SEA-Japan

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Kawasaki completes LPG carrier, NS FRONTIER

Kawasaki Heavy Industries, Ltd. delivered the NS FRONTIER (HN: 1730), a liquefied petroleum gas (LPG) carrier to Astomos Energy Corporation on November 30, 2016. This vessel is the fourth of the 82,200m^3 SEA-Arrow type of LPG carrier, characterized by Kawasaki's uniquely developed bow shape called SEA-Arrow (Sharp Entrance Angle bow as an Arrow), which significantly improves propulsion performance by minimizing bow wave resistance.

The main engine powering the vessel is an energy-efficient, electronically-controlled, ultra-long-stroke, two-stroke low-speed diesel engine. In addition, the Kawasaki rudder bulb system with fins (RBS-F) and the semi-duct system with contra fins (SDS-F) contribute to reducing fuel consumption.

Four independent cargo tanks are installed in the cargo holds for carrying liquefied petroleum gas. The tanks are designed to provide optimal thermal insulation and absorb low-temperature contraction. The cargo tanks are made with special cryogenic steel for loading LPG with a minimum temperature of -46°C. The tanks are wrapped in urethane foam for thermal insulation.

The vessel is designed to be fully compliant with the New Panamax requirements and is able to navigate the newly expanded Panama Canal, which was completed in June 2016.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 229.90m x 226.00m x 37.20m x 21.00m x 11.20m
DWT/GT: 54,312t/46,885
Hold capacity: 82,402m^3
Main engine: Kawasaki-MAN B&W 7S60ME-C8.2 diesel x 1 unit
Complement: 29
Registry: Panama
Classification: NK

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JMU completes Aframax tanker, SHINSEI MARU

Japan Marine United Corporation (JMU) delivered the SHINSEI MARU, an Aframax tanker, to JX Ocean Company Limited at the Kure Shipyard on October 26, 2016.

The principal particulars of SHINSEI MARU have been optimized for the customer's domestic operation to distribute crude oil from the central storage facility to their refineries. As a result, the vessel is one of the largest classes of Aframax tankers with a large cargo tank capacity and deadweight.

Excellent hull performance was achieved by using various and comprehensive technologies, which include lower resistance hull form and optimized energy saving devices such as L.V. Fin (Low Viscous resistance Fin) and A.T. Fin (Additional Thrusting Fin). Thanks to that, Energy Efficiency Design Index (EEDI) is much improved.

To ensure safety and maintenance, the IMO Performance Standard for Protective Coatings (PSPC) is applied to the ballast water tanks. In addition, corrosion resistant steel which satisfies the IMO Performance Standard for Alternative Means of Corrosion Protection is used for the top and the bottom of cargo oil tanks.

For the sake of environmentally friendly transportation, the vessel is provided with Ballast Water Management System and the Inventory List of hazardous materials.

Principal particulars

L (o.a.) x B x D x d:	246.80m x 44.40m x 22.00m x 15.40m
DWT/GT:	119,932t/66,082
Main engine:	DU-WARTSILA 6RTA58T-D diesel x 1 unit
Speed, service:	14.50kt
Complement:	32
Registry:	Japan
Classification:	NK

MHISB completes new generation MOSS type LNG carrier, LNG MARS

Mitsubishi Heavy Industries Shipbuilding Co., Ltd. (MHISB) completed construction of the LNG MARS (HN:2296), a new generation MOSS type LNGC named the "SAYAENDO*" type with a tank capacity of 155,693m^3 (100% full), and delivered the vessel to Osaka Gas International Transport Inc. and Mitsui O.S.K. Lines, Ltd. on October 20, 2016.

The LNGC "SAYAENDO" design incorporates a continuous cover to house four spherical tanks, and also acts as a hull-reinforcing element, resulting in greater overall strength and reduction in weight. The continuous cover also improves propulsion performance by substantially reducing longitudinal wind resistance.

The conventional cover configuration requires complex structures to support the pipes, wires and catwalks atop the tanks. The integrated cover does not need such supporting structures, so improving maintainability.

The LNG MARS 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 with the same tank diameter. Consequently, the LNG MARS has higher cargo capacity and satisfies the New Panamax requirements.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d (designed):	288.0m x 275.0m x 48.94m x 26.0m x 11.55m
Gross tonnage:	136,710
Cargo tank capacity:	155,693m^3
Main engine:	Ultra Steam Turbine MR36-II x 1 unit
Output:	26,000kW x 74.0rpm
Speed, service:	19.5kt
Classification:	NK

Note: ** The name "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").*

MES completes 18th "neo60BC," MEDI BRISBANE

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) completed and delivered the 60,000DWT type bulk carrier MEDI BRISBANE (HN: 1917) at its Tamano Works on November 29, 2016 to Asian Shipping S.A., Panama. This is the 18th ship of the "neo60BC" series, the third Eco-Ship type of the MES "neo series."

The vessel is designed for loading various cargos like coal, ore, grain, as well as lengthy/heavy cargoes such as steel pipes and hot coils. The design achieves over 60,000 deadweight tons with Panamax beam and retains the neo56 compatibility for ports and trade routes.

The vessel has four cranes and five cargo holds and retains the superior usability of the "Mitsui 56" series. The size of the hatch opening is the largest for this type of vessel in terms of both length and width.

The new form of the bow and stern makes it possible to keep good performance under rough sea conditions as well as calm sea conditions and shows better maneuverability.

The main engine, a MITSUI-MAN B&W 6S50ME-B9.3 diesel engine, complying with the MARPOL NO_x restrictions (Tier-II) for exhaust gas emissions, gives superior fuel oil consumption over a wide range of outputs.

The ship has low sulfur fuel oil tanks, which are designed for operation in Emission Control Areas (ECAs), considering strengthened restrictions for SO_x.

Principal particulars

L (o.a) x B (mld.) x D (mld.):	199.99m x 32.25m x 18.50m
DWT/GT:	60,386t/34,589
Main engine:	Mitsui-MAN B&W 6S50ME-B9.3 diesel x 1 unit
Speed, service:	abt. 14.5kt
Complement:	25
Registry:	Panama
Classification:	NK
Delivery:	November 29, 2016

NAMURA completes 115,000DWT type Aframax tanker CSK VANGUARD

Namura Shipbuilding Co., Ltd. delivered the CSK VANGUARD, a 114,667DWT crude oil carrier built at its Imari Shipyard & Works, to Endeavor Tankers Pte. Ltd. on November 4, 2016.

The vessel is the sixth 44m beam Aframax tanker which complies with the Common Structural Rules for Namura and having deadweight about 115,000 tons.

The vessel was constructed to comply with the latest requirements of the international regulations, such as IMO PSPC-COT and PSPC-WBT for corrosion protection of cargo oil tanks and water ballast tanks to increase safety of the vessel.

Energy saving devices developed by Namura, including Namura flow Control Fin (NCF) and Rudder Fin attached to the stern, improve the propulsion performance, and the electronically controlled main engine contributes to reduction of fuel oil consumption.

The main engine and generator engine are compliant with the Annex VI of MARPOL 73/78 regulations (Tier II) to reduce NO_x emissions for environmental safety.

The cargo system of the vessel has three large capacity cargo oil pumps, which enable loading/unloading three grades of cargo oils, so automatic unloading for unloading cargo oils can be achieved more efficiently.

The ballast water treatment system to control the quality of ballast water is equipped for protection of marine environment prior to enforcement of the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

Principal particulars

L (o.a.) x B (mld) x D (mld) x d (mld):	249.97m x 44.00m x 21.20m x 14.80m
DWT/GT:	114,667t / 63,497
Main engine:	MAN B&W 6G60ME-C9.2 diesel x 1 unit
Speed, service:	about 14.4 kt
Complement:	32 + 6 (Workers)
Registry:	Singapore
Classification:	ABS

Oshima completes 90,000DWT-type bulk carrier, NOSHIRO MARU

Oshima Shipbuilding Co., Ltd. delivered the 90,000DWT-type bulk carrier NOSHIRO MARU, to Nippon Yusen Kabushiki Kaisha (NYK LINE) on September 28, 2016. This carrier is designed for carrying coal and ore cargoes.

Hull dimensions of this carrier is optimized to enter major ports in Japan as well as designed to be shallow draft and wide breadth, so is suitable for mass transport of bulk cargoes.

The five cargo holds are equipped with wide hatch covers to improve cargo-handling efficiency. Two large capacity ballast pump units are mounted to shorten the deballasting time required.

For marine environment conservation, the carrier employs the double hull structure for all fuel oil and diesel oil tanks to prevent oil spillage in case of hull damage. Collection tanks and a gray water tank are also adopted for storage of hold and deck washing water as well as inboard gray water.

Fuel consumption is decreased by adopting a set of Advanced Flipper-Fins, Propeller Boss Cap Fin (PBCF), low friction paint and electronically controlled diesel engine. Moreover, the Seaworthy Bow that demonstrates excellent seaworthiness is employed to improve ship speed performance under rough sea conditions.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 235.00m x 230.00m x 43.00m x 18.55m x 13.073m (summer)
DWT/GT: 90,794t/50,791
Loading capacity: 109,210m^3
Main engine: Mitsubishi 7UEC60LSE-Eco-A2 diesel x 1 unit
MCR: 10,890kW at 86.0rpm
Speed, service: 14.3kt
Classification: NK
Completion: September 28, 2016

Naikai completes 8,800GT passenger/car ferry, BLUE DOLPHIN

Naikai Zosen Corporation completed construction of the BLUE DOLPHIN, an 8,800GT passenger/car ferry, at the Setoda Shipyard for its owner, Seiko Shipping Co., Ltd. (Japan), on September 29, 2016. The ferry is now being operated by Tsugaru Kaikyo Ferry Co. Ltd. (Japan) on the Seikan Route (Aomori - Hakodate).

The ferry is a single engine and single propeller type passenger/vehicle carrier capable of transporting 583 passengers and 101 vehicles including passenger automobiles and chassis. Vehicles go aboard through ramp doors at the bow and stern and can move between decks via inboard ramps. The three vehicle decks allow the loading of many vehicles.

The single-hull type with a bulbous bow and conventional stern shape has been designed to increase propulsion and seakeeping performances. Fin stabilizers are attached to the midship section to reduce ship rolling during navigation. The ferry uses one bow and two stern thrusters together with a CPP and the Marinar rudder with maximum rudder angle of 45 degrees effective at a slow speed. These devices result in superior maneuverability of the ship in the narrow sea route and ports.

An escalator is provided for the convenience of passengers, and a starboard elevator allows the aged and the disabled to move from vehicle decks to passenger cabin decks, achieving a barrier-free environment.

Principal particulars

L (o.a) x B x D x d: 144.13m x 23.00m x 14.10m x 5.90m (designed at full load)
DWT/GT: 3,444t/8,850
Main engine: Hitachi Zosen MAN B&W 6S50MC-C8.2 diesel x 1 unit
MCO: 9,945kW x 127.0min^{-1}
Speed, service: about 20.0kt
Vehicle loading capacity
70 12m-long trucks
One 8m-long truck
30 passenger automobiles
Passenger accommodation capacity
583 passengers (limited to six hours travel)
33 crew members
Classification: JG (limited to coastal areas)
Completion: September 29, 2016

Sanoyas completes Supramax bulk carrier, BASIC PORTLAND

Sanoyas Shipbuilding Corporation completed construction of the Supramax bulk carrier, BASIC PORTLAND (HN: 1341), at its Mizushima Shipyard on September 28, 2016. This is the third vessel of the 60,000DWT Supramax bulk carrier series newly developed by Sanoyas.

This series has large deadweight and can achieve superior fuel efficiency under the condition that the length is less than 200m. The hull form has been optimized to increase performance in actual seas including waves, resulting in improved overall performance, with lower fuel consumption and reduced emissions.

The main engine is a low-speed and long-stroke electronically controlled type combined with a high-efficiency propeller to increase propulsion efficiency. Moreover, the associated energy-saving devices are used to improve propulsion performance, which include the Sanoyas-developed "STF" (Sanoyas-Tandem-Fin: patented and 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.

Various eco-friendly countermeasures are provided, which are the main engine conforming to NO_x emission Tier II limit for the prevention of air pollution, a dedicated low sulfur diesel oil tank to cruise in Emission Control Areas (ECAs), the Ballast Water Treatment System (BWTS), and fuel oil tank protection to protect the marine environment. In addition, independent holding tanks for accommodation discharges, dirty hold bilge and rainwater on upper deck are arranged.

The vessel has five cargo holds with hatch openings maximized to load various cargoes such as grain, ore, coal, hot coils, and steel pipes. Four 31-ton deck cranes are installed for efficient cargo handling. Access trunks are provided for easy access from the upper deck to the double bottom even under loaded conditions, which will greatly improve ship maintenance.

Principal particulars

Hull No.:	1341
Ship type:	Bulk carrier
L (o.a.) x B x D x d (summer):	199.990m x 32.240m x 18.380m x 12.868m
DWT/GT:	60,513t/34,157
Cargo hold capacity: (grain)	77,067m^3
Main engine:	MAN B&W 6G50ME-B9.3 diesel x 1 unit
MCO:	7,740kW
Speed, service:	about 14.3kt
Complement:	24
Registry:	Panama
Classification:	ABS
Delivery:	September 28, 2016

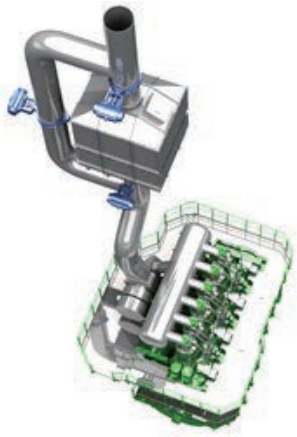
Hitachi Zosen develops new marine-use NO_x remover

— High and low pressure exhaust line fitting possible —

Hitachi Zosen Corporation (Hitz) will start marketing of a newly-developed marine-use NO_x remover using a low pressure - selective catalytic reduction (LP-SCR) method in April 2017.

Hitz has already commercialized the HP-SCR (high-pressure type) NO_x remover for low-speed two-stroke diesel engines, which comply with IMO emission standards Tier III. The HP-SCR device is used at the exhaust gas intake side of a turbocharger. In contrast, the new LP-SCR device will be installed at the outlet side of the turbocharger, so allowing Hitz devices to flexibly cope with environment regulations and needs of customers.

The HP-SCR device is designed with simple assembly of components, which has superior use of space, but must be mounted close to the engine. Therefore, certain ship or engine types may require complex pipings necessary for the device.



Looked-down Image of LP-SCR NO_x Remover

The LP-SCR device is difficult to assemble in confined spaces but can be mounted separately from the engine. Thus, the LP-SCR device is applicable to all ship and engine types even if the HP-SCR device is difficult to install.

The main features of the LP-SCR NO_x remover are possible to install at the downstream side of a turbocharger; applicable to any engine type, exhaust gas volume, or licensed engine; superior connectivity with multiple turbochargers via pipings; easy arrangement of machinery and independently mounted from an engine; and unnecessary to convert arrangement of engine-side installations.

NSU TRUST

Owner: Emma Line S.A.
Builder: Imabari Shipbuilding Co., Ltd.
Ship type: Bulk carrier
L (o.a.) x B x D: 299.9m x 50.0m x 24.7m
DWT/GT: 207,000t/107,500
Main engine: MAN B&W 6G70ME-C9.2 diesel x 1 unit
Speed, service: 14.60kt
Classification: NK
Completion: November 29, 2016

SOLOMON SEA

Owner: Indigo Marine Shipping S.A.
Builder: Sumitomo Heavy Industries Marine & Engineering Co., Ltd.
Hull No.: 1385
Ship type: Tanker
L (p.p.) x B x D: 224.64m x 42.00m x 21.45m
DWT/GT: 106,200t/57,164
Main engine: Mitsui MAN B&W 6S60ME-C8 diesel x 1 unit
Speed, service: about 15.0kt
Classification: LR
Completion: November 10, 2016

KEY WEST

Owner: Key West Shipping Limited
Builder: Kanda Shipbuilding Co., Ltd.
Hull No.: 556
Ship type: Log & bulk carrier
L (o.a.) x B x D x d (ext.): 179.9m x 30.0m x 15.0m x 10.527m
DWT/GT: 37,599t/23,275
Main engine: 6UEC45LSE-Eco-B2 diesel x 1 unit
Speed, service: 14.0kt
Registry: Hong Kong
Classification: NK
Completion: January 27, 2017

EPIC BONAIRE

Owner: Epic Bonaire Pte. Ltd.
Builder: Sasaki Shipbuilding Co., Ltd.
Hull No.: 693
Ship type: LPG carrier (Pressure type)
L (o.a.) x B x D x d (ext.): 113.08m x 19.00m x 9.10m x 6.80m
DWT/GT: 7,182t/6,220
Main engine: Hitachi MAN B&W 5L35MC-6.1 diesel x 1 unit
Speed, service: 13.5kt
Registry: Singapore
Classification: ABS
Completion: August 22, 2016

FJ STAR

Owner: F.J. Lines Inc.
Builder: Shin Kurushima Toyohashi Shipbuilding Co., Ltd.
Hull No.: S-3697/S-5893
Ship type: Bulk carrier
L (o.a.) x B x D x d: 196.5m x 32.26m x 18.7m x 11.4m
DWT/GT: 61,225t/35,025
Main engine: Mitsui-MAN B&W 6S50ME-B9.5 diesel x 1 unit
Speed, service: 14.5kt
Registry: Panama
Classification: NK
Completion: September 7, 2016

INDIGO ACE

Owner: I.M.S. Maritime S.A.
Builder: Tsuneishi Shipbuilding Co., Ltd.
Hull No.: 1549
Ship type: Bulk carrier (KAMSARMAX)
L (o.a.) x B x D: 229.00m x 32.26m x 20.00m
DWT/GT: 81,786t/43,068
Main engine: MAN-B&W 6S60ME-C8.2 diesel x 1 unit
Speed, service: 14.5kt
Registry: Panama
Classification: ABS
Completion: November 28, 2016