



JMU completes Suezmax tanker, KIMOLOS



Japan Marine United Corporation (JMU) delivered the KIMOLOS, a Suezmax tanker, to OMEGA THREE MARINE CORP of OKEANIS ECO TANKERS at the Tsu Shipyard on May 11, 2018. This is the first vessel of the newly developed Suezmax tanker after integration of two companies, Universal Shipbuilding and IHIMU. Principal particulars have been optimized to cope with the market requirements and to satisfy the restrictions of main ports in the world. The vessel has incorporated various and latest technologies developed through JMU's rich experience in building tankers.

Excellent hull performance was achieved by adopting various and comprehensive technologies, which include the advanced lower resistance hull form and optimized energy saving devices of the Super Stream Duct[®], Surf-Bulb[®] and ALV-Fin[®]. Furthermore, the unique bow shape called the Ax-Bow[®] gives better performance in waves, and the well-refined shape of the superstructure has low wind resistance.

The vessel can achieve Phase 2 level of the EEDI (Energy Efficiency Design Index), which will be required for

vessels with construction contracts to be concluded in and after 2020.

Fuel oil consumption has further been improved by adoption of the electronically controlled marine diesel engine compliant with the MARPOL NO_x regulation Tier II together with a high efficiency propeller. To ensure safety and maintenance, the IMO Performance Standard for Protective Coatings (PSPC) is applied to the cargo oil tanks and ballast water tanks. The vessel is also designed to comply with further environmental rules and regulations by installing the Ballast Water Management System, providing an inventory list of hazardous materials, and other features.

Principal Particulars

L (o.a.) x B x D:	274.30m x 48.00m x 23.15m
DWT/GT:	159,159 t / 82,602
Main engine:	MAN-B&W 7S65ME-C8.5 diesel x 1 unit
Speed, service:	14.65kt
Complement:	28
Classification:	LRS



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Ship of the Year Award 2017 goes to 20,000TEU containership MOL TRUTH

The Ship of the Year award given by the Japan Society of Naval Architects and Ocean Engineers had 10 vessels to choose from this year, the 28th year of the annual event. The Ship of the Year award is given to innovative vessels built in the past year based on technical, artistic and social considerations.

The candidate announcement meeting and the selection meeting for the Ship of the Year Award 2017 were held on May 14 at the Meiji Kinenkan in Minato-ku, Tokyo, and the 20,000TEU class containership MOL TRUTH, the biggest Japanese-built vessel of this category, came out as the winner. (Refer to SEA-Japan No. 387)



The 12 members who were present, out of the total of 13 incumbent selection committee members, made the choice of the MOL TRUTH, winning a majority of nine in the first voting out of the 12 committee members. As the vessel had such advantages of high transportation efficiency embodying diverse energy-efficiency features in addition to the economy of scale of the world's largest class containership, capable of carrying 20,000TEUs in its huge hull measuring 400 meters in overall length, the vessel gained the title of the Ship of the Year 2017.

MOL TRUTH

Ship type:	20,000TEU class containership
Shipowner:	Cypress Maritime, S.A.
Shipbuilder:	Imabari Shipbuilding Co., Ltd.
Completion:	October 31, 2017
L (b.p.) x B x D x d:	383.4m x 58.5m x 32.9m x 16.0m
Gross tonnage:	210,691
Speed:	23.0kt
Main engine:	MAN B&W 11G95ME-C9.5 diesel x 1 unit (56,380kW)
Container loading capacity:	20,182TEUs
Features:	Adoption of 4-stage lashing bridge and generator-use flue gas economizer

Ship of the Year Award 2017

The winners of individual sectors included the AZALEA (large passenger ship sector), the TRANS HARMONY 1 (large cargo ship sector), the TAKASU (small passenger ship sector), the HYPER-ECO (small cargo ship sector), the TENYO MARU (fishing and work vessel sector) and the KAIRYU (offshore structure/equipment sector).

The prize awarding ceremony, a joint event organized by the three academic societies in the maritime science sector, took place on July 13 at the Kaiun Club.

AZALEA, large passenger ship sector award

The car ferry AZALEA built by Mitsubishi Heavy Industries, Ltd. (present Mitsubishi Shipbuilding Co. - MSC) entered shuttle service between Otaru (Hokkaido) and Niigata in June 2017. The ship was designed by adopting the advanced energy-saving hull form, Proximity Twin-Screw System, and Mitsubishi Air Lubrication System (MALS) to reduce hull resistance and improve propulsion efficiency to achieve

increased navigation speed and reduced fuel consumption compared with the previous vessel.

AZALEA



Ship type:	Car ferry
Shipowner:	Shin Nihonkai Ferry Co., Ltd.
Shipbuilder:	Mitsubishi Heavy Industries, Ltd.
Completion:	June 26, 2017
L (b.p.) x B x D x d:	188.0m x 26.6m x 20.3m x 7.2m
Gross tonnage:	14,125
Speed:	25.0kt
Main engine:	Wartsila 16V38C diesel (11,000kW) x 2 units
Passengers:	600 people
Vehicles:	150 12m long trucks and 22 passenger automobiles
Features:	Adoption of MALS and fin stabilizers

TRANS HARMONY 1, large cargo ship sector award

Based on the concept of "harmony of humans and the global environment," the vehicle carrier was designed using safety technologies such as night-vision devices to achieve zero accidents on board the ship. The hull form with less wind resistance and various energy-saving technologies reduces fuel consumption by 17% (or CO₂ by 52% per cargo unit in transport). The original inboard lighting system and heat-insulation coating provides comfortable living and working environments for the crew. (Refer to SEA-Japan No 388)

TRANS HARMONY 1



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Ship type: Vehicle carrier
 Shipowner: Toyofuji Shipping Co., Ltd.
 Shipbuilder: Naikai Zosen Corporation
 Completion: December 31, 2017
 L (b.p.) x B x D x d: 199.9m x 32.2m x 30.3m x 14.8m
 Gross tonnage: 50,200
 Speed: 19.75kt
 Main engine: Hitachi MAN B&W 6S60ME-C8.5 diesel x 1 unit
 Cargo loading capacity: 3,000 passenger cars
 Features: Adoption of night-vision devices and safety assurance system for the crew

TAKASU, small passenger ship sector award

The TAKASU is a high-speed catamaran-type hydrofoil craft plying between isolated islands off the coast of Nagasaki Prefecture. The ferry has slender hull form and upright stems that make the ship's waterline length longer. Wave-making resistance can be reduced by the surface effect of hydrofoils installed between the hulls. Full-automatic controllable flaps attached to the foils alleviate the rolling and pitching motions for more comfortable cruising.

TAKASU



Ship type: Catamaran-type hydrofoil craft
 Shipowner: Nagasaki Kisen Co., Ltd.
 Shipbuilder: Setouchi Craft Co., Ltd.
 Completion: May 30, 2017
 L (b.p.) x B x D x d: 30.1m x 7.0m x 2.6m x 1.1m
 Gross tonnage: 124
 Speed: 30.0kt
 Main engine: MTU 16V2000M70 diesel (1,050kW) x 2 units
 Crew: 3 members
 Passengers: 150 people

Features: Adoption of full-automatic controllable flaps and inboard WiFi
HYPER-ECO, small cargoship sector award

The HYPER-ECO is a energy-conscious coasting cargo ship, which was designed with the optimized hull form and has adopted the latest technologies, i.e., contra-rotating propeller, hybrid propulsion system, LV Fin, rudder bulb, etc. The main propulsion system consists of the main diesel engine and shaft generator. The shaft generator is also used as an electric motor drive at low ship speeds. Hybrid ship operation is thus achieved with low noise and vibration.

HYPER-ECO



Ship type: Coasting cargo ship
 Shipowner: Mukaishima Dock Co., Ltd.
 Shipbuilder: Koike Shipbuilding & Shipping Co., Ltd.
 Completion: June 27, 2017
 L (b.p.) x B x D x d: 45.37m x 12.4m x 5.3m x 5.1m
 Gross tonnage: 499
 Speed: 11kt
 Main engine: Hanshin Diesel LH28 (1,029kW) diesel x 1 unit
 Cargo loading capacity: Steel materials of approximately 1,500 tons
 Features: Adoption of contra-rotating propeller and hybrid propulsion system

TENYO MARU, fishing vessel/work-ship sector award

The TENYO MARU is a fishery exploration and training ship with dual purposes: training of maritime officers and fishery investigation and research. Besides various fishing devices, radars, and sounders, the ship is equipped with hybrid propulsion system for engineer training, and SCR, a water-mixture fuel generator,

and power-system monitoring system for training to cope with environmental conservation.

TENYO MARU



Ship type: Fishery exploration and training ship
 Shipowner: Japan Fishery Research and Education Agency
 Shipbuilder: Mitsubishi Heavy Industries, Ltd.
 Completion: October 31, 2017
 L (b.p.) x B x D x d: 58.0m x 11.9m x 6.98m x 4.45m
 Gross tonnage: 1,354
 Speed: 12.0kt
 Main engine: LA34RG (1,700kW) x 1 unit
 Complement
 28 crew members
 8 instructors/researchers
 50 undergraduates
 Features: Adoption of hybrid propulsion system and various investigation installations

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Sanoyas completes Panamax bulk carrier, BALOS

Sanoyas Shipbuilding Corporation delivered the Panamax bulk carrier, BALOS, to Wall Knot Maritime S.A. on May 22, 2018, which was constructed at Sanoyas Mizushima Shipyard. This is the 13th 82,000DWT class Panamax bulk carrier of the newly-developed Sanoyas series.

The vessel has larger cargo hold capacity and further improved fuel efficiency by 10% compared with the previous 83,000DWT type. The vessel achieves Phase 2 level of the EEDI (Energy Efficiency Design Index: grams CO₂ per ton nautical mile) regulation that applies to building contracts for ships placed on or after 1st January, 2013.

For improvement of propulsion effi-

ciency, the vessel is equipped with a low-speed and long-stroke electronically controlled main engine combined with a high-efficiency propeller. Moreover, 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 contribute to the reduction of CO₂ emissions.

Eco-friendly features include various countermeasures such as the main engine complying with the NO_x emission Tier II limit for the prevention of air pollution, and dedicated low sulphur diesel oil tank to cruise in ECA (Emission Control Area), ballast water treatment system and fuel oil tank protection for conservation of the marine environment. In addition, independent holding tanks for accommodation discharges, dirty hold bilgewater, and rainwater on

the upper deck are provided.

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

Principal particulars

Owner:	Wall Knot Maritime S.A.
Builder:	Sanoyas Shipbuilding Corporation
Hull No.:	1356
L (o.a.) x B x D x d:	229.00m x 32.24m x 20.20m x 14.668m
DWT/GT:	82,025t/43,380
Cargo hold capacity:	96,597m ³ (grain)
Main engine:	MAN B&W 6S60ME-C8.2 diesel x 1 unit
MCO:	8,740kW
Speed, service:	about 14.5kt
Complement:	25
Registry:	The Bahamas
Classification:	ClassNK
Delivery:	May 22, 2018



Accumulated diesel engine production reaches 100 million hp

— MITSUI-MAN B&W diesel engine —

Mitsui E&S Machinery Co., Ltd. has achieved accumulated diesel engine production of 100 million horsepower with a single engine model. This record was achieved with the Mitsui-MAN B&W diesel engine 11S90ME-C10.5, which was manufactured as the 6,555th diesel engine at the Tamano Machinery Factory (Tamano-shi, Okayama) of Mitsui E&S Machinery. This is the main engine for a 14,000TEU container carrier to be built at Imabari Shipbuilding Co., Ltd. for Shoeni Kisen Kaisha, Ltd.

The production record of Mitsui-MAN B&W diesel engines achieved 50 million horsepower in October 2005 (77 years and 4 months since the first engine). Another 50 million horsepower has been added in

only 12 years and 8 months. In the total 90 years since the first engine was manufactured in 1928, accumulated production of 100 million horsepower has been achieved. In FY 2018, Mitsui E&S Machinery Co., Ltd. expects its annual production of diesel engines to be about 3.88 million horsepower.

Since entering into the license agreement with Burmeister & Wain in Denmark in 1926, now MAN Energy Solutions SE, Mitsui E&S Machinery has been building experience as the world's leading diesel engine manufacturer. Mitsui E&S Machinery will continue sales activities of diesel engines for bulkers, tankers, car carriers and LPG carriers, etc. with its delivery record of diesel engines that comply with the

NO_x regulation Tier-III and dual fuel diesel engines.

Principal particulars of the milestone engine

Model:	Mitsui-MAN B&W diesel engine 11S90ME-C10.5
Length, o.a.:	About 20.9m
Height:	About 14.6m
Width:	About 5.1m
Bore:	900mm
Stroke:	3,260mm
Shop test:	June 19, 2018



Mitsubishi Shipbuilding and MHPS launch advanced SO_x abatement system ACTIVE FUNNEL

Mitsubishi Shipbuilding Co., Ltd. (Mitsubishi Shipbuilding) and Mitsubishi Hitachi Power Systems, Ltd. (MHPS) have jointly launched the most advanced SO_x abatement system, ACTIVE FUNNEL. This funnel structure contains an optimally shaped exhaust gas scrubbing structure which reduces sulfur dioxide (SO₂) in the exhaust gas of 3.5%-sulfur content fuels to that of 0.1%-sulfur content fuels, conforming with the newly introduced SO_x emissions regulations coming into effect globally as of January 1, 2020.

The new and reliable SO_x abatement system was developed by combining MHPS' comprehensive exhaust gas treatment technologies developed through providing desulfurization systems for thermal power plants with Mitsubishi Shipbuilding's marine engineering expertise obtained from long shipbuilding experience. MHPS' land-based flue gas desulfurization systems can treat the equivalent of 7 to 20 times of the emissions from a large marine diesel engine.

ACTIVE FUNNEL is most suitable for very large container ships

with large engine output and limited installation space for SO_x abatement systems. ACTIVE FUNNEL can desulfurize large amounts of exhaust gas and the flexible design allows installation even in narrow spaces between the container holds, while maintaining the container capacity. ACTIVE FUNNEL is also suitable for installation on existing ships since the structure consists of one module enabling a short retrofitting period. ACTIVE FUNNEL which is applicable to both open-loop systems and hybrid systems^(Note 1) and provides a conventional funnel with advanced SO_x removal functions.

In the future, the product lineup will be expanded by applying the new ACTIVE FUNNEL technology to very large crude carriers (VLCC: 200,000-310,000 WT) and very large ore carriers (VLOC).

When new SO_x emissions regulations come into effect, ACTIVE FUNNEL is expected to contribute to the further development of environmentally-friendly and economic global marine transportation.

Please call at following address for more information of Active Funnel: <http://www.msb.mhi.co.jp/en/products/AF/index.html>

(Note 1) In an open loop system, seawater intake is sprayed directly on the exhaust gas and then discharged from the ship. In a closed loop system, the exhaust gas is scrubbed using circulating water, after which the circulating water is neutralized for reuse. In a hybrid system, it is possible to switch between open and closed systems.



Naikai completes 27,000DWT open bulker, ARAUCARIA

Naikai Zosen Corporation completed construction of the ARAUCARIA, a 27,000DWT open bulk carrier, at its Setoda Shipyard on June 8, 2018. The bulk carrier has entered into service mainly to transport nickel ore on routes centered on New Caledonia.

The ARAUCARIA has double side shells, and the shape of the cargo holds is suitable for loading fluid

cargo. Employment of the double side shells facilitates maintenance work of the cargo holds easy and will prevent outflow of fuel oil and cargo even if the outer side shell is damaged in a collision.

Four cargo holds are provided, and three deck cranes with 30t-hoisting capacity are installed on the upper deck. Open hatches of each hold has been designed to adapt for facilities at unloading ports for increasing cargo-handling efficiency.

The open bulker has improved fuel consumption using energy-saving equipment

such as the SSD (Super Stream Duct) and Surf-Bulb (Rudder Fin with Bulb).

Principal particulars

L (o.a.):	160.80m
L (b.p.):	154.50m
Breadth (mld.):	26.00m
Depth (mld.):	14.00m
Draught (mld.):	9.88m
DWT/GT:	27,356t/16,774
Cargo hold capacity:	20,800m ³
Complement:	24
Main engine:	Hitachi MAN B&W 6S42MC-7.1 diesel x 1 unit
NCO (85%):	4,165kW x 121.3min ⁻¹
Speed, service:	About 13.5kt
Registry:	Panama
Classification:	ClassNK
Completion:	June 8, 2018



CAPE CLOVER

Owner: Wealth Line Inc.
 Builder: Namura Shipbuilding Co., Ltd.
 Hull No.: 427
 Ship Type: Bulk carrier
 L(o.a.)x BxDxds: 291.96m x 45.00m x 24.60m x 18.20m
 DWT/GT: 183,194t/93,451
 Main engine: MAN B&W 6G70ME-C9.5 diesel x 1 unit
 Speed, service: about 14.50kt
 Classification: ClassNK
 Complement: 25
 Delivery: January 30, 2018

**ST. SOFIA**

Owner: Eastern Mediterranean Maritime Limited
 Builder: Mitsui E&S Shipbuilding Co., Ltd. (MES-S)
 Hull No.: 1960
 Ship type: Bulk carrier (neo60BC)
 L (o.a.) x B x D x d (ext.): 199.99m x 32.25m x 18.50m
 DWT/GT: 60,424t/34,094
 Main Engine: Mitsui-MAN B&W 6S50ME-B9.3 diesel x 1 unit
 Speed, service: about 14.5kt
 Registry: Malta
 Classification: ClassNK
 Delivery: May 28, 2018

**UNI SUNSHINE**

Owner: Yamasa Shipholding Unicorn S.A.
 Builder: Oshima Shipbuilding Co., Ltd.
 Hull No.: 10877
 Ship type: Bulk carrier
 L (o.a.) x B x D x d (ext.): 179.99m x 30.00m x 14.63m x 10.339m
 DWT/GT: 36,880t/22,734
 Main engine: Kawasaki-MAN B&W 5S50ME-C8.5 diesel x 1 unit
 Speed, service: 14.00kt
 Registry: Hong Kong
 Classification: ClassNK
 Completion: April 24, 2018

**NORD OLYMPIA**

Owner: Triton Navigation B.V.
 Builder: Onomichi Dockyard Co., Ltd.
 Hull No.: 717
 Ship type: Product/chemical tanker
 L (o.a.) x B x D x d (ext.): 182.50 x 32.20 x 19.05 x 13.10
 DWT/GT: 49,995t/29,513
 Main engine: Mitsui MAN B&W 6S50ME-B9.5 diesel x 1 unit
 Speed, service: 15.0kt
 Registry: Panama
 Classification: ClassNK
 Completion: March 9, 2018

**KYOWA FALCON**

Owner: Pacific Line Trading Inc.
 Builder: Shin kurushima Dockyard Co., Ltd.
 Hull No.: S-5961
 Ship type: RORO ship
 L (o.a.) x B x D : 134.0m x 22.60m x 14.4m
 DWT/GT: 12,084t/12,592
 Main engine: 6UEC33LSE-C2 diesel x 1 unit
 Speed, service: 14.00kt
 Registry: Marshall Islands
 Classification: ClassNK
 Completion: May 9, 2018

**SOUTHERN REVERENCE**

Builder: Tsuneishi Shipbuilding Co., Ltd.
 Hull No.: 1568
 Ship type: Tanker
 L (o.a.) x B x D: 243.80m x 42.00m x 21.48m
 DWT/GT: 108,677t/60,855
 Main engine: MAN-B&W 6G60ME-C9.5 diesel x 1 unit
 Speed, service: 15.25kt
 Registry: Panama
 Classification: ClassNK
 Completion: March 27, 2018

