

JMU completes newly-developed Dunkirkmax-type bulk carrier PROMETHEUS



Japan Marine United Corporation (JMU) delivered PROMETHEUS, a 181,000DWT bulk carrier, at its Ariake Shipyard on January 10, 2024. This is the third vessel of the newly-developed Dunkirkmax-type bulk carrier series, called N181BC, which is successful due to the economic and environmentally-friendly design.

The Energy Efficiency Design Index (EEDI) of this N181BC has achieved Phase 3 (30% reduction from the reference line) by application of latest energy saving technologies. This eco-friendly performance will contribute to environment protection.

The vessel has larger deadweight and cargo hold capacity suitable for loading bulk coal and iron ore in its nine cargo holds, based on JMU's expertise and vast experience. The SSD[®] (Super Stream Duct[®]) and SURF-BULB[®] installed on the fore and aft side of the propeller, respectively, greatly improve the propulsion performance.

The ALV-Fin[®] (Advanced Low Viscous Resistance Fin) installed forward of the propeller controls stern water flow to gain better propulsive efficiency.

Furthermore, a unique bow shape, LEADGE-Bow[®], can reduce the added resistance due to waves, and the well-refined shape of the superstructure can attain low wind resistance.

Principal particulars

L (o.a.) x B (mld.) x D (mld.) x d (mld.): 292.00m x 45.00m x 24.55m x 18.234m

DWT/GT: 182,384t/93,367

Main engine:MAN B&W 7S60ME-C10.6-HPSCR diesel x 1 unit

Speed: 14.4kt

Complement: 25

Classification: ClassNK



For further information please contact:

Website: <http://www.jsea.or.jp>

JAPAN SHIP EXPORTERS' ASSOCIATION

15-12, Toranomon 1-chome, Minato-ku, Tokyo 105-0001 Tel: (03) 6206-1661 Fax: (03) 3597-7800 E-Mail: postmaster@jsea.or.jp

NAMURA completes large LNG-fueled coal carrier, REIMEI

Namura Shipbuilding Co., Ltd. delivered the REIMEI, a 95,000DWT large LNG-fueled coal carrier, at its Imari Shipyard & Works on November 14, 2023. The vessel is the first of a newly-developed design of LNG-fueled coal carrier built by Namura, which is expected to virtually eliminate sulfur oxide (SO_x) emissions and reduce approximately 80% of nitrogen oxides (NO_x) emissions, as well as 30% of carbon dioxide (CO₂) emissions, in comparison with conventional marine fuels with eco-friendly and excellent features.

Further improvement of propulsion performance and fuel saving in conformity with EEDI Phase 3 can be achieved by adoption of a combination of optimized energy saving devices, the Namura flow Control Fin (NCF), the Rudder-Fin and the additional fins behind NCF, developed by Namura, and low-friction-type anti-fouling paint.

For environmental protection, the vessel is equipped with a main engine and generator engines compliant with Annex VI of the MARPOL 73/78 regulations to reduce NO_x emissions. In

addition, the vessel also complies with the SOLAS Chapter II-1 Regulation 3-12, Code on noise levels on board ships to improve the environment of the living quarters.

The ballast water treatment system to control the quality of ballast water is equipped to protect the marine environment to comply with the International Convention for the Control and Management of Ships' Ballast Water and Sediments. The vessel has class notation IHM (Inventory of Hazardous Materials) for compliance with the ship recycling convention according to the Guidelines for the Inventory of Hazardous Materials.

Namura considers reduction in environmental impact as one of the most important issues to realize a sustainable society through supplying environmentally-friendly vessels, and the company aims to reduce green-



house gas emissions in accordance with the government policy of carbon neutrality by 2050, while continuing to develop and supply new fuel-type vessels, and to contribute to a low carbon society.

Principal particulars

L (o.a.) x B (mld.) x d (mld.): 234.92m
x 38.0m x 14.4m
DWT/GT: 95,792t/54,684
Main engine: WinGD 6X62DF diesel
x 1 unit
Complement: 28
Classification: ClassNK
Registry: Liberia
Completion: November 14, 2023

Naikai completes passenger/vehicle carrier, FERRY OSUMI NO. 12

Naikai Zosen Corporation has completed construction of the FERRY OSUMI NO. 12, a 1,500GT passenger/vehicle ferry, at its Setoda Shipyard for the delivery to the co-owner, Iwasaki Corporation and Japan Railway Construction, Transport, and Technology Agency (JR TT).

This ferry is designed to be propelled by twin engines and twin propellers, and vehicles (limited to large

buses or automobiles) can roll on and off the vehicle decks through the ramp doors installed at the prow and stern.

The ferry also has a bow thruster and two sets of flap rudders. The main rudder board and flap rudder can turn through maximum angles of 45 degrees and 90 degrees, respectively. Combined operation of these installations can ensure the ship maneuverability when entering and leaving a port.

An elevator is provided at the starboard side for the convenience of the disabled and the aged to move from vehicle decks to the bridge deck.

Energy-saving devices are installed such as an eco-cap, rudder bulbs, stern-fins, and stern wave-flow controller, which improve propulsion efficiency.

Principal particulars

L (o.a.) x B (mld.) x D (mld.) x d:
76.90m x 13.30m x 9.50m x 3.63m
DWT/GT: 628t/1,443
Main engines: Daihatsu Diesel
6DKM-26e diesel x 2 units
MCO: 1,470kW x 750/215min⁻¹/unit
Speed, service: approx. 16.4kt
Passengers: 500
Officers and crew: 11
Vehicle loading capacity
Large buses only: 14 units, or
Automobiles only: 54 units
Classification: JG Class 2 (smooth
water area)
Completion: December 15, 2023



Kawasaki delivers LPG-powered LPG/NH₃ carrier, ENEOS MIRAI

Kawasaki Heavy Industries, Ltd. has delivered the ENEOS MIRAI (HN:1758), an 86,700m³ liquefied petroleum gas (LPG) and ammonia (NH₃) carrier powered by LPG.

The ENEOS MIRAI is the third of Kawasaki's newest 86,700m³ capacity design of LPG-fueled LPG/NH₃ carrier, with increased cargo capacity from the previous 84,000m³ LPG carrier as well as ammonia loading capability. Kawasaki has completed ten LPG-powered vessels to date, and the ENEOS MIRAI is its 73rd LPG carrier in total.

This carrier is equipped with separate cargo tanks and can simultaneously transport LPG, which is already widely used as a low car-

bon-emission energy source, and ammonia, which is expected to be utilized as a new fuel in low- and zero-carbon-emission societies. The vessel is designed with increased cargo tank capacity while maintaining the princi-

ing LPG as fuel, sulfur oxide (SO_x) and CO₂ emissions in exhaust gases can be significantly reduced compared with ships running on conventional marine fuel oil, enabling compliance with SO_x emission standards and



EEDI Phase 3 regulations. The propulsion system is compliant with nitrogen oxide (NO_x) Tier III requirements and utilizes EGR and SCR equipment. Therefore, the vessel is able to travel in NO_x emission control areas (ECAs) even when operating on conventional low-sulfur fuel. Fuel consumption is reduced through

the inclusion of the Kawasaki RBS-F (Rudder Bulb System with Fins), the Kawasaki SDS-F (Semi-Duct System with contra Fins), and energy-saving fins around the propeller.

The concept design for a system that utilizes ammonia as fuel on this vessel has been approved by Nippon Kaiji Kyokai (ClassNK). Therefore, the ship design specifications can be modified to enable the use of ammonia as fuel in the future.

In consideration of the strengthening of environmental regulations around the world and action plans for the Sustainable Development Goals (SDGs), Kawasaki will continue to develop and provide customers with environmentally-friendly ship technologies centered on LPG carriers and LPG/NH₃ carriers powered by LPG, as well as other types of merchant vessels that comply with the latest environmental regulations, including liquefied hydrogen carriers, which is expected to act as a next-generation energy source. Consequently, Kawasaki will contribute toward the realization of low- and zero-carbon-emission societies.

This carrier is equipped with a Kawasaki-MAN B&W 6G60ME-C10.5-LGIP, an electronically controlled, LPG-injection marine diesel engine (ME-LGIP engine). By utiliz-

ing LPG as fuel, sulfur oxide (SO_x) and CO₂ emissions in exhaust gases can be significantly reduced compared with ships running on conventional marine fuel oil, enabling compliance with SO_x emission standards and

EEDI Phase 3 regulations. The propulsion system is compliant with nitrogen oxide (NO_x) Tier III requirements and utilizes EGR and SCR equipment. Therefore, the vessel is able to travel in NO_x emission control areas (ECAs) even when operating on conventional low-sulfur fuel. Fuel consumption is reduced through

Specifications

L (o.a.) x B (mld.) x D (mld.) x d (mld.):	229.90m x 37.20m x 21.90m x 11.65m
DWT/GT:	56,519t/49,541
Cargo tank capacity:	86,911m ³
Main engine:	Kawasaki-MAN B&W 6G60ME-C10.5-LGIP diesel x 1 unit
Speed: Approx.	17.0kt
Complement:	29
Classification:	ClassNK
Registry:	Panama
Delivery:	December 28, 2023

Information from JSEA

Our news letter, SEA-Japan, is now available as e-mail. If anyone wishes to receive the digital edition (pdf format), please contact

sea-japan@jsea.or.jp

with the following information of yourself for identification:

1. Full name;
2. Company name/occupation, or freelance/others;
3. Your company address, or your country; and
4. E-mail address

You can also find back issues of SEA-Japan at our website:

<https://jsea.or.jp>

Shin Kurushima Sanoyas completes Panamax bulker, ORCHID ISLAND

Shin Kurushima Sanoyas Shipbuilding Co., Ltd. delivered the Panamax bulk carrier, ORCHID ISLAND, on January 24, 2024. The vessel was constructed at the Shin Kurushima Sanoyas Mizushima Shipyard.

The ORCHID ISLAND is the 18th vessel of a series of the Sanoyas newly-developed 82,000DWT-type Panamax bulk carriers. The vessel not only applies latest rules such as CSR B&T, NO_x Tier III regulations and SO_x emission regulations, but also has the equivalent deadweight with shallower draft than the builder's previous design. The vessel exceeds 30% reduction of CO₂ emission (Phase 3) by IMO's EEDI regulations in advance that will apply to ships for which the building contract is placed on or after 2025.

For improvement of propulsion efficiency, the vessel is equipped with a low-speed & long-stroke electronically controlled main engine combined with a high-efficiency propeller and rudder appendages. Furthermore, Sanoyas patented energy saving devices such

as the STF (Sanoyas-Tandem-Fin) and ACE DUCT (Sanoyas Advanced flow Controlling and Energy saving D U C T) are applied. These energy saving devices have

been improved over the previous design and have achieved over 8% reduction of energy consumption so that EEDI Phase 3 is certainly satisfied.

Considering eco-friendly features, various countermeasures such as the main engine with SCR compliant with NO_x emission Tier III limit for the prevention of air pollution, and dedicated low sulphur gas oil tank to cruise in ECAs (Emission Control Areas). In addition, countermeasures such as the Ballast Water Treatment System and independent holding tanks for rainwater on the upper deck for the protection of marine environment are also incorporated.



Furthermore, for improvement of maintenance, access trunks are arranged to allow access from the upper deck to double bottom even under laden conditions.

Principal particulars

Hull No.:	1396
L (O.A.) x B (mld.) x D (mld.) x d (Summer):	229.00m x 32.24m x 20.15m x 14.594m
DWT/GT:	81,996t/43,455
Cargo hold capacity:	97,034m ³ (Grain)
Speed, service:	Approx. 14.1kt (at C.S.O. with 15% sea margin)
Complement:	24
Classification:	ClassNK
Delivery:	January 24, 2024

JSEA participates in Posidonia 2024

The 28th Posidonia 2024 (The International Shipping Exhibition) will take place at the Metropolitan Expo Centre in Athens for five days from June 3 through 7, following in 2022. This event is organized by Posidonia Exhibitions SA and sponsored by the Greek Ministry of Mercantile Marine, Union of Greek Shipowners, and other organizations related to the maritime

industry.

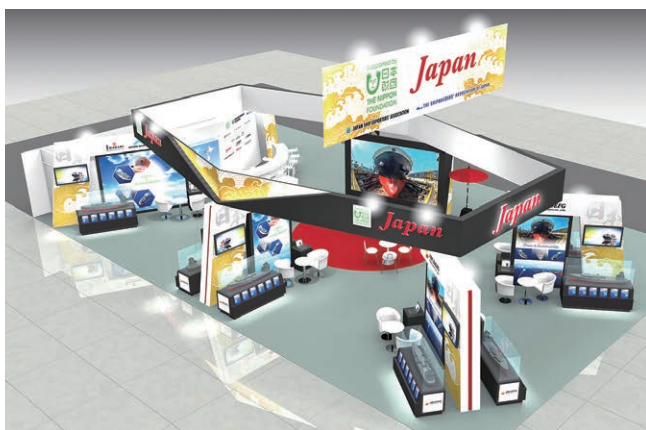
The Japan Ship Exporters' Association (JSEA) will participate in the exhibition with the financial support of The Nippon Foundation and in cooperation with The Shipbuilders' Association of Japan. JSEA will represent the Japanese shipbuilding industry together with the Japanese Marine Equipment Association (JSMEA)

using a 489m² stand floor to demonstrate their superior technologies accumulated through many years of experience in shipbuilding.

Specific ship hull forms, newly developed ship

designs, and other developments will be demonstrated with 50-inch monitors, photographs, and other presentations. A large LED monitor system will be installed as the center of the stand. The monitors are used for presentations by exhibitors. In addition, JSEA is now planning to hold the Japan Seminar at the Posidonia Seminar Room Central, Metropolitan Expo Centre, in the afternoon of Tuesday, June 4, 2024.

JSEA consists of the following shipbuilders: Imabari Shipbuilding Co., Ltd.; Japan Marine United Corporation; Kawasaki Heavy Industries, Ltd.; Mitsubishi Shipbuilding Co., Ltd.; Namura Shipbuilding Co., Ltd.; Nihon Shipyard Co., Ltd.; Oshima Shipbuilding Co., Ltd.; Shin Kurushima Dockyard Co., Ltd.; and Shin Kurushima Sanoyas Shipbuilding Co., Ltd.



JMU develops anti-fouling system for marine propellers using weak electric current

Japan Marine United Corporation (JMU), in collaboration with IHI Corporation's Corporate Research & Development Division, has developed a propeller anti-fouling system that utilizes the anti-fouling technology for sliding guides of floodgates using weak electric current, which was devised and developed by IHI Corporation.

By passing a weak electric current between the anti-fouling target and the electrode, an oxygen consumption reaction occurs in the surface layer of the anti-fouling target. This anti-fouling technology causes the surface layer of the anti-fouling target to be a hypoxic environment due to the oxygen consumption reaction, making it difficult for marine organisms to approach the anti-fouling target.

When an electric current is applied, metal components contained in the seawater are deposited as a film on the propeller surface, so it is necessary to change the current conditions to make it easier to remove the film.

To verify the effectiveness of the anti-fouling system, onboard tests were conducted on a small vessel for a total of two years. The degrees of fouling on the propeller were examined by comparing the fuel consumptions for the duration of one year for both with and without the action of the anti-fouling system. This con-

firmed that the increase in fuel consumption due to fouling of the propeller can be greatly suppressed by the action of the anti-fouling system, although the film removal process is required.

Presently, JMU are planning to conduct tests on larger ships to verify the effectiveness of the newly developed system on larger ships, with the aim of practical application to large merchant ships.

This technological development was carried out as a contract development project subsidized by the Japan Ship Machinery and Equipment Association (JSMEA) and The Nippon Foundation.

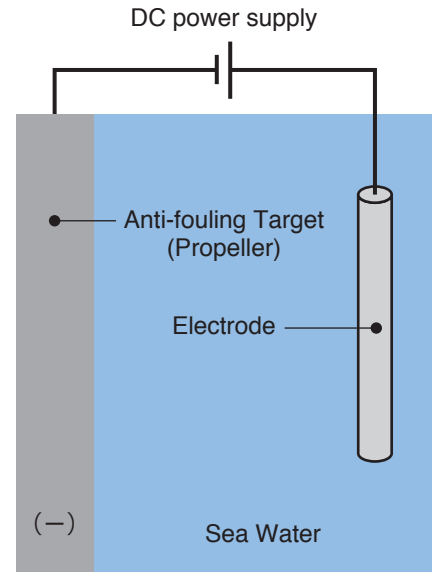
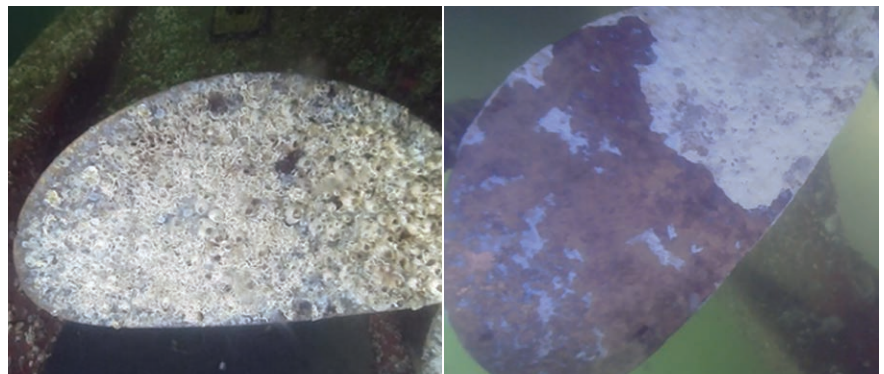


Fig. 1 Basic equipment configuration of the anti-fouling system



Without action of the system

With action of the system

Fig. 2 Comparison of the propeller surface between with and without action of the anti-fouling system

Shipbuilding and Marine Engineering in Japan 2024 now available

The Japan Ship Exporter's Association (JSEA) has published Shipbuilding and Marine Engineering in Japan 2024. This is only available from the JSEA website (<https://www.jsea.or.jp/en/publications/sameij/>) or QR code shown above the cover image as publishing of the book version has ceased.

Major contents include the current status of the Japanese shipbuilding industry, new completions by ship types, new shipbuilding technologies, navigation systems, energy-saving equipment and systems, software for shipbuilding rationalization, and building and repairing facilities, focusing on the achievements during the last two years.

JSEA is now providing digital publications for our readers, which include Shipbuilding and Marine Engineering in Japan (biennial edition) and SEA-Japan (bimonthly).



BERGE MAUNA KEA

Builder: Imabari Shipbuilding Co., Ltd.
 Ship type: Bulk carrier
 L (o.a.) x B x D: 299.99m x 50.00m x 25.00m
 DWT/GT: 211,599t/108,956
 Main engine: 7S60ME-C10.6 diesel x 1 unit
 Speed, service: 14.0kt
 Classification: ClassNK
 Completion: March 15, 2024

**SG OCEAN**

Builder: Japan Marine United Corporation
 Hull No.: 5280
 Ship type: Bulk carrier
 L (o.a.) x B x D x d: 299.99m x 50.00m x 25.00m x 18.436m
 DWT/GT: 210,933t/110,334
 Main engine: DU-WinGD 7X62DF-2.1 diesel x 1 unit
 Speed, service: 14.0kt
 Complement: 25
 Classification: ClassNK
 Registry: Japan
 Completion: January 30, 2024

**CAPT G**

Builder: Namura Shipbuilding Co., Ltd.
 Hull No.: 490
 Ship type: 182,000DWT bulk carrier
 L (o.a.) x B (mld.) x D (mld.) x d (mld.): 291.92m x 45.00m x 24.60m x 18.20m
 DWT/GT: 182,281t/93,721
 Main engine: MAN B&W 7G60MEC-10.5-EGRBP diesel x 1 unit
 Classification: ClassNK
 Registry: Cyprus
 Completion: November 30, 2023

**KAWA NAPRANUM**

Owner: Lucretia Shipping, S.A.
 Builder: Oshima Shipbuilding Co., Ltd.
 Hull No.: 11047
 Ship type: Bulk carrier
 L (o.a.) x B x D x d (ext.): 228.41m x 36.50m x 20.39m x 14.348m
 DWT/GT: 87,396t/48,105
 Main engine: Mitsui-MAN B&W 5S60ME-C10.5-EGRBP diesel x 1 unit
 Speed, service: 14.30kt
 Classification: ClassNK
 Registry: Liberia
 Completion: November 28, 2023

**BBC MERCURY**

Owner: Briese Schiffahrts GmbH & Co. KG
 Builder: Onomichi Dockyard Co., Ltd./ Saiki Heavy Industries Co., Ltd.
 Hull No.: 790
 Ship type: Bulk carrier
 L (b.p.) x B x D: 174.00m x 32.00m x 14.80m
 DWT/GT: Abt. 39,500t/abt. 24,748
 Main engine: MAN B&W 6G45ME-C9.7-HPSCR diesel x 1 unit
 Speed, service: 13.5kt
 Classification: ClassNK
 Registry: Liberia
 Completion: September 7, 2023

**LIMONE**

Owner: Panamanian owner
 Builder: Shin Kurushima Hiroshima Dockyard Co., Ltd.
 Hull No.: S-6207
 Ship type: General cargo ship
 L (b.p.) x B x D: 114.00m x 109.6m x 19.60m
 DWT/GT: 11,712t/7,356
 Main engine: Makita B&W 6L35MC6.1 diesel x 1 unit
 Speed, service: 13.0kt
 Classification: ClassNK
 Registry: Panama
 Completion: February 29, 2024

