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For zero-emission and automatic navigation

Oshima completes Japan's first electric battery-driven ferry e-Oshima

Oshima Shipbuilding Co., Ltd. completed the E/V e-Oshima, a 340GT type electric battery-driven ferryboat, on June 12, 2019. The e-Oshima has been designed as a ferryboat for transporting Oshima's customers from its shipyard to the opposite shore. The ferryboat has the following features for zero emission and safe automatic navigation.

The main propulsion system includes two azimuth-thruster units driven by electric motors, which also facilitate berthing and unberthing. Electric power is supplied by a 600kWh battery with adequate capacity to make several crossings. The battery power source allows the ferryboat to be completely free from emissions with less noise and vibration for passenger comfort.

The e-Oshima is Japan's first civilian vessel that uses a DC (direct current) grid system. The DC power distribution system is compact, so the internal arrangements are more flexible, and power distribution from the battery to the thrusters is very effiicient.

The automatic ship navigation system installed on the e-Oshima has been developed jointly by Oshima and MHI Marine Engineering, Ltd. The system functions mainly control course keeping and speed, with collision and grounding avoidance as well as support for berthing and unberthing. An actual demonstration of the automatic navigation system carried out with the ferryboat showed that collision with other vessels and grounding could be automatically avoided. This automatic ship navigation system was selected as one of the automated vessel projects for FY2018 promoted by Japan's Ministry of Land, Infrastructure, Transport and Tourism. The verification test will be conducted to assess the system performance and safety in 2019.

Oshima has a management policy of "emphasizing the global environment," so Oshima Shipbuilding Co. will continue to supply innovative vessels like the E/V e-Oshima which incorporate energy-saving technologies and next-generation environmental technologies for marine transport.

Principal particulars

L (o.a.) x B x D x d (Summer):	abt. 35.00m x 9.60m x 3.80m x 2.60m
GT:	340 (JG)
Loading capacity:	50 passengers 1 bus and 4 cars, or 8 cars
Battery capacity:	abt. 600kWh
Speed, service:	Max 10.0kt
Classification:	JG (calm water area, limited within 5 nm)
Registry:	Japan (Saikai City, Nagasaki Pref.)
Completion:	June 2019

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JMU completes 83,000m³ type LPG carrier, LILAC PROMENADE

Japan Marine United Corporation (JMU) delivered the LILAC PROMENADE, a 83,000m³ type liquefied petroleum gas (LPG) carrier, to SMILE SHIPHOLDING S. A. at its Ariake shipyard on May 31, 2019. This is the first vessel of the very large gas carrier (VLGC) newly developed after integration of Universal Shipbuilding Corporation and IHI Marine United Inc. This is the first VLGC constructed by JMU in fifteen years. The vessel was designed to consider port restrictions of both in Japan and worldwide. In addition, the vessel is designed to comply with the regulations for the new Panama Canal.

The IMO Type A independent cargo tanks which has much construction records and soundness are installed in cargo holds. Complete secondary barrier is made using steel for low temperature. Various latest technologies developed through JMU's experience in shipbuilding have been incorporated into the vessel. High propulsion performance is achieved by the application of lower resistance and high effiiciency hull form and optimized energy saving devices such as the Super Stream Duct®, SURF-BULB® and ALV-Fin®. Fuel oil consumption is further improved by application of the new electronically controlled marine diesel engine and low friction paint. Phase 2 of the Energy Effiiciency Design Index (EEDI), which is required for vessels contracted for construction on or after 2020, is achieved.

Principal particulars

L (o.a.) x B x D x d: 230.0m x 36.6m x 22.2m x 11.3m
DWT/GT: 53,100t/51,000
Main engine: WinGD 7RT-flex58T-D diesel x 1 unit
Speed, service: 16.75kt
Complement: 30
Classification: ClassNK

Kawasaki delivers first SO_x scrubber-equipped LPG carrier PYXIS PIONEER

Kawasaki Heavy Industries, Ltd. delivered the PYXIS PIONEER (HN: 1737), an 82,200m³ capacity LPG carrier, to Kumiai Navigation (Pte) Ltd. on April 23, 2019. This is Kawasaki's 58th LPG carrier, and the first vessel to include a SO_x scrubber.

This vessel adopts Kawasaki's uniquely developed bow shape called SEA-Arrow, which significantly improves propulsion performance by minimizing bow wave resistance. The main engine is an energy-effiicient, 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) are fitted to reduce fuel consumption.

To satisfy the new restrictions on SO_x emissions which will be implemented by the International Maritime Organization (IMO) in 2020, the vessel includes a set of SO_x scrubbers at the exhaust gas outlets of the main engine and the power generator. This system can also reduce the cost of fuel oil, since general purpose fuel oil can continue to be used after the regulations are tightened, without the need to switch to low sulfur fuel oil.

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 minus 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 can 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: 53,928t/47,236
Hold capacity: 82,391m³
Main engine:Kawasaki-MAN B&W 7S60ME-C8.2 diesel x 1 unit
Complement: 29
Classification: ClassNK
Registry: Singapore

MHIMSB completes 83,000m^3-type LPG carrier, FUTURE ACE

–Japan's first newbuilding VLGC equipped with SO_x scrubber–

Mitsubishi Shipbuilding Co., Ltd. (MHIMSB) completed construction of FUTURE ACE (HN: 2337), an LPG carrier with a tank capacity of 83,272m^3, and delivered the vessel on March 29, 2019. This is the first newbuilding VLGC equipped with SO_x scrubber in Japan. This is the first time Mitsubishi Shipbuilding has utilized the SO_x scrubber for a ship built in-house. The vessel is the 12th of the third generation LPGC series which was developed based on the first and second generation LPGC series, of which the MHI Group has delivered 49 vessels in total of the first and second generations.

This new LPGC has been designed with a concept of environmentally-friendly, easy and flexible operation and maintenance and high reliability as main features. Higher propulsive performance with less vibration compared with the conventional LPGC was achieved by the sophisticated hull form, optimum design of propeller and Mitsubishi Reaction Fin. Furthermore, the SO_x scrubber is fitted to satisfy the SO_x global cap limitation which will come 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.

Various improvements are incorporated for effiicient and flexible cargo operation such as increase of unloading rate by auxiliary cargo pumps, elimination of loading restrictions, cargo manifold arrangement allowing docking at various terminals, etc. In addition, necessary fittings are arranged to pass through the Neopanamax Locks.

Higher reliability was achieved by the IMO IGC-code type B independent tank newly developed based on feedback from long experience, design nowhow accumulated through constructions 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)

GT: 48,167

Cargo tank capacity: 83,272m^3

Main engine: MAN Diesel & Turbo Marine Diesel Engine 7S60ME-C8.5 x 1 unit

Output: 13,000kWh x 100min^{-1}

Service speed: 17.0kt

Classification: ClassNK

Sanoyas provides FGSS and engineering service for LNG fueled ships

Sanoyas Shipbuilding Corporation has decided to provide a Fuel Gas Supply System (FGSS) and support engineering service for LNG fuelled ships. Due to the global environmental regulations, fuelling of ships is shifting from diesel oil to clean energy. As a solution, natural gas is now utilized more because of its clean emissions.

Sanoyas has advanced technologies in designing and constructing various vessels as well as rich experiences in building pressurized LPG storage tanks including semi-refrigerated gas tanks, and associated gas piping arrangements onboard. Based on its expertise of marine engineering and gas storage tanks, Sanoyas has entered the business FGSS/engineering service to cope with growing needs.

The company has already delivered its first FGSS to Yanmar Co., Ltd. of Japan. This FGSS will be installed on a bunker tanker to be operated in Singapore; the tanker is scheduled to be completed in December 2019. The FGSS is a low-pressure type consisting of a double-shell vacuum-insulated LNG storage tank (photo), a vaporizer, a buffer tank, etc. which is used for four-cycle medium speed dual-fuel engines.

The FGSS does not use any supply pumps, but operates with a simple system that pressurizes the tank inside with a pressurizer and a pressure control valve. The controlled pressure then supplies fuel LNG to the vaporizer from the storage tank.

Sanyas has confirmed the quality of FGSS by good boil-off rate of 0.114%/day of the LNG storage tank, which had been proved by the thermal insulation performance test carried out before the shipment.

More vessels are expected to use LNG as marine fuel in the future. So Sanoyas says that it will offer the FGSS to any projects regardless of ship types, sizes, operation method, etc. Furthermore, the company will provide the enhanced FGSS for large vessels like bulk carriers.

Namura completes Malaccamax-type VLCC, APOLLO ENERGY

Namura Shipbuilding Co., Ltd. delivered the 312,513DWT VLCC, APOLLO ENERGY, built at its Imari Shipyard & Works, to KATORI NAVIERA S.A. on April 17, 2019. The vessel is the second of the newly developed 310,000DWT-type VLCC compliant with the Harmonized Common Structural Rule (CSR-BC&OT) for Namura.

The vessel has a length of about 339m to maximize the loading capacity and improved hull form for better propulsion performance. Safety and economic effiiciency of the vessel has been increased. The vessel also complies with the latest requirements of international regulations, such as the 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 greatly been 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 ECO-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 safety, 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.

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 effiiciently. 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.) : 338.95m x 60.00m x 21.05m
DWT/GT: 312,513t/159,984
Complement: 35 plus six (workers)
Registry: Panama
Classification: ClassNK

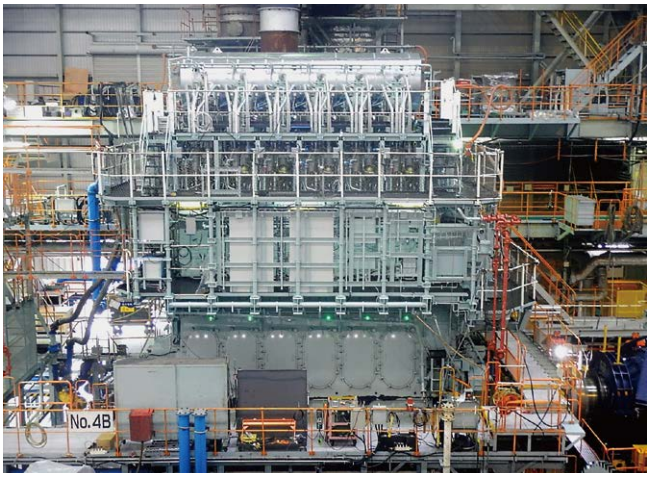
Production record of large marine diesel engines in FY2018

Mitsui E&S Machinery Co., Ltd. (MES-M) today announced that its machinery plant (Tamano-shi, Okayama) produced 164 units and 3.89 million horsepower of Mitsui MAN-B&W low speed diesel engines in FY2018 (146 units and 3.77 million horsepower in the previous fiscal year).

Since the conclusion of a technical alliance with B&W (currently, MAN Energy Solutions) in Denmark on diesel engines in 1926, MES-M has a track record of production as a top global manufacturer, whose cumulative production horsepower exceeds 100 million horsepower. In the current fiscal year, it plans to produce 208 units and 3.98 million horsepower. In addition, MES-M has installed a four-cylinder test engine with a 500-mm cylinder radius in the Tamano Works machinery plant and is developing products to respond to NO_x Tier III regulations promoted by the International Marine Organization (IMO) and CO_2 reduction.

MES-M will also accelerate activities for NO_x regulations, SO_x regulations and fuel diversification, as well as build a system that flexibly addresses customer requests.

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



[Production records and plan of Mitsui MAN-B&W low speed diesel engines in recent five years]
FY2015 181 units/3.28 million horsepower
FY2016 180 units/3.76 million horsepower
FY2017 146 units/3.77 million horsepower
FY2018 164 units/3.89 million horsepower
FY2019* 208 units/3.98 million horsepower
(*The numbers for FY2019 are planned)

PCC BELUGA ACE wins Ship of the Year Award 2018

The Ship of the Year award of the Japan Society of Naval Architects and Ocean Engineers is given to innovative vessels built in the past year based on technical, artistic and social considerations. This year, the 29th year of the annual event, had nine vessels to consider.

The candidate announcement meeting and the selection meeting for the Ship of the Year Award 2018 were held on May 13 at the Meiji Kinenkan in Minato-ku, Tokyo, and the winner of the award was the PCC BELUGA ACE with car carrying capacity of 6,800 units. Compared with previous PCCs, the BELUGA ACE has a streamlined appearance of original design and uses innovative technologies as the next generation PCC. The special award for technological accomplishment was given to the LNG carrier CASTILLO DE MERIDA constructed by Imabari Shipbuilding Co. Ltd. (see SEA-Japan No 389). The ship features a gas and oil dual-fuel main engine, dual-fuel diesel generators, dual-fuel auxiliary boilers, reliquefaction unit, and high-pressure gas piping and duct systems, together with high-level gas-handling systems.

The 12 members present, of the total of 13 incumbent selection committee members, made the choice of the BELUGA ACE, and other winners of individual sectors included the SUNFLOWER SATSUMA (large passenger ship sector), the UMINOKO (small passenger ship sector), the COOL EXPRESS (large cargo ship sector), GENKAI (fishing and work vessel sector) and the NMRI Navigable AUV NO 4 (offshore structure/equipment sector). The prize award ceremony, a joint event organized by the three academic societies in the maritime science sector, took place on July 12 at the Kaiun Club.

New SAJ Chairman appointed

Mr.Saito

The 77th annual general meeting of the Shipbuilders' Association of Japan (SAJ) took place on June 19 and elected 19 new directors. Subsequently, the 671st board of directors' meeting was held, and Mr. Tamotsu Saito was appointed as the 37th Chairman of SAJ. Mr. Saito is concurrently Chairman of the Board of IHI Corporation.

BELUGA ACE

CASTILLO DE MERIDA

Other Winners

Left to right (anti-clockwise) are: The sister ferry SUNFLOWER SATSUMA (photo) and SUNFLOWER KIRISHIMA; The UMINOKO, a study ship for elementary schoolchildren; The COOL EXPRESS, a versatile reefer transport together with vehicles and containers; The GENTKAI, a experimental study ship equipped with echosounder reseach devices; and the NMRI Navigational AUV NO. 4.

KYBELE HORIZON

Builder: Imabari Shipbuilding Co. Ltd.
Ship type: Ore carrier
L (o.a.) x B x D: 320.0m x 55.0m x 24.3m
DWT/GT: 240,750t/123,000
Main engine: 6G70ME-C9.5 diesel x 1 unit
Speed, service: 14.5kt
Classification: ClassNK
Completion: July 26, 2019

ONE APUS

Owner: Chidori Ship Holding LLC
Builder: Japan Marine United Corporation
Hull No.: 5124
Ship type: Container carrier
L (o.a.) x B x D x d : 364.15m x 50.6m x 29.5m x 15.79m
DWT/GT: 138,611t/146,694
Main engine: WinGD W9X82 x 1 unit
Speed: 22.5kt
Complement: 30
Classification: ClassNK
Completion: April 19, 2019

KIRANA NAWA

Owner: Regulus Leasing Pte. Ltd.
Builder: Naikai Zosen Corporation
Ship type: Black product tanker
L (o.a.) x L (b.p.) x B x D x d: 157.98m x 149.98m x 27.90m x 11.20m x 7.26m
DWT/GT: 18,960t/13,136
Main engine: Hitachi-MAN B&W 7S35MC7.1 diesel x 1 unit
MCO: 4,900kW x 170min^{-1}
CSO: 4,165kW x 161min^{-1}
Speed, service: about 13.4kt
Complement: 25
Classification: ClassNK
Registry: Singapore
Completion: March 20, 2019

PACIFIC JASPER

Owner: Friend Shine Shipping S.A.
Builder: Onomichi Dockyard Co., Ltd.
Hull No.: 750
Ship type: Oil/chemical tanker
L (o.a.) x B x D x d (ext.): 175.00m x 32.20m x 19.05m x 13.10m
DWT/GT: 49,998t/29,513
Main engine: Mitsui MAN B&W 6S50ME-B9.5 diesel x 1 unit
Speed, service: 15.0kt
Classification: ClassNK
Registry: Monrovia
Completion: April 23, 2019

NORDIC COPENHAGEN

Owner: Panamanian owner
Builder: Shin Kurushima Dockyard Co., Ltd.
Hull No.: S-6030
Ship type: Chemical tanker
L (o.a.) x B x D: 151.5m x 27.1m x 14.2m
DW/GT: 26,024t/16,572
Main engine: B&W 6S46ME-B8.5 diesel x 1 unit
Speed, service: 14.95kt
Classification: NK
Registry: Panama
Completion: April 3, 2019

MINERVA OLYMPIA

Owner: EMY SHIPPING S.A.
Builder: Sasebo Heavy Industries Co., Ltd.
Hull No.: S846
Ship Type: Crude oil carrier
L (o.a.) x B x D x d (mld.): 249.97m x 44.00m x 21.20m x 14.80m
DWT/GT: 114,661t/63,485
Main engine: MAN B&W 6G60ME-C9.5 diesel x 1 unit
Speed, service: 15.0kt
Classification: ABS
Registry: Hellenic Republic
Completion: May 9, 2019