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Hard sail completed for Wind Challenger Project and installation underway on a large vessel

—Using wind as vessel propulsive force—

"Hard Sail for Wind Challenger"
Reef condition (left) and full sail condition (right)

Mitsui O.S.K. Lines, Ltd. and Oshima Shipbuilding Co., Ltd. completed a hard sail system jointly developed as part of the Wind Challenger Project at the Oshima Shipyard on February 1, 2022.

The Wind Challenger Project started in 2009 with the "Wind Challenger Plan," an industry-academia joint research project led by The University of Tokyo, and the project has received a subsidy for next-generation marine environment-related technology research from the Japan's Ministry of Land, Infrastructure, Transport and Tourism since 2013. MOL and Oshima Shipbuilding took charge of the plan in January 2018, and now lead this project. For details, please refer to the following URL:

https://www.mol-service.com/service/windchallenger

MOL have been promoting the Wind Challenger project to harness wind as a propulsive force for merchant ships. The additional propulsion power from the wind can reduce greenhouse gas (GHG) emissions by an estimated 5% assuming a Japan-Australia voyage, to about 8% on a Japan-North America West Coast voyage, compared to conventional ships of the same class.

The hard sail will be installed on a bulk carrier currently under construction at Oshima Shipbuilding after shoreside tests. The vessel is planned for delivery this fall after sea trials and will transport cargoes for Tohoku Electric Power Co., Inc.

MOL set out its plan to achieve net zero GHG emissions by 2050 through concerted group-wide efforts in the MOL Group Environmental Vision 2.1 (For more details: https://mol.disclosure.site/en/themes/101). The company expects to reduce GHG emissions, and realize a low-carbon and decarbonized society by proactively participating not only in this project, but also by establishing clean energy supply chains. MOL Group will also move assertively to promote wind-related businesses including the Wind Challenger-developed hard sail.

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JMU completes 311,000DWT crude oil tanker, TOWA MARU

Japan Marine United Corporation (JMU) delivered TOWA MARU, a 311,000DWT crude oil tanker, at its Kure Shipyard on January 21, 2022. This is the fourteenth vessel of the newly developed eco-type Malaccamax VLCC. Principal particulars have been optimized for transportation between the Middle East and Japan, while satisfying restrictions of domestic ports. Various and latest technologies developed through JMU's extensive experience in building tankers have been incorporated into the vessel.

High propulsion performance was achieved by the design of the lower resistance and high efficiency hull form, and use of optimized energy saving devices such as the Super Stream Duct®, SURF-BULB® and ALV-Fin®. In addition, good sea performance was achieved by inclusion of the low wind resistance superstructure and unique bow shape called the "LEADGE-Bow®". Fuel oil consumption was further improved by installation of the new electronically controlled marine diesel engine, low-friction paint, and large diameter propeller. In addition, this vessel is equipped with a SO_x scrubber to comply with MARPOL ANNEX VI Regulation 14.

Principal particulars

L (o.a.) x B x D x d:	339.50m x 60.00m x 28.50m x 21.05m
DWT/GT:	311,028t/160,709
Main engine:	WinGD W7X82 diesel x 1 unit
Speed, service:	15.45kt
Complement:	34
Classification:	ClassNK
Registry:	Japan

Shin Kurushima Sanoyas delivers Panamax bulk carrier, ETG HAYATE

Shin Kurushima Sanoyas Shipbuilding Co., Ltd. completed construction of the Panamax bulk carrier, ETG HAYATE, at the Shin Kurushima Sanoyas Mizushima Shipyard on January 26, 2022. This is the 10th vessel of a series of the Sanoyas newly developed 82,000DWT type Panamax bulk carriers.

The vessel applies the latest rules such as CSR B&T, NO_x Tier III regulations and SO_x emission regulations, and has the equivalent level of deadweight with shallower draft than the previous design. The vessel exceeds 20% reduction of CO_2 emission to reach the IMO EEDI (Energy Efficiency Design Index: grams CO_2 per ton nautical mile) regulation and is close to the 30% reduction 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 and long-stroke electronically controlled main engine combined with a high-efficiency propeller and rudder appendages. Furthermore, patented energy saving devices such as the Sanoyas developed "STF" (Sanoyas-Tandem-Fin) and ACE DUCT (Sanoyas Advanced flow Controlling and Energy saving DUCT) are applied. These energy saving devices have achieved about 8% reduction of energy consumption and CO_2 emissions.

Eco-friendly features include various countermeasures such as the main engine with SCR compliant with the NO_x emission Tier III limit for 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 are provided protection of the marine environment.

For improvement of the vessel maintenance, access trunks are arranged to allow access from the upper deck to double bottom even under the laden condition. Accommodation complies with the latest IMO noise reduction regulation to improve the working and living environment for officers and crews.

Principal particulars

Hull No.:	1380
L (o.a.) x B x D x d:	229.00m x 32.24m x 20.15m x 14.594m
DWT/GT:	81,957t/43,474
Cargo hold capacity: (Grain)	97,034m^3
Classification:	ABS
Complement:	24
Speed, service:	about 14.2kt
Delivery:	January 26, 2022

Kawasaki delivers 84,000m³ LPG carrier, CRYSTAL TRINITY

Kawasaki Heavy Industries, Ltd. has delivered the 84,000m³ capacity liquefied petroleum gas (LPG) carrier, CRYSTAL TRINITY (HN: 1750) for Kumiai Navigation (Pte) Ltd. This is the 65th LPG carrier built by the company. This vessel is a dual-fuel LPG carrier using LPG and low-sulfur fuel oil, and Kawasaki's second 84,000m³ LPG carrier adopting a dual-fuel main engine.

In recent years, more vessels are adopting liquefied gases as an alternative to heavy fuel oil to effectively reduce emissions of greenhouse gases (GHG) from international shipping.

This very large LPG carrier is powered by LPG, which reduces GHG emissions and is expected to significantly reduce environmental impact. The design is based on the Kawasaki Group's accumulated knowledge in building LPG and liquefied natural gas (LNG) carriers, and LNG-fueled vessels.

Kawasaki plans to develop and build more LPG-fueled LPG carriers and other commercial vessels that meet environmental standards, as well as to develop and offer other eco-friendly marine technologies, to contribute to the establishment of a low-carbon/decarbonized society. These products include vessels for transporting liquefied hydrogen, considered to be the next-generation energy source.

This LPG carrier operates using both LPG and low-sulfur fuel oil. Use of LPG as fuel greatly reduces the emissions of sulfur oxides (SO_x), CO_2 and other pollutants compared with use of marine fuel oil. Consequently, the new vessel will meet SO_x emission standards[*1] which were strengthened in January 2020, and EEDI[*2] Phase 3 regulations which will further strengthen CO_2 emission standards in 2022.

In order to satisfy restrictions introduced by NO_x Tier III controls[*3] on emissions of the International Maritime Organization (IMO), the main engine and generator are equipped with a Selective Catalytic Reduction (SCR) System. An exhaust gas purification system to reduce NO_x allows the ship to navigate in Emission Control Areas (ECAs).

Installation of LPG fuel tanks on the ship's upper deck makes it possible to load fuel-use LPG separate from the ship's cargo LPG. Moreover, a piping system connecting the LPG fuel tanks and LPG cargo tanks enables transferring of extra LPG to the LPG fuel tanks if necessary.

This vessel adopts the Kawasaki Rudder Bulb System with Fins (RBS-F) and the Semi-Duct System with contra Fins (SDS-F) to reduce fuel consumption.

Notes

*1 SO_x emission standards: Since January 2015, SO_x emission restrictions in North American and European Emission Control Areas (ECAs) have limited sulfur content in fuels to 0.1% or less. Starting in January 2020, regulations have required ships operating in all other parts of the world to use fuel with sulfur content levels of 0.5% or less, or alternatively use equipment to reduce SO_x in exhaust gases to an equivalent level.

*2 Energy Efficiency Design Index: Compulsory international regulations requiring energy-efficiency compliance in newly built ships based on EEDI values, which specify CO_2 emissions in grams for transporting one ton of cargo for one mile. EEDI regulation values apply in increasingly strict phases based on the construction-contract conclusion date and finished-ship delivery date. Phase 3 regulations (30% CO_2 emissions reduction compared with baseline levels) will be introduced for certain ship types including large LPG carriers and LNG carriers contracted to be built in 2022 or later.

*3 The Tier III controls apply only to the specified ships while operating in Emission Control Areas (ECAs), requiring 80% NO_x emissions reduction compared with Tier I controls.

Principal particulars

Owner: Kumiai Navigation (Pte) Ltd.
Builder: Kawasaki Heavy Industries, Ltd.
Ship type: 84,000m³ type LPG carrier
Hull No.: 1750
L (o.a.) x B x D x d: 229.90m x 37.20m x 21.90m x 11.60m
DWT/GT: 55,068t/49,943
Cargo tank capacity: 84,222m³
Main engine: Kawasaki-MAN B&W 7S60ME-C10.5-LGIP diesel x 1 unit
Speed: Approx. 17.0kt
Complement: 29
Classification: ClassNK
Registry: Singapore
Delivery: January 26, 2022

Mitsubishi Shipbuilding completes conceptual study on floating storage and regasification unit (FSRU) for ammonia together with Mitsui O.S.K. Lines

— FSRU will promote use of ammonia as energy storage medium for decarbonization —

Mitsubishi Shipbuilding Co., Ltd., a part of Mitsubishi Heavy Industries (MHI) Group, has completed a conceptual study, in a joint effort with Mitsui O.S.K. Lines, Ltd. (MOL), on a floating storage and regasification unit (FSRU) for ammonia. The study is aimed at promoting utilization of ammonia as an energy source that contributes to decarbonization, and the introduction of Ammonia FSRUs all over the world.

Ammonia FSRU is a floating facility for receiving and storing ammonia which is transported in a liquid state from its production area, and the stored ammonia is then heated and regasified onboard for transfer to an onshore pipeline. Ammonia FSRUs can be constructed at lower cost and in shorter times than onshore ammonia storage and regasification plants. Global interest in usage of ammonia is increasing, so application of Ammonia FSRUs instead of onshore storage and regasification plants is expected to contribute to earlier and stable supply of ammonia fuel.

The newly completed conceptual study conducted multiple case studies of FSRUs with different specifications according to the ammonia supply conditions, regasification method, tank capacity, etc., to respond to a wide range of demands, and eventually developed designs for more environmentally friendly Ammonia FSRUs. The study also covered the feasibility of employing ammonia fuel to generate the power required for the operation of the FSRU. In addition, Mitsubishi Shipbuilding has just concluded a memorandum of understanding (MOU) with MOL and The Kansai Electric Power Co., Inc. to examine the possibilities of future introduction of Ammonia FSRUs. The companies are aiming at realization of the first Ammonia FSRU in the world, based on Mitsubishi Shipbuilding's expertise in ammonia handling technologies.

Image of Ammonia FSRU

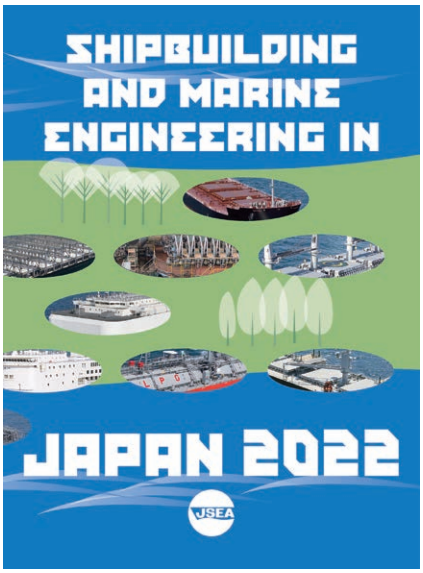
Ammonia is now mainly used as a raw material of fertilizers, and although the present volume of maritime transportation is limited, demand is expected to increase in the future as a next-generation clean energy that does not emit CO_2 during combustion. The global trend toward decarbonization is moving toward making increasing strategic use of ammonia, especially in Asia.

MHI Group's strategy of advancement of the energy transition will strive to promote decarbonization of the maritime industry as well as to contribute to realizing a carbon-neutral society and reduction of environmental load on a global scale, by utilizing its technologies and expertise in ammonia handling accumulated through long experience in building multi-gas carriers for transporting LPG and ammonia.

Shipbuilding and Marine Engineering in Japan 2022 now available

The Japan Ship Exporter's Association (JSEA) has published Shipbuilding and Marine Engineering in Japan 2022. This edition is a digital version and available from the JSEA website (https://www.jsea.or.jp/en/publications/) or QR code below instead of being included with the book edition on a CD-ROM as previously. 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).



Namura starts joint development of ammonia-fuelled ammonia gas carrier

Namura Shipbuilding Co., Ltd. (Namura) has reached an agreement with Mitsui O.S.K. Lines, Ltd. and Mitsubishi Shipbuilding Co., Ltd. to jointly develop a very large ammonia fuelled ammonia gas carrier.

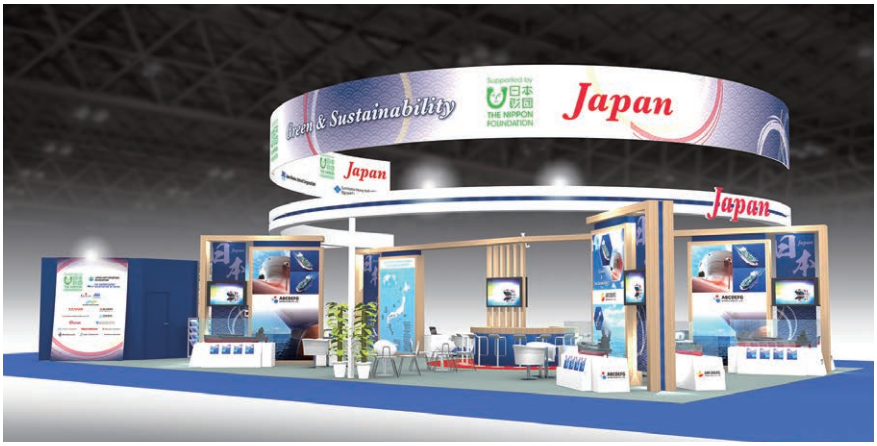
Ammonia is currently widely used as a fertilizer, but in recent years, it has been attracting attention as a next-generation clean energy source that does not emit carbon dioxide during combustion, and the Agency for Natural Resources and Energy has announced that technological development for use in power generation is underway. Ammonia production and storage technologies are already established, and safety measures and guidelines are in place. Furthermore, since the supply chain has been established, it is believed that ammonia can be converted to energy without much initial investment. Thus, the prospect of early commercialization is a major advantage as a next-generation energy source.

In addition to providing a means of transportation to meet the growing demand for ammonia, Namura is working with MOL and Mitsubishi Shipbuilding to develop a large-scale ammonia gas carrier that uses ammonia as its main fuel, with the aim of reducing greenhouse gas emissions.

Presently, Namura is identifying the optimum ship size to meet the nearterm demand for ammonia, but Namura will also consider larger vessels from a longer-term perspective. Furthermore, Namura will consider all possible measures to promote thorough energy conservation and lower emissions for this ship by integrating the expertise of the three participants. In line with the government's policy of carbon neutrality by 2050 for the realization of a sustainable society, Namura has positioned the development of environmentally friendly ships as one of their top management priorities, and intend to contribute to the future low-carbon society by actively working on the development of next-generation of ammonia fuel-operated ships.

JSEA participates in Posidonia 2022

The 27th Posidonia 2022 (The International Shipping Exhibition) will take place at the Metropolitan Expo Centre in Athens for five days from June 6 through 10, following the cancellation of the 2020 exhibition due to the pandemic. 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 489m^2 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 48-inch monitors, photographs, and other presentations. A large multi-screen monitor system will be installed as a backdrop to the reception counter. In addition, JSEA is now planning to hold the Japan Seminar at the Posidonia Seminar Room, Metropolitan Expo Centre, in the afternoon of Tuesday, June 7, 2022.



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.
Sumitomo Heavy Industries Marine & Engineering Co., Ltd.

ASANAGI

Builder: Imabari Shipbuilding Co., Ltd./Tadotsu Shipyard Co., Ltd.
Ship type: Bulk carrier
L (o.a.) x B x D: 291.96m x 45.00m x 24.70m
DWT/GT: 182,162t/93,972
Main engine: 6S70ME-C10.5 diesel x 1 unit
Speed, service: 14.5kt
Classification: ClassNK
Completion: February 17, 2022

GOLDEN KIKU

Owner: Benefit Transport S.A.
Builder: Japan Marine United Corporation
Ship type: 82,400DWT type bulk carrier
L (o.a.) x B (mld.) x D (mld.) x d (mld.): 229.00m x 32.26m x 20.20m x 14.55m
DWT/GT: 82,459t/44,318
Main engine: MAN-B&W 6S60ME-C8.5-EGRBP diesel x 1 unit
Speed: 14.50kt
Complement: 25
Classification: ClassNK

THORNBURY

Owner: Lundquist Shipping Company Limited
Builder: Sumitomo Heavy Industries Marine & Engineering Co., Ltd.
Hull No.: 1408
Ship type: Crude oil carrier
L (b.p.) x B x D : 228.96m x 44.00m x 21.80m
DWT/GT: abt. 112,100t/abt. 60,300
Main engine: Hitachi MAN B&W 6G60ME diesel x 1 unit
Speed, service: 15.0kt
Classification: LR
Registry: Bahamas
Completion: January 26, 2022

OCEAN CLIO

Owner: Panamanian owner
Builder: Shinkurushima Toyohashi Shipbuilding Co., Ltd.
Hull No.: S-3745
Ship type: Bulk carrier
L (b.p.) x B x D: 179.95m x 31.00m x 14.70m
DWT/GT: 39,996t/25,010
Main engine: Mitsu-MAN B&W 6S46ME-B8.5-HPSCR diesel x 1 unit
Speed, service: 14.0kt
Classification: ClassNK
Registry: Panama
Completion: January 26, 2022

PRESTIGE DIVA

Owner: Comerge Shipping Co., Ltd.
Builder: Tsuneishi Shipbuilding Co., Ltd.
Hull No.: 1612
Ship type: Bulk carrier
L (b.p.) x B x D: 229.00m x 32.26m x 20.15m
DWT/GT: 82,300t/44,000
Main engine: MAN B&W 6S60ME-C10.5 diesel x 1 unit
Speed, service: 14.30kt
Classification: ClassNK
Registry: Panama
Completion: January 27, 2022

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 for identification:

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

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