



# SEA-Japan

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*Season's Greetings*

*Motoyama*

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## Kawasaki completes newly-developed LNG carrier ENERGY HORIZON

Kawasaki Heavy Industries, Ltd. completed construction of the newly-developed 177,000m<sup>3</sup> LNG carrier ENERGY HORIZON (HN: 1664) for delivery to Tokyo LNG Tanker Co., Ltd. and Nippon Yusen Kabushiki Kaisha (NYK Line) on September 2, 2011.

The ENERGY HORIZON is the world's largest MOSS-type LNG carrier capable of carrying 177,000m<sup>3</sup> of LNG as well as the first carrier of this new series. Its predecessor as Kawasaki's standard type is the 147,000m<sup>3</sup> class carrier that features superior propulsion efficiency and the advantage of being able to call at major LNG terminals worldwide. The new 177,000m<sup>3</sup> version has the same performance level quality despite its increased LNG carrying capacity.

The propulsion system of the carrier uses the Kawasaki reheat cycle plant, or Kawasaki Advanced Reheat Turbine Plant (Kawasaki URA plant), and this is the world's first LNG carrier to be powered by this system.

Steam generated by the main boiler is first led into the high-pressure turbine and returns to the boiler for re-heating. Reheated steam is introduced into the medium-pressure turbine. Employment of the reheat cycle serves to greatly improve thermal efficiency

by increasing the steam temperature and pressure high. The fuel consumption can decrease by 15% compared with the conventional steam turbine plant.

Four MOSS type independent spherical tanks provide a large LNG transport capacity of 177,000m<sup>3</sup>. The cargo tank compartment consists of double side shells and bottoms to protect the LNG tanks from direct damage even if the outer shell is damaged in an accident.

The ENERGY HORIZON uses the Kawasaki panel heat insulation system maintaining the boil-off gas rate at about 0.1% per day.

The wheelhouse has advanced integrated electronic navigation devices and equipment, which were previously installed separately. It has further improved functions for ship operation. Windows around the wheelhouse provide a panoramic view of 360 degrees, allowing one-man operation during ocean navigation.

Cargo-handling operations are remotely controlled from the cargo han-



dling room located in front of the accommodation quarters, where the Kawasaki Integrated Automation System (IAS) is installed to monitor and control cargo handling operation. This system is also installed in the engine room for monitoring engine conditions.

### Principal particulars

L (o.a.) x L (b.p.) x B x D x d: about 300.00m x 286.50m x 52.00m x 28.00m x 11.65m

DWT/GT: 87,257t/141,136

Cargo tank capacity: 177,440m<sup>3</sup> (at -163°C, 100%)

Main engine: Kawasaki URA-450 reheat cycle turbine plant x 1 unit

MCR: 29,890kW x 76rpm

Speed, service: about 19.5kt

Complement: 44

Classification: NK

## Universal completes Panamax bulk carrier NAVIOS MARCO POLO

Universal Shipbuilding Corporation delivered the 80,000DWT bulk carrier, NAVIOS MARCO POLO, at the Maizuru Shipyard on Sept. 29, 2011.

The vessel is the 16th delivery of the newly designed Panamax type bulk carrier and has the largest dead-

weight and cargo hold capacity with various independent technology despite the restriction of the overall length for the Panamax type bulk carrier.

The bow shape, called Leadge-Bow, reduces the added wave resistance not only under a laden condition but also when in ballast. The newly developed Leadge-bow achieves superior performance at sea to the Ax-Bow that is used by more than 90 vessels.

The vessel,

equipped with the Surf-Bulb (a rudder fin with bulb) behind the propeller and the SSD (Super Stream Duct) in front of the propeller, is higher in propulsion efficiency and consumes less energy.

### Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 225m x 222m x 32.26m x 20m x 14.38m

DWT/GT: 80,647t/42,711

Cargo hold capacity: 95,980m<sup>3</sup>

Main engine: MAN B&W 7S50MC-C diesel x 1 unit

Sea speed: 14.6kt

Complement: 25

Classification: NK

Completion: Sept. 29, 2011



## MES delivers 177,000 DWT Dunkerque-max bulker CAPE CELTIC

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) completed and delivered the 177,000 DWT type bulk carrier CAPE CELTIC (HN: 1732) at its Chiba Works on September 29, 2011.

This carrier is the eighth of the Capesize bulk carrier of Dunkerque-max Type having cargo hold construction of double-side skins. It contributes to effective cargo handling, easy maintenance of cargo holds and structural safety.

In spite of cargo holds bounded by the double-side skins in accordance with SOLAS, the cargo capacity of the ship is equivalent to that of conventional Capesize bulk carriers with holds bounded by a single-side skin.

The carrier was designed in accordance with IACS URS25 so that loading flexibility has been secured and structural safety has been improved.

Suitable arrangement of means of access required by SOLAS facilitates safe and effective inspection in cargo holds and ballast tanks.

Safety is improved by installing a forecastle and conforming to applying new requirements concerning reserve



buoyancy of ships.

The main engine of the ship is a MITSUI-MAN B&W 6S70MC-C diesel, which satisfies IMO Environment Standards for Exhaust Gas and achieves greater fuel saving by optimum matching at normal service output. An electronically controlled cylinder oiling system is applied to the main engine for further operational cost saving.

Fuel oil tanks comply with the MARPOL regulations on oil fuel tank protection to prevent marine pollution.

Ballasting and deballasting work

can be efficiently done by separation of the topside tank and the bottom side tank.

Principal particulars

L (o.a.) x L (b.p.) x B x D: 292.00m x 282.00m x 44.98m x 24.70m

DWT/GT: 178,342t/92,249

Main engine: Mitsui-MAN B&W 6S70MC-C diesel x 1 unit

MCO: 18,660kW x 91rpm

Speed: 15.3kt

Complement: 28

Classification: NK

Port of Registry: Panama

Delivery: Sept. 29, 2011

## MHI completes 298,000T VLCC HAKUSAN

Mitsubishi Heavy Industries, Ltd. (MHI) completed construction of the 298,000DWT VLCC HAKUSAN (HN: 2266), and successfully delivered the tanker to Taurus Transport & Marine S.A. (MOL) at its Nagasaki Shipyard & Machinery Works on August 1, 2011.

The HAKUSAN is a new genera-

tion double hull VLCC designed to have the maximum cargo carrying capability within the size limitations of the Strait of Malacca and main Japanese tanker berths. The latest MHI ship designing technologies and Mitsubishi reaction fin contribute to excellent propulsive performance.

Hull structure is designed and con-

structed in accordance with the Common Structural Rules (CSR), and Painting Specifications and Painting Standards for ballast tanks are also in accordance with the rule and guidance for Performance Standards for Protective Coatings (PSPC). Permanent Means of Access (PMA) is designed and provided in accordance with the specified classification requirements.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 333.00m x 324.00m x 60.00m x 29.10m x 20.80m (mld.)

DWT/GT: 305,350t/160,059

Main engine: Mitsubishi-UE 7UEC85LSII diesel x 1 unit

MCR: 27,020kW

Speed, service: abt. 15.5kt

Complement: 36

Classification: NK

Completion: Aug. 1, 2011





## Sanoyas completes PANAMAX bulker YASA H.MULLA

Sanoyas Hishino Meisho Corp. delivered the PANAMAX bulk carrier YASA H. MULLA to Ya-Sa Shipping Industry and Trading S.A. on October 5, 2011, the construction order for which had been received through Mitsubishi Corporation. The bulker had been built at the Mizushima Works and Shipyard.

The vessel is the 25th of the 83,000DWT type PANAMAX bulk carrier series developed by Sanoyas, featuring the largest deadweight and cargo hold capacity in the world for a PANAMAX bulk carrier as well as complying with the Common Structural Rules (CSR) set forth by International Association of Classification Societies.

Increased propulsion efficiency of the vessel is achieved using a low-speed and long-stroke main engine combined with a high-efficiency propeller and a Sanoyas-developed energy-saving device called STF (Sanoyas-Tandem-Fin (patent): max. 6% energy saving) on stern shell, which

also contributes to the reduction of CO<sub>2</sub> emission.

Cargo hatches are widened as much as possible for efficient cargo handling. Dedicated fresh water tanks are provided for storing hold washing water generated by a large capacity fresh water generator. In addition, a special fuel oil heating system is applied for fuel oil storage tanks to avoid cargo damage by overheating and save the steam consumption.

With a view to protection of environment, various countermeasures such as fuel oil tanks of double hull structures, holding tank for accommodation discharges and dirty hold bilge, independent bilge segregation system for engine room, are incorporated.

Principal particulars



|                                  |   |
|----------------------------------|---|
| L (o.a.) x L (b.p.) x B x D x d: | 229.00m<br>x 224.00m x 32.24m x 20.20m x<br>14.598m |
| DWT/GT:                          | 83,482t/44,367                                      |
| Cargo hold capacity:             | 96,121m <sup>3</sup> (grain)                        |
| Main engine:                     | MAN B&W 6S60MC-C<br>diesel x 1 unit                 |
| MCR:                             | 10,740kW  |
| Speed, service:                  | about 14.0kt (at C.S.O.<br>with 15% sea margin)     |
| Classification:                  | NK  |
| Complement:                      | 24  |
| Flag of registry:                | Turkey  |

## Oshima completes J-OPEN type general cargo carrier PUFFIN ARROW

Oshima Shipbuilding Co., Ltd. delivered the 62,967DWT box shaped general cargo carrier PUFFIN ARROW to Intersky Shipping Corp. on July 22, 2011.

The vessel belongs to a "J-OPEN type general cargo carrier" series. It has eight open-hatch type cargo holds and is equipped with four sets of jib cranes instead of gantry cranes.

The J-OPEN type features efficient and quick loading and unloading for a variety of cargoes such as wooden pulp, packaged lumber, hot coils, con-

tainers, grains, ore, coal, aluminum ingots, sulfur, and other bale or bulk items.

Cargo holds with completely square hatch corners and flush bulkhead surfaces facilitate smooth handling of unitized cargoes. A dehumidifier is installed to keep special cargo items including wooden pulp and roll paper dry.

Large capacity 40t jib deck cranes and high-lift end rolling type piggy back hatch covers serve to reduce the time required for loading and unloading work.

A double-hull structure provided for fuel oil tanks and diesel oil tanks prevents oil spills in case of damage. A bow thruster and a high-lift rudder offer effective maneuvering in port.

The use of the Seaworthy Bow has resulted in excellent seaworthiness, with improved speed performance under rough weather conditions and about 5% power saving compared with the ordinary bulbous bow.

The vessel can achieve a decrease in fuel consumption by the use of a new optimized hull form and a set of the Flipper-Fins, which contributes to a further increase propulsive efficiency.

Principal particulars

|                                  |   |
|----------------------------------|---|
| L (o.a.) x L (b.p.) x B x D x d: | 199.98m<br>x 196.00m x 32.26m x 19.22m x<br>13.507m |
| DWT/GT:                          | 62,967t/36,925                                      |
| Loading capacity:                | 70,312m <sup>3</sup>                                |
| Main engine:                     | Kawasaki MAN B&W<br>6S50MC-C (Mk8) diesel x 1 unit  |
| MCR:                             | 8,605kW x 110.0rpm                                  |
| Speed, service:                  | 14.55kt   |
| Classification:                  | NK  |
| Completion:                      | July 22, 2011                                       |



## Imabari completes bulk carrier SANKO PARTNER

Imabari Shipbuilding Co., Ltd. completed construction of the 181,399 DWT bulk carrier SANKO PARTNER (HN: S-8109), and delivered the vessel at the Saijo Shipyard on October 3, 2011.

The vessel is a single-screw diesel driven and oceangoing bulk carrier to carry coal and ore cargoes and has a suitable size calling at the Port of Dunkerque.

The vessel has nine holds and nine hatches, and No. 6 hold can be used as a ballast hold. The Nos. 2, 4 and 8 holds can be used as ballast holds when in a port to adjust the trim and draught of the vessel during loading and unloading work.

The vessel is provided with side rolling type hatch covers, which are

operated with an electric motor and a chain drive system.

The vessel is equipped with an energy saving device installed on the leading edge of the rudder. This contributes to environment-friendly and economical operation.

### Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 291.98m  
x 283.80m x 45.00m x 24.70m x  
18.214m  
DWT/GT: 181,399t/92,746  
Cargo hold capacity: 201,243m<sup>3</sup>



Main engine: Hitachi-MAN B&W  
6S70MC-C diesel x 1 unit  
MCR: 18,660kW x 91.0rpm  
Speed, service: 15.15kt  
Complement: 28  
Classification: ABS  
Delivery: Oct. 3, 2011

## Naikai completes 37,800DWT general cargo ship SANTA SERENA

Naikai Zosen Corporation completed construction of the 37,800DWT general cargo ship SANTA SERENA for delivery to Ansei Bulk Carrier S.A. at the Setoda Works on August 29, 2011.

The vessel has been constructed to the latest design employing double side shells for every cargo hold, providing strengthened ship construction and greater stability against external damage than the conventional cargo ship.

Should an external damage occur, the inner shell of the vessel can prevent loss or outflow of cargoes, and secure the quality of cargoes. Fuel oil

tanks are also protected by double side shells conforming to the international regulations. This contributes to environmental conservation.

The vessel has a broad beam and shallow draught, which are helpful in entering shallow ports and navigating rivers, channels and lakes. An adequate rudder area gives the course keeping stability to the vessel despite the broad beam.

The SANTA SERENA can be loaded with grains, coal, ores, sulfur, cement, lime stone, steel products, and lumber. Lengthy cargoes can be loaded in a cargo hold or on the upper deck.

The cargo hold compartment consists of five holds. The Nos. 2 through 4 holds are box-ones, mounted with four 30t deck cranes. Wide hatch openings allow loading of lengthy cargoes and facilitate cargo loading and unloading.

The vessel, as an eco-ship, uses the latest energy-saving type low-speed main engine, a large-diameter propeller SSD (Super Stream Duct) and a Surf-Bulb (Rudder Fin with Bulb) for increased fuel efficiency. Moreover, a sharp-edged bow called the Ax-Bow is employed to improve seakeeping performance.

### Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 184.75m  
x 177.00m x 30.60m x 14.50m x  
9.55m  
DWT/GT: 38,238t/23,857  
Cargo hold capacity: 47,235.9m<sup>3</sup>  
Main engine: Hitachi-B&W 6S46MC-  
C (Mark7) diesel x 1 unit  
NCR: 6,100kW x 107.2 min<sup>-1</sup>  
(D.C.S.O.)  
Speed, service: about 14.3kt  
Classification: NK  
Registry: Panama  
Completion: Aug. 29, 2011



**ELVIRA BULKER**

Owner: LB Ship Owner II A/S  
 Builder: The Hakodate Dock Co., Ltd.  
 Hull No.: 843  
 Ship type: Bulk Carrier  
 L (o.a.) x B x D x d: 175.53m x 29.40m  
 x 13.70m x 9.64m  
 DWT/GT: 31,858t/19,812  
 Main engine: Mitsubishi-  
 6UEC45LSE diesel x 1 unit  
 Speed, service: 14.4kt  
 Classification: NK  
 Complement: 24  
 Completion: Sept. 22, 2011

**TAKAOKA**

Owner: Rebus Shipping Pte. Ltd.  
 Builder: IHI Marine United Inc.  
 Hull No.: 3316  
 Ship type: VLCC  
 L (o.a.) x B x D x d: 333.00m x 60.00m  
 x 28.50m  
 DWT/GT: abt. 310,000t/158,051  
 Main engine: DU-WARTSILA 7RT-  
 flex84T-D diesel x 1 unit  
 MCR: 27,160kW x 70.1rpm  
 Flag: Panama  
 Classification: NK  
 Completion: Sept. 22, 2011

**BAOSTEEL  
EMOTION**

Owner: Canopus Maritime Inc.  
 Builder: Namura Shipbuilding Co.,  
 Ltd.  
 Hull No.: 327  
 Ship type: Ore carrier  
 L (o.a.) x B x D x d: 319.00m x 54.00m  
 x 25.10m x 18.10m  
 DWT/GT: 226,434t/119,446  
 Main engine: MHI 6UEC85LSII die-  
 sel x 1 unit  
 Speed, service: abt. 15.10kt  
 Classification: NK  
 Complement: 25  
 Completion: Sept. 16, 2011

**RICH DUCHESS II**

Owner: Inter Ocean Maritime S.A.  
 Builder: Sumitomo Heavy Industries  
 Marine & Engineering Co., Ltd.  
 Hull No.: 1368  
 Ship type: Tanker  
 L (o.a.) x B x D: 228.60m x 42.00m x  
 21.50m  
 DWT/GT: 105,000t/56,000  
 Main engine: Mitsui MAN B&W  
 6S60MC-C diesel x 1 unit  
 Speed, service: About 14.8kt  
 Classification: LR  
 Completion: Sept. 9, 2011

**SUNDA SEA**

Owner: Venetia Shipping Limited  
 Builder: Sasebo Heavy Industries Co.,  
 Ltd.  
 Hull No.: S-772  
 Ship type: Crude oil carrier  
 L (o.a.) x B x D x d (ext.): 243.80m x  
 42.00m x 21.50m x 15.713m  
 DWT/GT: 114,531t/59,180  
 Main engine: Mitsui MAN B&W  
 6S60MC-C diesel x 1 unit  
 Speed, service: 15.1kt  
 Registration: Singapore  
 Classification: ABS  
 Completion: Sept. 27, 2011

**Cover Photo**

A sunset over the Tsugaru Strait on a day when a 32,000DWT type bulk carrier was put to a sea trial. The vessel was built by The Hakodate Dock Co., and the photo was taken by a trial staff member from the bridge.