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MHI completes new generation MOSS-type LNG carrier, LNG VENUS

Mitsubishi Heavy Industries, Ltd. (MHI) completed construction of the LNG VENUS (HN:2295), a new generation MOSS-type LNGC "SAYAENDO" with a tank capacity of 155,691m^3 (100% full), and delivered the vessel to Osaka Gas International Transport Inc. and Mitsui O.S.K. Lines, Ltd. at the Nagasaki Shipyard & Machinery Works on November 13, 2014.

The term "SAYAENDO," which means peas in a pod in Japanese, comes from the vessel's appearance, featuring spherical tanks ("endo" or "peas") in a continuous cover ("saya" or "pod"). The "SAYAENDO" LNGC employs a continuous cover to house four spherical tanks completely, enabling the cover to be used as a hull-reinforcing element, resulting in greater overall strength and lower weight. With a conventional cover configuration, pipes, wires, and catwalks atop the tanks are supported by complex structures. Covering the tanks with an integrated cover makes those supporting structures unnecessary, and improves maintainability.

The LNG VENUS, which is the first ordered SAYAENDO vessel from MHI, has the capacity to transport 8,000m^3 more LNG than a typical 147,000m^3 carrier, without increasing the beam by using vertically stretched spherical tanks that maintain the same tank diameter. Thus, the LNG VENUS provides a higher cargo capacity while meeting the new Panamax requirements.

The LNG VENUS achieves a significant reduction in fuel consumption through improvements in ship weight and propulsion performance, such as reduction of longitudinal wind force with the use of the continuous tank cover and adoption of the high-efficiency UST (Ultra Steam Turbine) propulsion plant. The LNG VENUS is expected to achieve a CO_2 reduction of approximately 25% per cargo unit during actual operations compared with a conventional 147,000m^3 LNGC.

Principal particulars

Length (o.a.):	288.0m
Length (b.p.):	275.0m
Breadth:	48.94m
Depth:	26.0m
Design draft:	11.55m
Gross tonnage:	136,710
Cargo tank capacity:	155,691m^3
Main turbine:	MR36-II (Ultra Steam Turbine) x 1 unit
Output:	26,000kW x 74.0rpm
Speed, service:	19.5kt
Classification:	NK

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Imabari completes first newly-developed 84,000DWT bulker

Imabari Shipbuilding Co., Ltd. held the naming and delivery ceremony of the NORD DRACO, a 84,000DWT type bulk carrier at the Marugame Headquarters on December 2, 2014. The NORD DRACO was delivered to its owner E.K. Line S.A.

The vessel design was newly developed in 2012, which has 80,000DWT at under 14.0m draft, by widening the breadth compared with the conventional Panamax-type bulk carrier, based on the fact that the draft restriction of the majority of ports worldwide visited by such 80,000DWT class bulk carriers is less than 14 meters. Enlarged hold capacity and strengthened hull with BC-A notation give the vessel broader and flexible utility to carry a wide range of cargoes including light cargo such as grain, common cargo such as coal and alternate loading of ore cargo as well. Cargo handling efficiency in port is also improved by widened hatch openings.

Although the vessel size is enlarged and deadweight is increased, remarkable performance of lower fuel consumption, in comparison with the existing design, is attained by application of various energy saving measures including HYBRID-FIN, Imabari's unique design which improves the propulsion efficiency. Furthermore, the AERO-CITADEL type superstructure is adopted, which contributes to lower wind resistance and antipiracy measures. The AERO-CITADEL superstructure was already adopted for another vessel which received the Ship of the Year 2013 Award.

Since her development, this 84,000DWT type bulk carrier, the first vessel of which was just completed, has achieved a good reputation among local and overseas ship operators and cargo owners, and nearly 20 vessels have been ordered. Another new design will be developed in order to flexibly reflect the needs of their customers.

Principal particulars

Length (o.a.):	228.9m
Breadth:	35.0m
Depth:	19.9m
DWT:	84,000M.T.
Delivery:	December 2, 2014

JMU completes ultramax bulk carrier, IVS NARUO

Japan Marine United Corporation (JMU) delivered IVS NARUO, a 60,000DWT typed bulk carrier, called Future-60, to SUN HARBOR S.A. at its Kure Shipyard on December 1, 2014.

This is the first vessel of Future-60 series, which, being newly developed by JMU with its expertise and experience, has larger deadweight and cargo hold capacity and four deck cranes of 30 tons capacity each suitable for carrying various cargoes, such as grain, coal, iron ore and steel coil, in its five cargo holds.

JMU has been successful in dramatically decreasing fuel oil consumption of Future-60, compared with its previous supramax bulk carriers, by using various and comprehensive measures of energy-saving, so that EEDI (Energy Efficiency Design Index) is much improved and GHG (Greenhouse Gas) emission may be decreased overwhelmingly.

JMU's original energy-saving devices, such as SSD (Super Stream Duct) and Surf-Bulb, contributes to improve the propulsion performance of the vessel.

In addition, application of fuel oil tank protection rule, ballast water treatment system, and MARPOL NO_x tier-II makes the vessel environment-friendly.

In the view point of safety and maintenance of the vessel, CSR (Common Structural Rules) for bulk carriers and PSPC (Performance Standard for Protective Coatings) for ballast water tanks are applied.

Principal particulars

L (o.a.) x B (mld) x D (mld) x d (mld):
198.0m x 32.26m x 18.6m x 12.9m

DWT/GT:	60,317t / 34,349
Main engine:	WARTSILA 6RT-flex50-D x 1 unit
Speed:	14.0kt
Complement:	25
Classification:	NK

Oshima delivers first of three bulk carriers to ADM of U.S.

New vessel achieves 27% reduction in CO_2 emissions with Mitsubishi Air Lubrication System (MALS)

The first unit of a new bulk carrier developed by Mitsubishi Heavy Industries, Ltd. (MHI), a vessel offering superlative energy efficiency and environmental performance, was delivered to Archer Daniels Midland Company (ADM) of the U.S., one of the world's foremost grain processors, following its completion at Oshima Shipbuilding Co., Ltd. of Nagasaki, an MHI licensing partner. The incorporation of a wide spectrum of innovative technologies – including MHI's proprietary Mitsubishi Air Lubrication System (MALS), which reduces frictional resistance between the vessel hull and seawater using air bubbles produced at the vessel bottom – has enabled a 27% reduction in CO_2 emissions, as verified, compared with conventional bulk carriers, exceeding the target figure of 25%.

The newly delivered bulk carrier, HARVEST FROST, is the first of three vessels, designed to serve as grain carriers, ordered by ADM in 2011 from Sumitomo Corporation. The vessel was constructed by Oshima Shipbuilding with MHI providing the conceptual design and various green technologies, including MALS. Delivery of the three vessels is scheduled for completion by mid-2015.

The new vessel also features a new bow shape designed to reduce wave-making resistance. For propulsion, an innovative system is adopted that effectively converts the main engine power into propulsion power by positioning fins forward of the propellers and placing special grooves in the propeller boss cap. The ship's shallow draught facilitates MALS's pursuit of energy savings and CO_2 emission reductions.

In MALS, the air blown from the vessel's bottom produces small air bubbles that cover the vessel's bottom like an "air-carpet," reducing friction between the hull and seawater during navigation. The system was developed by MHI with support from ClassNK (Nippon Kaiji Kyokai) et al., and it has already been adopted in module carriers, ferries and other ships constructed by MHI. In this way, MALS has built up a solid track record demonstrating the effectiveness of its technologies in reducing fuel consumption and easing environmental loads. Seafaring tests have already verified that MALS achieves the target level of performance in the newly delivered bulk carrier.

With the increasing adoption of international rules on easing environmental burdens imposed by marine transport, expectations of and demand for environmentally harmonious "Eco-ships" are steadily rising. In response MHI is not only developing and constructing Eco-ships of every kind, the company is also applying its expertise accumulated in its shipbuilding and ocean development businesses to provide engineering support to other shipbuilders. By focusing on promoting expanded adoption of MALS and other energy-saving and environmentally compatible technologies, the company looks to make significant contributions to the development of the marine transport industry.

Principal particulars

Ship name:	HARVEST FROST
Owner:	HFR Shipping Company Ltd.
Builder:	Oshima Shipbuilding Co., Ltd.
Hull No.:	10719
Ship type:	Bulk carrier
L (o.a.) x B x D x d (ext.):	237.00m x 40.00m x 19.80m x 13.729m
DWT/GT:	95,263M.T./54,486
Main engine:	Mitsubishi 6UEC60LSE-Eco-A2 diesel x 1 unit
Speed, service:	14.50kt
Registry:	Marshall Island
Classification:	NK
Completion:	October 29, 2014

To our readers

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MES delivers BULK AQUILA, 66,000DWT type bulker

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) completed and delivered a 66,000DWT type bulk carrier BULK AQUILA (HN: 1889) at its Tamano Works on November 13, 2014 to Venus Ocean Navigation S.A., Panama. This is the fifth ship of wide beam shallow draft vessel called "neo66BC," the new generation ship of MES line up "neo series."

Features of vessels include:

1. The vessel has five cargo holds and four cranes for handling cargo and keeps the superior usability of "Mitsui 56."
2. The ship is designed to have enough deadweight more than 66,000 metric tons and capacity more than 82,800 cubic meters for loading various cargoes like coal, ore, grain, as well as lengthy/heavy cargo such as steel pipes and hot coils.
3. Fuel oil consumption is less than that of the conventional Supramax bulk carrier despite its enlargement.
4. As a result of research work of interviews with ship owners and operators, investigations on ports all over the world and present trade patterns, wide beam (over-Panamax) and shallow draft make it possible to have wide flexibility for operations and high transport efficiency.
5. The new hull form makes it possible to keep good performance in rough sea conditions as well as calm sea conditions and shows better maneuverability.
6. The size of hatch opening is the largest for this type of vessel in terms of both length and width.
7. The main engine, MITSUI-MAN B&W diesel engine 7S50ME-B9.3, complying with MARPOL NO_x restriction (Tier-II) for exhaust gas emissions, gives superior fuel oil consumption over wide range of output.
8. Considering strengthened restriction for SO_x, the ship has low sulfur fuel oil tanks, which are designed for operation in ECA (Emission Control Areas).
9. The vessel is designed in accordance with IACS Common Structural Rules.

Principal particulars

L (o.a.) x B x D:	199.99m x 36.00m x 18.45m
DWT/GT:	66,613t/38,227
Main engine:	Mitsui-MAN B&W 7S50ME-B9.3 diesel x 1 unit
MCO:	8,470kW
Speed service:	abt.14.5kt
Complement:	25
Classification:	NK
Registry:	Panama
Delivery:	November 13, 2014

Tsuneishi delivers 199th KAMSARMAX bulk carrier, UNITED PRESTIGE

Tsuneishi Shipbuilding Co., Ltd. has delivered the 81,600DWT KAMSARMAX bulk carrier, UNITED PRESTIGE, to the United Ocean Group (President: Vipan Sharma) at the Tsuneishi Factory. The KAMSARMAX bulker was developed by Tsuneishi in 2004, and the first vessel was constructed at the Tsuneishi Factory in 2005. Since then, 199 KAMSARMAX bulkers have been constructed by the Tsuneishi group.

Tsuneishi Shipbuilding was one of the first shipbuilders to increase the deadweight of Panamax bulkers from the previous 70,000 tons to over 80,000 tons (as much as 82,000 tons), which are permitted to navigate the Panama Canal, greatly improving the transport efficiency of the Panamax type. The name KAMSARMAX is based on the vessel with the maximum ship length permitted to enter Kamasar Port, a major bauxite shipping port in Guinea, which restricts ships to a length of 229m.

Principal particulars

Owner:	United Ocean Group
Builder:	Tsuneishi Shipbuilding Co., Ltd.
Shipyard:	Tsuneishi Factory
Ship name:	UNITED PRESTIGE
Type:	KAMSARMAX bulk carrier
Length:	about 229m
Breadth:	32.26m
Depth:	20.00m
DWT/GT:	81,918t/43,089
Main engine:	MAN-B&W 6S60MC-C (Mark 7) diesel x 1 unit
Speed, service:	14.5kt (normal output)
Classification:	NK
Registry:	Panama
Delivery:	November 14, 2014

Sanoyas completes Panamax bulker, SANTA REGINA

Sanoyas Shipbuilding Corporation has completed construction of the Panamax bulker, SANTA REGINA, for Compania Flor De Vapores, S.A. at its Mizushima Shipyard.

This is the second vessel of the new series of the Sanoyas 82,000DWT-type Panamax bulk carrier. The vessel has larger cargo hold capacity, and the fuel consumption has further been improved by 10% compared with the previous version of 83,000DWT type featuring 10% improvement in fuel efficiency from the existing design.

To improve the propulsion efficiency, the vessel is equipped with a low-speed and long-stroke electronically controlled main engine combined with a high-efficiency propeller and associated energy saving devices such as the Sanoyas STF (Sanoyas-Tandem-Fin (patent): max. 6% energy saving) on the stern shell and highly efficient appendages on the rudder, which also contribute to the reduction of CO_2 emissions.

Eco-friendly features of the vessel include various countermeasures such as main engine complying with the NO_x emission Tier II limit for the prevention of air pollution, Ballast Water Treatment System, and fuel oil tank protection to avoid contamination of the marine environment. In addition, independent holding tanks for accommodation discharges, dirty hold bilge, and rainwater on the upper deck are provided.

Furthermore, for improved vessel maintenance, access trunks are arranged to allow access from the upper deck to the double bottom even under the laden condition. Safe maneuverability is achieved with the well organized arrangement of the wheelhouse provided with wide rear visibility.

Principal particulars

Owner: Compania Flor De Vapores, S.A.
Hull No.: 1329
L (o.a.) x B x D x d: 229.00m x 32.24m x 20.20m x 14.668m
DWT/GT: 82,063t/43,314
Cargo hold capacity: 96,597m³ (grain)
Speed, service: 14.5kt
Main engine: MAN B&W 6S60ME-C8.2 diesel x 1 unit
MCO: 8,740kW
Complement: 25
Classification: ABS
Registry: Panama
Delivery: October 23, 2014

Naikai completes FERRY AZALEA, 495GT cargo/passenger/car ferry

Naikai Zosen Corporation completed construction of the FERRY AZALEA, a 495GT cargo/passenger/car ferry for the co-owner, the Japan Railway Construction, Transport and Technology Agency (JRTT) and Shinshinkisen Co., Ltd. at the Setoda Works. This is the first cargo/passenger/car ferry to enter service in the Izushoto Islands including Kozushima, Shikinejima, Niijima, and Toshima.

The features of the ferry to visit these small islands include the shore rampway installed at the stern for roll-on/off of passenger cars and the Thomson type derrick crane equipped on the bow, which allows the handling of cargo containers.

The ferry hull form is designed with bulbous bow and transom stern, the adoption of which ensures navigation safety and improvement of the propulsion and seakeeping performances. Employment of fin-stabilizers, anti-rolling tanks, and a large bilge keel reduces rolling during navigation as well as cargo-handling work at a wharf. A bow thruster and Schilling rudder, the maximum rudder angle of which is 70 degrees, ensure maneuverability entering and leaving a port, or at berthing and unberthing.

Principal particulars

L (o.a.) x B x D x d: 63.60m x 12.60m x 6.90m x 3.10m
DWT/GT: 282t/485
Cargo loading capacity
Ten passenger cars
Six 130-type containers
Eight net-cage containers
240 passengers
Nine crew members
One other member
Main engine: Niigata 6MG28AHX diesel x 1 unit
MCO: 2,060kW x 750/257min^{-1}
Speed, service: about 15.20kt
Classification: JG (Limited to coastal areas)
Completion: December 5, 2014

NORD HYDRA

Owner: Lepta Shipping Co., Ltd.
Builder: Hiroshima Shipyard, Imabari Shipbuilding Co., Ltd.
Ship type: Bulk carrier
L (o.a.) x B x D: 224.98m x 32.24m x 19.9m
DWT/GT: 76,450t/40,937
Main engine: Mitsui-MAN B&W 2 cycle diesel engine 6S60ME-C7.1 x 1 unit
Speed, service: about 14.5kt
Classification: NK
Completion: October 29, 2014

KYPROS UNITY

Owner: Gloverthree Shipping Corporation
Builder: Sasebo Heavy Industries Co., Ltd.
Hull No.: 821
Ship type: Bulk carrier
L (o.a.) x B x D x d (ext.): 225m x 32.20m x 20.00m x 14.429m
DWT/GT: 78,056t/41,759
Main engine: MAN B&W 6S60ME-C8.2 diesel x 1 unit
Speed, service: 14.4kt
Registry: Republic of Cyprus
Classification: BV
Completion: September 26, 2014

ANGELIC ZEPHYR

Owner: Kana Maritime S.A.
Builder: Kanda Shipbuilding Co., Ltd.
Hull No.: 544
Ship type: Log & cargo ship
L (o.a.) x B x D x d (ext.): 179.90m x 30.00m x 15.00m x 10.527m
DWT/GT: 37,780t/23,224
Main engine: 6UEC45LSE-B2 diesel x 1 unit
Speed, service: 14.30kt
Registry: Panama
Classification: NK
Completion: September 30, 2014

GLOBAL EFFORT

Owner: Oriente Maritime S.A.
Builder: Onomichi Dockyard Co., Ltd.
Hull No.: 594
Ship type: Super box-shaped bulker
L (o.a.) x B x D x d (ext.): 177.80m x 28.60m x 15.00m x 10.85m
DWT/GT: 37,072t/22,861
Main engine: Mitsubishi 6UEC45LSE-Eco-B2 diesel x 1 unit
Speed, service: 15.2kt
Registry: Panama
Classification: NK
Completion: October 29, 2014

GYOKO MARU

Owner: Japan Railway Construction, Transport and Technology Agency, Tofuku Kisen Kaisha, Ltd., and Taiheiyo Enkai Kisen Kaisha, Ltd.
Builder: Shin Kurushima Dockyard Co., Ltd.
Hull No.: S-5845
Ship type: Cement carrier
L (o.a.) x B x D x d: 114.53m x 19.00m x 9.50m x 7.313m
DWT/GT: 8,883t/5,882
Main engine: Hanshin Kawasaki-MAN B&W 5L35MC6 diesel x 1 unit
Output: 3,250kW
Speed, service: 12.50kt
Classification: NK
Completion: October 28, 2014

ECO INVICTUS

Owner: Kaizen Industries Ltd.
Builder: Sasaki Shipbuilding Co., Ltd.
Hull No.: S686
Ship type: LPG carrier
L (o.a.) x B x D x d: 99.98m x 17.20m x 7.80m x 6.10m
DWT/GT: 4,923t/4,294
Main engine: Kawasaki-MAN B&W 5L35MC6 diesel x 1 unit
Speed, service: about 13.4kt
Registry: Marshall Islands
Classification: BV
Completion: September 22, 2014