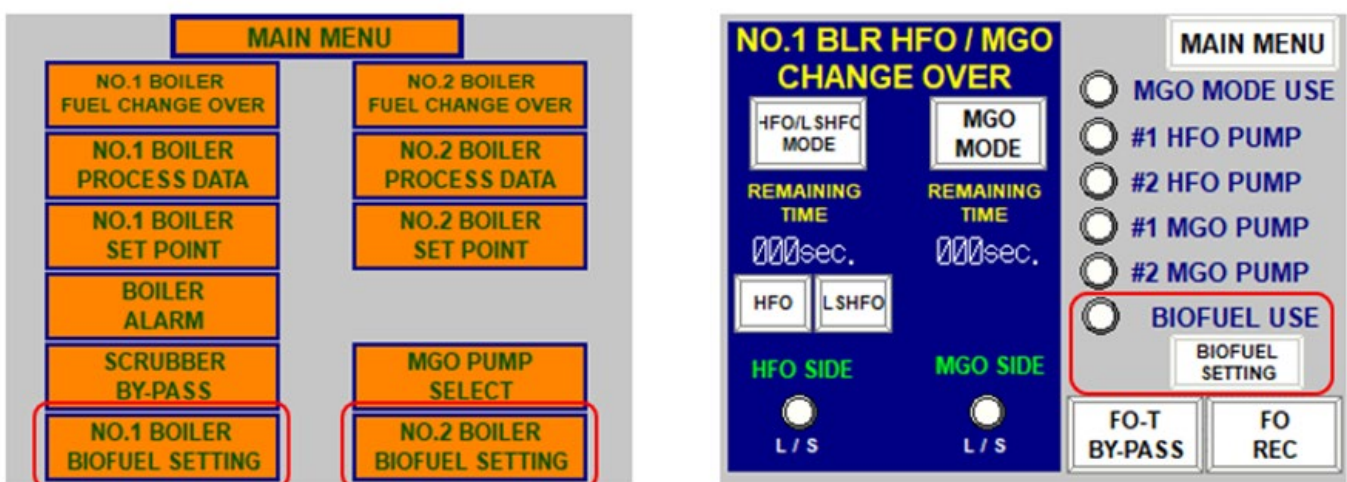


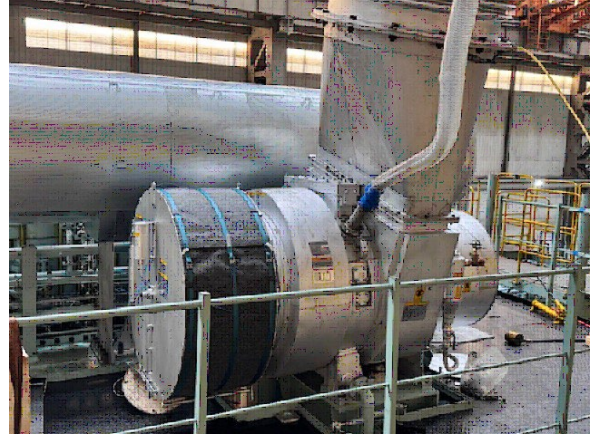
Image of Display Screen with BIOFUEL Mode Feature Added

Delivery of the First MET Turbocharger Unit Manufactured by Jiangsu Masada

Jiangsu Masada Heavy Industry (Jiangsu Masada), which concluded a manufacturing and sales license agreement for MET turbochargers with Mitsubishi Heavy Industries Marine Machinery & Equipment in 2024, delivered the first licensed unit, the MET48MB, to Guangzhou Diesel Engine Factory Co., Ltd. (GDF) in December 2025.

This unit has been installed on GDF's large low-speed two-stroke engine "6UEC42LSH Eco D3 LPSCR", and was delivered to the shipyard after engine shop tests completed in January 2026.

Jiangsu Masada has already received orders for other types of MET turbochargers, and the number of licensed units manufactured in China, is expected to increase in the near future.



SEMINAR IN SINGAPORE

Technical Seminar in Singapore

From January 26 to 30, 2026, Mitsubishi Heavy Industries Marine Machinery & Equipment conducted an on-site technical seminar for customers in Singapore. This type of seminar has been held since 2016, marking its tenth year of operation. This time, we visited approximately 10 companies and held study sessions on our products ^(*) and technologies in each company's meeting room.

(*1: Turbochargers, steering gears, marine boilers, turbines, and Energy Saving Technology)

The seminar covered a wide range of topics, including the latest trends for each product, technical updates, preventive maintenance, environmental regulations, fuel efficiency improvements, and long-term service agreements (LTSA). In an environment where there is an ever-increasing awareness of trouble prevention, preventive maintenance, fuel efficiency improvement, CO₂ emission reduction, and decarbonization, there was an even more active exchange of opinions than in previous years. Additionally, the familiar and interactive format of the seminar encouraged many questions, comments, and requests from participants.



MET Turbocharger Recognition Program 2025

In 2025, Mitsubishi Heavy Industries Marine Machinery & Equipment (MHI-MME) recognized three Authorized Repair Agents (ARA) for their outstanding performance in after-sales service for MET turbochargers.

The following are the names of these repairers. (In alphabetical order)

Through the global ARA network, MET turbochargers are equipped to provide prompt and appropriate service anywhere in the world. (As of April 1, 2026: 61 companies)

Please visit our website for the latest ARA information. (<https://www.mhi.com/group/mhimme/services/ara.html>)



GULF TURBO SOLUTIONS FZC (UAE)



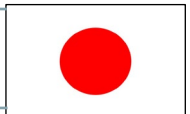
Mr. Rehan Karanjia,
Founding Partner

URL

<https://www.gulfturbo.com>

MHI-MME has truly honored Gulf Turbo Solutions by awarding us with the Best Performing ARA award for Three Consecutive Years – 2023, 2024 and 2025. The hat-trick of awards is a unique distinction. Team Gulf Turbo Solutions is turbocharged to keep progressing each year with unwavering dedication, hard work, and commitment to quality. MHI-MME's recognition inspires us to aim even higher in "Field Service Quality," "Sales," and "Technical Reporting"

KOBE MARINE ENGINEERING LTD. (JAPAN)



Mr. Hideki Tsuji,
President CEO

URL

<https://www.kobe-marine.co.jp/>

It is our great honor to receive the MET Turbocharger Recognition Award for the second time since 2023. We are all delighted with this achievement, as it acknowledges the consistent efforts we have made in our sales and service activities. KOBE MARINE ENGINEERING CO., LTD. opened a new turbocharger repair workshop in Fukuyama-City, Hiroshima, on February 27, 2026. This will enable us to deliver services that are even more aligned with our customers' needs.

TRU-MARINE PTE LTD. (Singapore)



Mr. James Loke,
Group Chief Executive Officer

URL

<https://www.trumarine.com/>

We are honored to receive the MET Turbocharger Recognition Award and be recognized as a Top Authorized Repair Agent by MHI-MME. We sincerely thank MHI-MME for this recognition, which reflects our team's engineering discipline, service consistency, and alignment with Maker standards, motivating us to continue delivering reliable, compliant service support.

EUROPE OFFICE INFORMATION



View of Munich

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Mr. Ryuta Nakamura

I was appointed to the General Manager of Marine Machinery Group in Munich Office in April of this year as the successor to Mr. Kusakabe.

Mitsubishi Heavy Industries Marine Machinery & Equipment (MHI-MME) previously maintained its European representative office in London, but in light of changes to our business portfolio, we have recently relocated our office to Munich, Germany.

I have been involved in marine boiler design operations in Nagasaki for 23 years, and for the past 2 years, I have been engaged in new product and new business development.

This appointment represents a challenge in a field different from design and development work. I will continue to work to ensure that our marine machinery products can be adopted with confidence in the EMEA (Europe, Middle East, and Africa) region. In addition, as Europe has taken the lead in introducing environmental regulations for ships, I will continue to actively propose our energy-saving technologies and maintenance services in this region. Furthermore, since 2020, our company has participated as a founding partner in the Maersk Mc-Kinney Moller Center for Zero Carbon Shipping (MMMCZCS), based in Denmark, and I will also be involved in the activities of this research institute. I will do my best to utilize my experience to contribute to the decarbonization of the entire shipping industry. I appreciate your continued support.



Mr. Nakamura
General Manager
Marine Machinery Group

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Tel. : + 86 21-6841-3030 (Receipt.)

Mr. Jun Kojima

I have been engaged for approximately 14 years in sales of turbochargers for new ships and various marine machinery, mainly in the Chinese market, as well as licensing business with partner companies in China. Currently, the Chinese shipbuilding market continues to thrive. In this environment, I would like to make the most of the experience and knowledge I have cultivated so far, sincerely listen to our customers, and accurately reflect their feedback in our products and services, thereby contributing to further improvement of the quality and customer satisfaction of our branded products.

Going forward, I will work together with the members of our department, maintaining a spirit of constant progress, and flexibly adapting to the rapidly changing market environment. I sincerely ask for your continued support and guidance.



Mr. Kojima
General Manager
Marine Machinery Group

KOREA OFFICE INFORMATION

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Mr. Satoshi Makino

As the successor to Mr. Kim, I am assigned to the Busan Office starting from April 2026.

For the past 16 years, I have been engaged in the design work of MET turbochargers, including three years as a resident turbocharger engineer at the Busan Office. During that time, the outbreak of COVID-19 began, and I felt frustrated that I could not fully utilize my capacity expected in Korea. However, I am now once again given the opportunity to serve as head of Marine machinery team in Busan.

Korea is one of the world's leading shipbuilding nations and is an extremely important base in the marine market. I will make full use of the experience and knowledge I have gained so far, as well as my previous experience in Busan, to provide the utmost support to ensure customer satisfaction. I will do my best to encourage continued patronage of our products, and I sincerely ask for your support and cooperation.



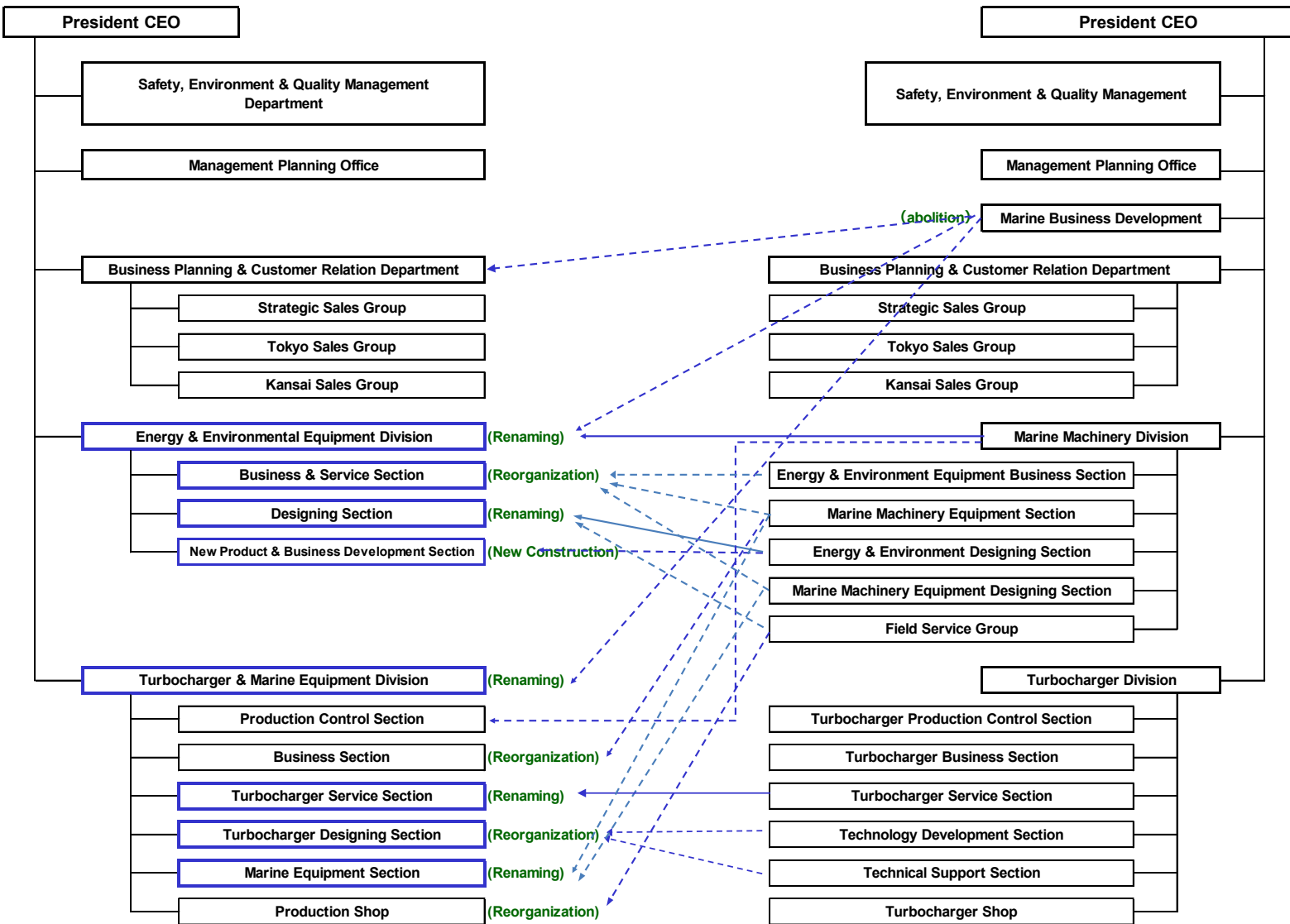
Mr. Makino
Team Leader
Marine Machinery

New Organization

← Name change ← Transfer of functions

[As of Apr. 1 2026 ~]

[~ Mar. 31 2026]



Mitsubishi Heavy Industries Marine Machinery & Equipment implemented the following organizational reforms effective April 1, 2026:

- (1) The Marine Machinery Division has been renamed the Energy & Environmental Equipment Division, and the Turbocharger Division has been renamed the Turbocharger & Marine Equipment Division.
- (2) The Marine Business Development has been abolished. Its external relation functions have been transferred to Business Planning & Customer Relation Department, Energy & Environmental Equipment Division, and Turbocharger & Marine Equipment Division. New Product & Business Development Section is established in the Energy & Environment Division.
- (3) Marine auxiliary products (excluding propellers), have been transferred to the Turbocharger & Marine Equipment Division.
- (4) The Turbocharger Technology Development Section and Technical Support Section have been integrated into the "Turbocharger Design Section."

Greetings

The maritime industry today appears to be at a historic turning point, as geopolitical factors, international regulations, and industrial policies of various countries intertwine in complex ways. In April last year, the Trump administration in the United States issued a presidential executive order aimed at rebuilding the foundation of the U.S. maritime industry. The order instructed the strengthening of shipbuilding capacity and the formulation of a Maritime Action Plan (MAP) to reduce dependence on China. Measures such as increased tariffs on port facilities and the imposition of port entry fees for Chinese-built ships were implemented, and considerable confusion was initially expected. However, with the subsequent suspension of these measures for one year, the immediate turmoil has subsided. Nevertheless, the United States continues to advance broad policies aimed at promoting domestic shipbuilding, such as considering new fees for foreign-built ships, which may lead to significant structural changes in the supply chain.

Additionally, at the MEPC Extraordinary Session ^{(*)1} held in last October, a one-year postponement was resolved for the adoption of medium term GHG reduction measures (NZF ^{(*)2}), for which a basic agreement had been reached at the 83rd session in April. As a result, the momentum for transitioning to new fuels has slowed, and customers' needs for energy saving appear to be rising more than ever. In Japan, the government has formulated the "Shipbuilding Industry Revitalization Roadmap," a national project to double the current annual shipbuilding volume from about 9 million gross tons to 18 million gross tons by 2035. News of capital investments for increased production at shipyards and marine machinery manufacturers is now frequently heard.

As described above, the global maritime industry is experiencing unprecedented multiple changes—decarbonization, supply chain restructuring, geopolitical risks, and uncertainty in international regulations. However, our company views these changes not as "threats" but as "opportunities for transformation."

To strengthen our manufacturing capacity in response to robust demand, enhance our ability to propose energy-saving solutions, and accelerate the commercialization of next-generation products, we reorganized our company structure effective April 1. The marine auxiliary machinery business, including steering gear, was integrated into the Turbocharger Division, and the Business Development Office, which had functions for new product planning, was integrated into the Energy & Environmental Equipment Division. Please refer to the main text for details, but we believe that this organizational reform will allow us to more accurately grasp our customers' needs and deliver products and services that meet those needs more swiftly, even as our business environment changes and becomes increasingly complex.

Moving forward, we will continue to strive to be a company that is needed and trusted by our customers through the provision of high-quality products and services. We ask for your continued patronage of Mitsubishi Heavy Industries Marine Machinery products.

(*1) MEPC Extraordinary Meeting:

An extraordinary session of the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO), held separately from the usual schedule (once or twice a year), in order to expedite the formulation of certain urgent issues or important international regulations.

(*2) NZF : Net-Zero Framework



Mitsubishi Heavy Industries
Marine Machinery & Equipment Co., Ltd.

President CEO

Katsuhide Matsunaga