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Imabari Shipbuilding acquires ClassNK AiP certificate for LPG dual-fueled Capesize bulk carrier

LPG dual-fueled Capesize bulker (an image)

Imabari Shipbuilding Co., Ltd. has acquired AiP (Approval in Principle: basic design approval) for an LPG dualfueled Capesize bulk carrier from Nippon Kaiji Kyokai (ClassNK) for the first time in the world.

This AiP confirms that ClassNK examined and approved the basic design as satisfying ClassNK standards. Imabari carried out thorough research for the optimum design for the 180,000DWT-type bulk carrier in cooperation with Mitsubishi Shipbuilding Co., Ltd.

One of the recent international requirements for the environment is reduction of greenhouse gas (GHG) and other emissions. Therefore, Imabari has been continuing R&D for ship design using LPG as an environmentally friendly fuel. Based on the physical properties and characteristics peculiar to a LPG, Imabari carried out risk assessment (HAZID: Hazard Identification Study) for each component design of the ship to achieve greater safety and reliability.

This design eliminates the necessity for special consideration of boil-off gas with the design handling LPG at room temperature and high pressure, which makes the ship operation easier. In addition, the ship has been designed with extensive consideration towards cost competitiveness by eliminating the use of low-temperature resistant materials such as stainless steel and cryogenic insulation.

The LPG fuel tank is planned/designed to be installed in the aft area of the bridge, which has a round-trip distance capacity between Japan and Australia. Maritime LPG supply bases and infrastructure are now globally developed and improved, which makes ship operation more flexible. This was another consideration in the present design.

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JMU completes 1st J-Series 82,400DWT bulk carrier, SAKIZAYA STAR

Japan Marine United Corporation has delivered SAKIZAYA STAR, the first J-Series 82,400DWT bulk carrier at the Maizuru Shipyard on March 27, 2020.

This is the first vessel of Panamax bulk carrier of J-Series, called J82BC, which is successful in both economical and environmental friendly design. This J-Series is applied with MARPOL ANNEX VI NO_x Tier III and SO_x emission regulation, in addition to CSR BC&OT (Common Structural Rules for Bulk Carriers and Oil Tankers). These regulations/rules make the ship environmental friendly and more secure in hull structure. On the other hand, these have negative impacts in economical design as decrease of cargo hold capacity, deadweight and increase of fuel oil consumption. However, using the latest JMU technology, JMU has overcome these negative impacts in design and achieved more cargo capacity, deadweight, and lower fuel consumption, compared with the previous series called G81BC which is categorized as Phase 1 of Energy Efficiency Design Index (EEDI). J82BC is so improved as to be categorized as Phase 2 of EEDI. J82BC has larger deadweight and cargo hold capacity suitable for carrying grain, bulk coal and iron ore in its 7 cargo holds, and has been developed with expertise and vast experience.

SSD® (Super Stream Duct®) and SURF-BULB® equipped fore and aft of its propeller respectively, much improve the propulsion performance. In addition, ALV-Fin® (Advanced Low Viscous Resistance Fin) equipped fore of its propeller controls stern flow to get better propulsive efficiency. Furthermore, well-refined shape of superstructure can attain low wind resistance.

Principal particulars

L (o.a.) x B (mld) x D (mld) x d (mld):	229.0m x 32.26m x 20.20m x 14.55m
DWT/GT:	82,516t/44,314
Main engine:	MAN B&W 6S60ME-C8.5-EGRBP diesel x 1 unit
Speed:	14.5kt
Complement:	25
Classification:	ClassNK

Namura completes Malaccamax-type VLCC, FUJISAN MARU

Namura Shipbuilding Co., Ltd. delivered the 312,499DWT VLCC, FUJISAN MARU, built at its Imari Shipyard & Works, to Iino Kaiun Kaisha, Ltd. on March 23, 2020. The vessel is the fourth of the newly developed 310,000DWT type VLCC complying with the Harmonized Common Structural Rule (CSR-BC&OT) for Namura. The vessel has increased length of about 339m, maximizing the loading capacity and propulsion performance by improving the hull form, and increasing safety and economic efficiency. The vessel also complies 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.

The propulsion performance has been greatly improved by adoption of energy saving devices developed by Namura, which include the Namura flow Control Fin (NCF) and the Rudder Fin attached to the stern, together with the wind force reduction type superstructure, hub vortex reduction type propeller boss cap, low-friction type antifouling paint applied to the outside shell, and an electronically controlled main engine which contributes to reduction of fuel oil consumption.

For environmental protection, the vessel is equipped with a main engine and generator engine compliant with the Annex VI of MARPOL 73/78 regulations (Tier II) to reduce NO_x emissions, and a SO_x scrubber is installed for reducing SO_x emissions under the policy of the IMO 2020 global sulphur cap.

The vessel has three large capacity cargo oil pumps that enable loading/unloading of three grades of cargo oils and two cargo oil stripping eductors for unloading cargo oils more efficiently. The ballast water treatment system to control the quality of ballast water is equipped for protection of the marine environment to comply with 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.) :	338.92m x 60.00m x 21.05m
DWT/GT:	312,499t/160,106
Complement:	30 + 6 (Workers)
Classification:	ClassNK
Registry:	Japan

Oshima completes 100,000DWT-type bulk carrier DIETRICH OLDENDORFF

Oshima Shipbuilding Co., Ltd. delivered the DIETRICH OLDENDORFF, a 100,000DWT type bulk carrier, to Oldendorff Drybulk GmbH & Co. KG on March 13, 2020. This is the first delivery of the 100,000DWT-type of bulk carrier developed by Oshima, which has been optimized for carrying coal, grain, ore, and hot coils.

For higher propulsion efficiency, an electronically controlled main engine and a high efficiency propeller are equipped. In addition, the Oshima original energy saving devices, "Advanced Flipper Fins," "Rudder Fin," and "Seaworthy Bow," are installed for further improved propulsion efficiency. With these installations, the vessel can achieve over 30% reduction from the IMO EEDI (Energy Effiiciency Design Index) reference line, which means less CO_2 emissions per dead weight ton and nautical mile.

For environmental conservation, a SO_x scrubber has been installed to achieve environmentally friendly ship operation, reducing SO_x emissions and complying with the strict IMO regulations.

The Propeller Shaft Condition Monitoring System of ClassNK is also applied for easy management of propeller shaft conditions, and the main propulsion machinery uses automatic and remote control systems with the "M0" notation of ClassNK. Mooring arrangements will satisfy the requirements for the expanded New Panama Canal for wider trade routes.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d:	234.96m x 231.00m x 38.00m x 20.62m x 15.040m (Summer)
DWT/ GT:	100,449t/53,219
Loading capacity:	115,356m^3
Main engine:	Mitsui MAN B&W 6G60ME-C9.5 diesel x 1 unit
MCR:	9,000kW at 72.0rpm
Speed, service:	about 14.0kt
Classification:	ClassNK
Completion:	March 13, 2020

MHIMSB completes 83,000m^3-type LPG carrier, BW YUSHI

Mitsubishi Shipbuilding Co., Ltd. (MHIMSB) completed construction of BW YUSHI (HN: 2336), an LPG carrier with a tank capacity of 83,315m^3, and delivered the vessel on February 13, 2020. The vessel is the 14th of the third generation LPGC series that was developed based on the first and second generation LPGC series, of which the MHI Group has delivered 49 vessels in total.

This new LPGC has been designed with the concepts of environmentally-friendly, easy and flexible operation and maintenance and high reliability as the main features. Higher propulsive performance with less vibration compared with the conventional LPGC was achieved by the advanced hull form, optimum design of the propeller and Mitsubishi Reaction Fin. Furthermore, a SO_x scrubber is fitted to satisfy the SO_x global cap limitation which entered into force in 2020 and an electronically controlled main engine with low fuel consumption is installed to comply with NO_x limitation Tier II. The Ballast Water Treatment System is installed onboard.

The vessel can carry commercial propane, which contains up to 5mol% of ethane with 3 sets of reliquefaction systems. In addition, various improvements are incorporated for efficient and flexible cargo operations such as higher unloading rate using auxiliary cargo pumps, elimination of loading restrictions, cargo manifold arrangement allowing docking at various terminals, etc. Necessary fittings are arranged to pass through the Neopanamax Locks.

Higher reliability was achieved using the IMO IGC-code type B independent tank newly developed based on the feedback from long experience, design expertise accumulated through construction of MOSS type LNG carriers and the state-of-the-art structural analysis system MHI-DILAM (Direct Loading Analysis Method).

Principal particulars

L (o.a.) x L (b.p.) x B x D x d:	230.0m x 219.0m x 36.6m x 21.65m x 11.575m (Summer)
Gross tonnage:	48,122
Cargo tank capacity:	83,315m^3
Main engine:	MAN Diesel & Turbo Marine Diesel Engine 7S60ME-C8.5 x 1 unit
Output:	13,000kW x 100min^{-1}
Speed, service:	16.6kt
Classification:	ClassNK

Sanoyas completes PANAMAX bulk carrier, AQUABEAUTY

Sanoyas Shipbuilding Corporation delivered the Panamax bulk carrier, AQUABEAUTY, constructed at its Mizushima Shipyard on May 19, 2020. This is the 20th vessel of the Sanoyas newly developed 82,000DWT type series of Panamax bulk carriers. The vessel has larger cargo hold capacity and further improved fuel consumption by about 20% compared to the original 83,000DWT type. The vessel achieves Phase 2 level of the EEDI (Energy Efficiency Design Index: grams CO_2 per ton nautical mile) regulation that will apply to ships for which the building contract is placed on and after January 1, 2013.

For improvement of propulsion efficiency, the vessel is equipped with low-speed, long-stroke electronically controlled main engine combined with a high-efficiency propeller and associated energy saving devices such as the Sanoyas developed "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.

Various eco-friendly features are incorporated such as the main engine compliant with the NO_x emission Tier II limit for the prevention of air pollution, dedicated low sulphur diesel oil tank to cruise in ECAs (Emission Control Areas), Ballast Water Treatment System and fuel oil tank protection for the protection of marine environment. In addition, independent holding tanks for accommodation discharges, dirty hold bilge, and rainwater on upper deck are provided.

Furthermore, for improvement of vessel maintenance, access trunks are arranged from the upper deck to double bottom even under the laden condition. Wooden furniture in the accommodation increases officer and crew comfort and safe maneuverability is achieved with the organized arrangement and rear visibility in the wheelhouse.

Principal particulars

Hull No.:	1363
L (o.a.) x B x D x d:	229.00m x 32.24m x 20.20m x 14.668m (Summer)
DWT/GT:	82,023t/43,376
Cargo hold capacity:	96,597m^3 (grain)
Speed, service:	about 14.5kt (at C.S.O. with 15% sea margin)
Complement:	25
Classification:	ClassNK
Delivery:	May 19, 2020

Mitsui E&S Machinery Co.

Production of large marine diesel engines in FY2019

Mitsui E&S Machinery Co., Ltd. (MES-M) has announced that its machinery plant produced 200 units of Mitsui MAN-B&W low speed diesel engines totaling 3.62 million horsepower in FY2019, compared to 164 units and 3.89 million horsepower in the previous fiscal year.

MES-M first concluded a technical alliance with B&W (currently, MAN Energy Solutions) of Denmark for the manufacture of diesel engines in 1926, and has since become a top global manufacturer with cumulative production exceeding 100 million horsepower. MES-M plans to produce 165 units of 3.75 million horsepower in the current fiscal year.

MES-M has installed a four-cylinder test engine with a 500-mm cylinder radius in the Tamano Works machinery plant to develop products to respond to the NO_x Tier III regulations promoted by the International Marine Organization (IMO) and CO_2 reduction. MES-M will also accelerate responses to NO_x regulations, SO_x regulations and fuel diversification, as well as systems that flexibly address customer needs.

MES-M will undertake sales activities of these diesel engines and gas burning diesel engines that confirm to NO_x regulations. MES-M will also continue to engage in sales activities of engines for bulkers, tankers, car carriers, and LPG vessels.

[Production records and plans for Mitsui MAN-B&W low speed diesel engines in the recent 5 years]

FY2016:	180 units/3.76 million horsepower
FY2017:	146 units/3.77 million horsepower
FY2018:	164 units/3.89 million horsepower
FY2019:	200 units/3.62 million horsepower
FY2020:	165 units/3.75 million horsepower

(*Numbers for FY2020 are planned)

Tsuneishi completes 500th ship of its long-selling TESS series

Tsuneishi Shipbuilding Co., Ltd. has constructed and delivered the 500th ship of its long-selling environmentally friendly TESS series of bulk carriers at its shipbuilding site, Tsuneishi Heavy Industries (CEBU), Inc. The name TESS (Tsuneishi Economical Standard Ship) signifies the excellent economical fuel consumption performance, and high versatility in service. The TESS design has highly been appreciated by its customers since the first ship was completed in 1984.

Handymax bulk carriers used to have a deadweight of 36,000 tons, but Tsuneishi Shipbuilding was the first in the shipbuilding industry to introduce the 40,000-ton TESS40 to the market, and was highly evaluated by ship owners, especially in Europe, resulting in the expanded market. Custom-made shipbuilding used to be common in the shipbuilding industry. However, Tsuneishi Shipbuilding developed a standard ship model based on market research, and can propose solutions to customers.

Variations on the original design, such as TESS45, TESS52, and TESS58 were gradually added. The 300th ship was completed in January 2012. The TESS64 AEROLINE design, a 64,000-ton type bulk carrier, was used for the 500th ship and has a distinctive rounded streamline-shaped bow, with wind pressure resistance reduced by 10% compared to conventional models. The TESS64 is also equipped with FAIS*, which improves engine combustion efficiency, and an electronically-controlled engine, both of which improve fuel efficiency by approximately 20% compared to the TESS58.

Tsuneishi Shipbuilding says it will continue to build ships that are favored by ship owners and support marine transportation in the world.

*Note: *Fresh Air Intake System, or FAIS, is an air supply system using an air duct to directly intake fresh air from outside the ship to enhance engine combustion efficiency. Compared to conventional systems, the FAIS can lower the temperature of the air supplied to the engine by approximately 10 degrees Celsius.*

Naikai builds 8,800GT passenger/car ferry, BLUE LUMINOUS

Naikai Zosen Corporation completed construction of the BLUE LUMINOUS, an 8,800GT passenger/car ferry, for Tsugaru Kaikyo Ferry Co., Ltd. of Japan on June 1, 2020.

Tsugaru Kaikyo Ferry is now operating the newly built ship between Hakodate (Hokkaido) and Aomori/Oma (Honshu) on the regular services.

The BLUE LUMINOUS has an escalator for passengers' convenience, and the aged and the disabled can directly move between car decks and the cabine entrance by an elevator installed at the starboard side. Automobiles and trucks can be loaded on three vehicle decks, which provide ample roll-on/off loading capacity, through shore-ramp doors at the bow and stern and inboard ramps.

The ferry is the single engine/single propeller type and has the bulbous bow and ordinary single hull stern to improve propulsion efficiency and seaworthiness. The ferry uses one bow and two stern thrusters together with a CPP and the Mariner rudder with maximum rudder angle of 45 degrees effective at a slow speed. These devices result in superior maneuverability of the ship in narrow sea lanes and ports. Steady navigation is ensured by the fin-stabilizers at both sides of the mid section.

Principal particulars

L (o.a.) x B x D x d: 144.13m x 23.00m x 14.10m x 6.00m (ext.)	
DWT/GT:	3,440t (at scantling)/8,800
Loading capacity	
Crew:	33 members
Passengers:	583 (in less 6 hrs navigation)
Trucks:	70 units (12m long type)
	1 units (8m long type)
Automobiles:	30 units
Main engine:Hitachi Zosen MAN B&W 6S50MC-C8.2 diesel x 1 unit	
MCR:	9,945kW x 127.0min^{-1}
Speed, service:	About 20kt
Classification:	JG (Coasting area)
Port of registry:	Aomori City, Japan
Completion:	June 1, 2020

IONIC ARIADNE

Owner: Ionic Ariadne Inc.
Builder: Sumitomo Heavy Industries Marine & Engineering Co., Ltd.
Hull No.: 1401
Ship type: Crude oil carrier
L x B x D: 228.96m x 44.00 x 21.8m
DWT/GT: about 111,600t/about 60,600
Main engine: Hitachi MAN B&W 6G60ME-C9.5 diesel x 1 unit
Speed: 15.0kt
Classification: LR
Registry: Marshall Islands
Completion: June 10, 2020

OCEAN LEGEND

Owner: Ocean Legend Maritime Inc.
Builder: Sasebo Heavy Industries Co., Ltd.
Hull No.: S860
Ship typ: Bulk carrier
L (o.a.) x B x D x d (mld.): 225.00m x 32.20m x 20.00m x 14.40m
DWT/GT: 78,208t/41,766
Main engine: MAN B&W 6S60ME-C8.5 diesel x 1 unit
Speed, service: 14.4kt
Classification: ClassNK
Resistry: Hong Kong
Completion: February 19, 2020

IZUMO HERMES

Owner: Cedar Valley S.A.
Builder: Onomichi Dockyard Co., Ltd./ Saiki Heavy Industries Co., Ltd.
Hull No.: 726
Ship type: Bulk carrier
L (o.a.) x B x D x d (ext.): 174.44m x 30.00m x 15.10m x 10.50m
DWT/GT: 37,301t/23,765
Main engine: MAN B&W 6S46ME-B8.5 diesel x 1 unit
Speed, service: 14.7kt
Classification: ClassNK
Registry: Panama
Completion: February 27, 2020

TAIAN NO.2

Owner: Ta Tong Marine Co., Ltd.
Builder: Sasaki Shipbuilding Co., Ltd.
Hull No.: 708
Ship type: Oil tanker
L (o.a.) x B x D x d (ext.): 79.92m x 12.00m x 6.30m x 5.10m
DWT/GT: 2,489t/1,599
Main engine: Daihatsu 6DEM-23L diesel x 1 unit
Output: 1,471kW x 900rpm
Speed, service: 12.48kt
Classification: CR
Registry: Taiwan
Completion: April 21, 2020

ARIES SAKURA

Owner: Panamanian owner
Builder: Shin Kurushima Toyohashi Shipbuilding Co., Ltd.
Hull No.: S-6075/S-3736
Ship type: Bulk carrier
L (o.a.) x B x D: 182.87m x 31.0m x 14.7m
DWT/GT: 39,870t/25,012
Main engine: Makita 6S46ME-B8.5-HPSCR diesel x 1 unit
Speed, service: 14.0kt
Classification: ClassNK
Registry: Panama
Completion: June 30, 2020

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