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Season's Greetings

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JMU completes 209,000DWT bulk carrier, AEGEAN CLOVER

Japan Marine United Corporation (JMU) has delivered AEGEAN CLOVER, the 209,000DWT bulk carrier at the Ariake Shipyard on October 4, 2013.

This is the second vessel of newly developed series of Cape-size bulk carrier, called the "G-Series," which target is 25% reduction of fuel consumption at actual sea lower than existing ships, and category of Phase 2 of Energy Efficiency Design Index (EEDI) defined in MARPOL Annex VI.

The vessel can achieve impressive hull performance by the technologies of the sophisticated lower resistance hull form, optimized energy saving devices of SSD (Super Stream Duct) and Surf-Bulb (Rudder Fin with Bulb) equipped in front of and behind the propeller respectively, the unique bow shape, called the "LEADGE BOW," which reduces the added wave resistance both at laden and ballast conditions and well-refined accommodation house with low air resistance shape.

And a high efficiency machinery plant is equipped with selection of main engine, MAN B&W 7S65ME-C, and an advanced waste heat recovery system consists of turbocharger generator (Hybrid-turbocharger). And further a shaft motor gives low fuel consumption to assist propulsion with surplus electric power generated by the waste heat recovery system.

With the above fuel consumption benefit, AEGEAN CLOVER is the most competitive and efficient Cape size bulk carrier to carry coal and iron ore between Asia and Australia with large deadweight at shallow draft, large hold capacity and large cargo hatch opening, keeping high

flexibility for port restrictions.

Principal particulars

L(o.a.) x B x D:	299.99m x 50.0m x 25.0m
DWT/GT:	209,649MT/107,051
Grain Capacity:	221,478m ³
Main engine:	MAN B&W 7S65ME-C8.2 x 1 unit
Speed:	14.70kt
Complement:	25
Classification:	NK



"IS" NEW I-STAR series

Imabari announces new development of 63,000DWT-type bulker

Imabari Shipbuilding Co., Ltd. has developed a new 63,000DWT-type bulk carrier in the series of its "IS" NEW I-STAR (called NEW I-STAR). The predecessor of the NEW I-STAR is "IS" I-STAR of 61,000DWT-type bulk carrier, commonly called the I-STAR. The first vessel of the preced-

ing series was completed in September 2010, and 55 vessels have already been delivered, gaining the top share in the world fleet of this category. (*) In addition to the great number of constructions, vessels of the series have been enjoying a very high reputation from domestic and overseas clients on

the superb performance in actual navigation. [(*) Based on the Summary from IHS Fairplay Survey]

The NEW I-STAR is based on the I-STAR to maintain its superior design concept and has increased deadweight by 2,000 tons while decreasing fuel consumption by around 12% as a result of reviewing the main propulsion unit and energy saving technologies. The vessel is now more economical and environmentally friendly. Imabari Shipbuilding Co., Ltd. says that it will continue to build far better vessels to cope with the expectation of their customers for the ship quality and long-lasting satisfaction.

Principal Particulars of the NEW I-STAR series:

L (o.a.):	199.9m
Breadth:	32.24m
Depth:	19.15m
Deadweight:	63,000t



61,000DWT-type bulk carrier "IS" I-STAR

Kawasaki delivers LNG carrier, GRACE DAHLIA, to NYK Line

Kawasaki Heavy Industries, Ltd. has delivered the LNG carrier GRACE DAHLIA (Hull No.: 1665) to Nippon Yusen Kabushiki Kaisha (NYK Line). This is the second 177,000m³ LNG carrier delivered by Kawasaki and is the world's largest Moss-type LNG carrier currently in operation. The significant increase in LNG carrying capacity that this vessel offers was made possible by expanding the size of the cargo tanks. Kawasaki has ensured that the ship-shore compatibility and outstanding propulsion performance of its existing vessels are not affected by this upgrade.

The GRACE DAHLIA uses the Kawasaki advanced reheat turbine plant (Kawasaki URA Plant) developed specially for LNG carriers. This plant is based on a reheat cycle where the steam used in the high-pressure turbine is reheated back in the boiler, and then sent on to drive the medium-pressure turbine. This cycle, combined with a high-pressure, high-temperature boiler, achieves a dramatic in-

crease in thermal efficiency. As a result, fuel consumption is improved by approximately 15% compared to conventional steam turbine plants.

This vessel features four Moss-type spherical LNG tanks with a total capacity of 177,427m³. The LNG tanks use the Kawasaki Panel System, a high-performance insulation system developed by Kawasaki that keeps the boil-off rate to no more than 0.1% per day. The cargo holds housing the LNG tanks employ a double-hull, double-bottom structure to protect the tanks from damage in the case of an accident.

The pilothouse is equipped with state-of-the-art, network-connected nautical equipment and a satellite communication system, and all information needed for navigating the ship is displayed on a central monitor to enable safe and efficient ship handling. In addition, the pilothouse has windows on all sides to give the operators a 360-degree view. Cargo operations are monitored and controlled from the cargo control room situated under the bridge in front of the accommodations, offering a clear view of the loading and unloading area. The cargo control room is provided with an Integrated Automation System (IAS) which gives control over all cargo operations and enables centralized monitoring for the main engine as well as cargo. Considerable input from operators based on their actual experience went into the development of this IAS, resulting in a highly user-friendly system.

The main boiler of the ship is able to burn Marine Gas Oil (MGO) as an environmentally friendly alternative with low sulfur content. While heavy fuel oil (HFO) is normally used, a pipe



arrangement separating HFO and MGO enables switching between the fuels with a simple operation, right before feeding to the main boiler combustor. Fuel gas can also be used as before.

Various measures have been put in place to enable cargo transport to cold regions where temperatures reach as low as -25°C. These include the Enclosed Navigation Bridge Wing, ice strengthening that meets ClassNK regulations, air bubbling system to prevent ballast tanks from freezing and other measures to ensure proper operation of equipment below freezing temperature. A ballast water management system ensures the ocean habitat is protected from unwanted environmental effects. Further, equipment reliability is enhanced through redundant configurations. Lecture rooms with educational facilities as well as accommodations for 20 lecturers and trainees are provided for the purpose of training crew members.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d:	about 300m x 286.50m x 52.00m x 28.00m x 11.65m
DWT/GT:	86,512t/141,671
Cargo tank capacity:	177,427m ³ (at -163°C 100%)
Main engine:	Kawasaki URA-450 reheat cycle turbine plant x 1 unit
Max. output:	29,890kW x 76rpm
Speed, service:	about 19.5kt
Complement:	63
Classification:	NK
Registry:	Tokyo, Japan

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Naikai completes 9,400kl clean product tanker, OXALIS PEONY

Naikai Zosen Corporation completed construction of the 9,400kl petroleum refined clean product tanker, OXALIS PEONY, for Oxalis Shipping Co. Pte. Ltd. on September 26, 2013.

The OXALIS PEONY is a refined clean petroleum product tanker now engaged in transport of jet fuel oil in the sea areas around Singapore.

Cargo tanks including a slop tank are separated into ten compartments and protected with a double bottom and double side-shells. The safety of bunker oil tanks is also secured with the double side shells and bottom. These countermeasures ensure the prevention of marine pollution from the leakage of cargo oil and/or bunker oil. The capacity of cargo tanks totals 9,800kl, and cargo loading or unloading can be achieved with two electrically-driven screw pumps having a capacity of 1,200m³/h.

The vessel is designed to have superior ship maneuverability and good



performance in ship speed and uses the super VecTwin rudders and bow thrusters. The hull form design and equipment have improved lateral movement and turning on the spot, increasing the maneuverability compared to before.

Principal particulars

L (o.a.) x B x D x d: 116.30m x 19.40m x 10.10m x 7.00m (full load)

DWT/GT:	8,609t/5,725
Main engine:	Hanshin LH46LA x 1 unit
MCO:	3,309kW x 220min ⁻¹
NCO:	2,813kW x 208min ⁻¹
Speed, service:	about 12.5kt
Complement:	18
Classification:	NK
Registry:	Singapore
Completion:	September 26, 2013

Sanoyas delivers Panamax bulk carrier, LORD STAR

Sanoyas Shipbuilding Corporation delivered the LORD STAR, an 82,938DWT Panamax bulk carrier, constructed at the Mizushima Shipyard to Green Spanker Shipping S.A. on September 4, 2013. The vessel has improved fuel consumption by 10% compared to the existing Sanoyas Panamax bulk carrier, but maintains a loading capacity of 83,000t that is the biggest in this category. The ves-

sel is the fourth of the new series of the 83,000DWT type Panamax, which will contribute to seaborne trade with utmost fuel-saving efficiency.

The propulsion efficiency has greatly been improved by installing the low-speed and long-stroke fuel-optimized main engine combined with a high-efficiency propeller and the Sanoyas energy saving device called STF (Sanoyas-Tandem-Fin (patent):

max. 6% energy saving) mounted on the stern shell, which also contribute to the reduction of CO₂ emissions.

Various countermeasures for the protection of the environment are taken by adopting the main engine complying with the NO_x emission Tier II limit to prevent air pollution, protected fuel oil tank, and independent holding tanks for accommodation drainage, dirty hold bilge, and rainwater on the upper deck. In addition, dedicated fresh water tanks are provided for storing hold washing water generated by a large capacity type fresh water generator. For improvement of vessel maintenance, access trunks are arranged to allow access from upper deck to double bottom even in the laden condition.

Accommodation, applying the new Maritime Labour Convention in advance, ensures comfort for the officers/crews, and safe maneuverability is achieved with organized arrange-



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Tsuneishi markets first external generator engine waste heat recovery units for ships

Tsuneishi Shipbuilding Co., Ltd. and Miura Co., Ltd. have co-developed the shipbuilding industry's first external "generator engine waste heat recovery unit" (patent pending).

"Generator Engine Waste Heat Recovery Unit" allows collection of exhaust heat from the generator engine equipped in the ship as a heat resource. The unit converts the heat to energy for the auxiliary boiler and can reduce the auxiliary boiler's fuel consumption by 12-25 %.

Originally, the heat resources aboard the ship used exhaust heat from the main engine. But as efforts to reduce exhaust CO₂ and NO_x have lowered the temperature of exhaust from the main engine, it has become difficult to obtain the required energy. Additionally, the exhaust heat of an onboard generator engine inside the ship has less energy than the main engine. Therefore this couldn't be put to effective use either.

The "Generator engine waste heat recovery unit" which has now been developed can be installed to the respec-

tive generator engines to connect to a main engine's auxiliary boiler which used to be the exhaust machine heat collecting unit. These new generator engine waste heat recovery unit can collect exhaust heat from multiple generator engines efficiently and complement the main engine's utilization of exhaust heat. Tsuneishi Shipbuilding Co., Ltd. has already decided to introduce this "generator engine waste heat recovery unit" to some ships which will be built after 2014. Features are:

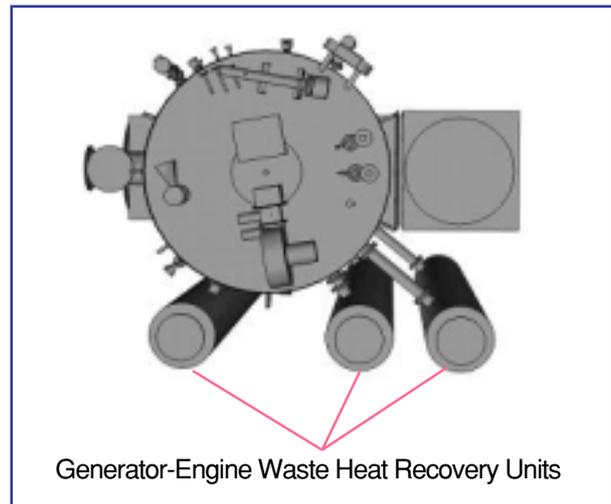
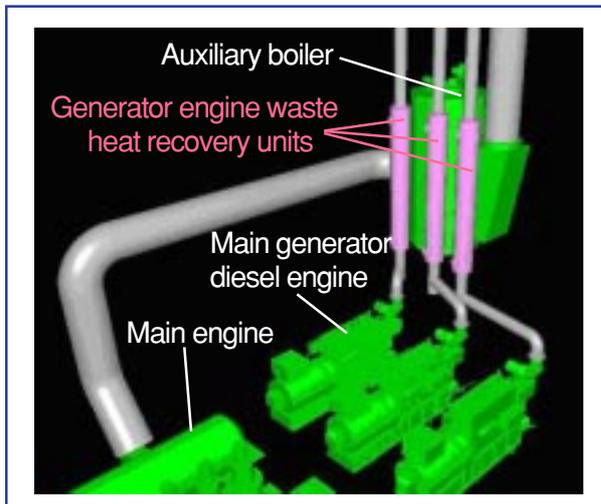
- In case it is introduced to Tsuneishi Shipbuilding's ship, the amount of heat collected from generator engines will be about 10% of the heat collected from the main engine, and about 100kg/h of steam can be generated. Without increasing the size of the auxiliary boiler, it can generate the sufficient amount of steam required to keep inside the ship.
- With the cooperation of Daihatsu Diesel Mfg. Co., Ltd. (Headquarters: Osaka City, Osaka Prefecture), a newly developed specialized silencer is also equipped to this unit, helping

to decrease the noise heard in the neighborhoods when a ship enters the port.

- Flexible layout is possible so that the maintenance space can be secured for various pipe configurations or machine structures around the generator engines and the auxiliary boiler.
- To prevent soot from building up in conducting tubes inside the unit, a high pressure air soot blower is installed to each conducting tube.

Specifications

- Heat transmission area: 10.8m²
- Reserved water quantity: 270kg
- Dry weight: 870kg
- Size: Approx. 5,300mm (H) and Approx. 600mm (F)
- Amount of generated steam: Approx. 100kg/h (in case of Tsuneishi Shipbuilding's ship under 50% load to a generator)
- Heat exchange: Fume tube type
- Feed-water control
- Control type: Control water level of the boiler on the main engine side.
- Circulation type: Natural circulation system



Arrangement of auxiliary boiler and generator engine waste heat recovery units

(Continued from page 4)

ment and rear visibility in the wheelhouse.

Principal particulars

Owner: Green Spanker Shipping S.A.
 Hull No.: 1325
 Delivery: September 4, 2013

L (o.a.) x L (b.p.) x B x D x d:
 229.00m x 225.00m x 32.24m x
 20.20m x 14.648m
 DWT/GT: 82,938t/43,656
 Cargo hold capacity: 95,892m³ (grain)
 Speed, service: about 14.5kt
 Main engine: MAN B&W 6S60MC-

C8.2 x 1 unit
 MCO: 9,750kW
 Complement: 25
 Classification: NK
 Registry: Panama

HOKKAIDO BULKER

Owner: Otamay Shipping Inc.
 Builder: The Hakodate Dock Co., Ltd.
 Hull No.: 854
 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: 31,868t/19,812
 Main engine: Mitsubishi-6UEC45LSE x 1 unit
 Service Speed: 14.4kt
 Classification: NK
 Complements: 24
 Completion: October 2, 2013

**RTM DHAMBUL**

Owner: Rio Tinto Shipping Limited
 Builder: Oshima Shipbuilding Co., Ltd.
 Hull No.: 10690
 Ship type: Bulk carrier/tanker for caustic soda
 L (o.a.) x B x D x d (ext.): 225.00m x 32.26m x 18.90m x 13.778m
 DWT/GT: 70,373t/38617
 Main engine: Mitsubishi 7UEC50LSE-Eco x 1 unit
 Speed, service: 14.50kt
 Registry: United Kingdom
 Classification: DNV
 Completion: September 4, 2013

**YM MOVEMENT**

Owner: Paraiso Shipping S.A.
 Builder: Koyo Dockyard Co., Ltd.
 Ship type: Container Carrier
 L (o.a.) x B x D: 293.18m x 40.00m x 24.30m
 DWT/GT: 72,370t/71,821
 Main engine: Mitsui MAN B&W 10K98ME x 1 unit
 Speed, service: about 25.0kt
 Classification: NK
 Completion: July 29, 2013

**IKAN LUDING**

Owner: ASL Navigation S.A.
 Builder: Onomichi Dockyard Co., Ltd.
 Hull No.: 678
 Ship type: Bulker
 L (o.a.) x B x D x d (ext.): 177.85m x 28.60m x 15.00m x 10.87m
 DWT/GT: 37,070t/22,852
 Main engine: Akasaka Diesels 6UEC45LSE x 1 unit
 Speed, service: 14.9kt
 Registry: Marshall Islands
 Classification: ABS
 Completion: October 2, 2013

**ZOE**

Owner: Glovertwo Shipping Corporation
 Builder: Sasebo Heavy Industries Co., Ltd.
 Hull No.: S814
 Ship type: Bulk carrier
 L (o.a.) x B x D x d (ext.): 225.0m x 32.2m x 19.8m x 14.149m
 DWT/GT: 75,005t/40,334
 Main engine: Mitsui B&W 7S50MC-C8.1 x 1 unit
 Speed, service: 14.5kt
 Registry: Cyprus
 Classification: ABS
 Completion: July 25, 2013

**Rising sun on the day of sea trial**

The sea trial of a newbuilding 300,000DWT ore carrier with dawn on the horizon. The vessel was built by the Ariake Shipyard of Japan Marine United Corporation.

