SEA-Japan

No. 309 Feb. - Mar. 2005

Next generation marine transport:

First commercial Techno Superliner launched

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) has launched the first commercial marine transport based on Techno Superliner (TSL) technology at MES Tamano Shipyard. The Super Liner Ogasawara, a 14,500GT passenger/cargo ship, is the next generation of high-speed marine transports. The ship will enter service on the Ogasawara route extending for 1,000km between Tokyo and Chichi Jima of the Ogasawara Islands.

The collaborative study on the Techno Superliner between Japanese shipbuilders and the government was started to develop the next generation of high-speed commercial ships capable of navigating open seas in 1989, and ended in 1995. The TSL was selected as a Millennium Project of the government, and Techno-Seaways Inc. was incorporated in June 2002 to order construction of the Super Liner Ogasawara.

This TSL consists of a catamaran type hull made of aluminum alloy, two propulsion units of water jets driven by gas turbines, and four power units to drive eight fans for lifting the ship by air cushioning on the sea surface. Combined use of the water jet propulsion and air cushion systems permit the ship to glide over the sea surface at a speed of 70km/h (nearly 40 knots).

The ship was launched in November 2004, and outfitting of interiors and instruments is now under way at the Tamano Shipyard. Completion is scheduled for end of October this year. The Super Liner Ogasawara is ranked among the largest high-speed aluminum alloy ships worldwide.

Upon completion, the navigation time required for the route will be reduced by nine or ten hours compared with 25 hours at present. This means a considerable increase in the number of voyages a year and it is expected to greatly contribute to improving convenience of the people living in the islands and to increasing the number of tourists.

This project is now proceeding under the guidance of the Ministry of Land, Infrastructure and Transport for the whole project management including ship construction and navigational operation. The development of this project is supported by the Japan Railway Construction, Transport and Technology Agency and the Nippon Foundation.

Principal particulars

Ship's name: Super Liner Ogasawara
Gross tonnage: approx. 14,500 tons
Dimensions: Length (o.a.) 140.0m x Breadth 29.8m x Height 10.5m
Main engine: Gas turbine x 2 sets
Propulsion unit: Water-jet pump x 2 sets
Lift engine: High-speed diesel engine x 4 sets
Max. speed: approx. 39 knots (approx. 72km/hr)
Cruising range: approx. 2,200 km
Passengers: 740 persons (max.)
Cargo loading capacity: 210 metric tons (max.)
Ship owner: Techno-Seaways Inc.
Ship operator: Ogasawara Kaiun Co. Ltd.

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Kawasaki delivers LPG carrier, *Rhourd Enouss*, to SONATRACH

Kawasaki Shipbuilding Corporation has delivered *Rhourd Enouss* (HN: 1547), a 59,392m^3 capacity LPG carrier, to Rhourd Enouss Transportation Corp. as an affiliate shipping company of Sonatrach Petroleum Corporation (SPC) of the UK. SPC also is a subsidiary company of SONATRACH of Algeria. The *Rhourd Enouss* is the second delivery of three LPG carriers ordered by SPC from Kawasaki. Kawasaki had previously constructed four LPG carriers for SPC. Newbuildings of LPG carriers built by Kawasaki now totals 39.

The *Rhourd Enouss* has four cargo tanks of the independent tank type that allows contraction of the tanks due to liquefied cargoes such as NH_3 besides LPG at very low temperatures. The cargo tanks are constructed with special steel durable to the lowest temperature of minus 50°C and insulated with urethane foam.

Reliquefaction units using three-stage compressors, cargo heaters, vaporizers, booster pumps, and aeration fans are also provided to facilitate cargo handling at ports. The engine and cargo section operation is also totally managed by an integrated automation system. Various machinery and valves of both sections can be monitored and controlled at the central control room.

The main engine is the fuel-saving super-long stroke, 2-cycle low-speed Kawasaki-MAN B&W type. The use of an electric-control lubrication system for the main engine also reduces the consumption of lubricant for cylinders. The Kawasaki SEA-ARROW bow is employed to increase propulsion efficiency since it is effective to reduce wave-making resistance.

The wheelhouse is equipped with advanced electronic navigation installations, which are centralized in a ship-shaped arrangement to increase handling accessibility, and contributed to acquiring the NAUT-OC notification. Furthermore, adoption of the tracking control system ensures the more accurate and safe course-keeping.

Principal particulars
L (o.a.) x L (b.p.) x B x D x d: 204.92m x 200.45m x 32.20m x 20.20m x 12.10m
DWT/GT: 44,399t/35,306t
Cargo tank capacity: 59,392m^3
Main engine: Kawasaki-MAN B&W 6S60MC-C diesel x 1 unit
MCR: 13,560kW x 105rpm
Speed, service: approx. 17.1kt
Complement: 30
Classification: DNV

Toyohashi completes Panamax car carrier, *Pyxis Leader*

Toyohashi Shipbuilding Co., Ltd. has completed construction of the pure car carrier, *Pyxis Leader* for Pyxis Shipholding S. A. of Panama. The *Pyxis Leader* is designed to carry 5,427 units based on the standard car (6,405 units based on RT43L), trucks, complete knock down (CKD) kits and containers. This is the second of the series of car carriers being built continuously at the shipyard at Toyohashi. The vessel has twelve car decks with garage deck including two liftable decks. Car holds above the freeboard deck have two fire compartments. The main engine is a low-speed, long-stroke diesel engine Kobe Diesel-Mitsubishi 8UEC 60LSII. The high performance propeller saves fuel oil consumption.

Principal particulars
L (o.a.) x L (b.p.) x B x D x d: 199.94m x 190.00m x 32.26m x 34.80m x 10.30m
GT/DWT: 62,195t/21,466t
Main engine: Kobe Diesel-Mitsubishi 8UEC 60LSII x 1 unit
MCR: 15,540 kW (21,129ps) x 104 min^{-1} (rpm)
NOR: 13,209 kW (17,960ps) x 98.5 min^{-1} (rpm)
Speed, service: 20.0kt (max. trial: 21.82kt)
Complement: 28
Classification: NK

IHIMU completes 7,500TEU type container ship, *P&O Nedlloyd Mondriaan*

IHI Marine United Inc. has delivered the 7500TEU type container ship, *P&O Nedlloyd Mondriaan* (HN: 3191), to P&O Nedlloyd B.V. through Reederei Blue Star GmbH at its Kure Shipyard. The *P&O Nedlloyd Mondriaan* is the first of the series of eight ships to be long-term chartered to the P&O Nedlloyd group, and is deployed under its Europe/Asia service. The *P&O Nedlloyd Mondriaan* is a new generation of postPanamax size container ship and features larger capacity and good stability, installation of common rail electronically-controlled DU-Sulzer 12RT-flex 96C high power engine, superior hull form for efficient speed and good fuel consumption, about 700 reefer container receptacles, lashing bridges for simple and secure lashing of on-deck containers, and integrated bridge system with one-man operation design.

In order to realize good propulsion performance, economical operation and good maneuverability of the ship, IHIMU has designed the ship with its technical/engineering know-how, CFD analysis, 3D-FEM ship model analysis, walk-through simulation and apparatus installation simulation CIM system, Ajisai, which IHIMU originally developed.

Principal particulars
L (o.a.) x B x D x d: 335.0m x 42.8m x 24.4m x 14.0m
DWT/GT: 97,517t/94,724t
Number of stowing containers: 8,176TEUs (in case of 7 tiers on deck) 8,450TEUs (in case of 8 tiers on deck)
Main engine: DU-Sulzer 12RT-flex 96C x 1 unit
MCR: 61,900kW x 94.0rpm
Service speed: 24.5kt
Classification: Germanischer Lloyd
Completion: Dec. 14, 2004

Naikai completes 32,000DWT cargo ship, *Ivs Nightjar*

Naikai Shipbuilding Corporation has completed construction of the 32,000DWT general cargoship, *Ivs Nightjar* (HN: 691), for Diamond Island Maritime S. A. at the Setoda Works.

The *Ivs Nightjar* is a unique dry cargo ship consisting of five holds protected with double hull construction of the shipsides and bottom. The double hull construction increases the hull strength and improves ship stability against external damage. This also eases maintenance in the cargo holds and prevents the outflow of cargoes even if the outer shell is damaged.

The ship has a wide beam and shallow draft, which permit entering ports with shallow waters as well as navigating rivers, channels, and lakes. A special stern form was designed to maintain the course despite the wide beam hull, even under seagoing conditions or within a harbor.

The cargo holds can accommodate grain, coal, ore, and steel products. Moreover, timbers can be loaded inside cargo holds and on the exposed deck. The Nos. 2 through 4 cargo holds are of the box-shaped type. Cargoes can be handled with four 30t deck cranes.

The wide hatches facilitate loading and unloading of lengthy products. The longitudinal hull strength allows loading of heavy cargoes in every other hold. If Nos. 2 and 4 holds are empty, the Nos. 1, 3, and 5 holds can load cargoes to the full load waterline.

The *Ivs Nightjar* is an ECO-SHIP employing a low fuel consumption propulsion system based on a low-speed main diesel engine and large diameter propeller.

Principal particulars
L (o.a.) x L (b.p.) x B x D x d: 172.90m x 164.90m x 29.40m x 14.00m x 9.00m
DWT/GT: 32,316t/20,283t
Cargo hold capacity: 42,166.9m^3 (grain)
Main engine: Hitachi B&W 6S46MC-C diesel x 1 unit
MCR: 6,400kW x 111min^{-1}
NCR: 5,440kW x 105min^{-1}
Speed, service: 14.2kt
Classification NK
Complement: 25
Completion: Oct. 29, 2004

MES and Aker Kvaerner strengthen joint technical development for NGH

Mitsui Engineering & Shipbuilding Co., Ltd. (MES), a frontier company for the development of natural gas hydrate (NGH) production and transport technology, has agreed a technical tie-up with Natural Gas Hydrate AS, a group company of Aker Kvaerner ASA, a Norwegian heavy industry group.

Natural Gas Hydrate AS was established jointly by Professor Gudmundsson Jon Steinar of the Technical Institute of Norway, who first proposed marine transport of NGH and Aker Kvaerner ASA. The company will specialize in the development of NGH technology.

The agreement concluded this time includes promotion of joint development of NGH technology between Norway and Japan as well as joint working with potential customers for commercialization and technical discussion of NGH.

MES has continued strenuous efforts for technological development to commercialize NGH in collaboration with several organizations with support from the New Energy and Industrial Technology Development Organization (NEDO), the Japan Oil, Gas and Metals National Corporation (JOGMEC), and the Japan Railway Construction, Transport, and Technology Agency (JRTT). The company will increase R&D on NGH from the global perspective viewpoint based on the new agreement.

NGH pellets production (above) and the test plamt

MES and the Norwegian company will strengthen technological exchange about NGH, prepare for joint presentations to prospective NGH customers, and promote the use of NGH worldwide.

Natural Gas Hydrate AS possesses the proprietary expertise of Dr. Gudmundsson and the R&D resources of the Aker Kvaerner group and is exclusively targeting NGH development. Previously the company carried out a feasibility study on NGH commercialization for a major oil company.

Outline of Natural Gas Hydrate AS

President: Mr. Urdahl Petter
Office: Trondheim, Norway
Shareholders: Aker Kvaerner Engineering & Technology AS: 50%
Professor Gudmundsson Jon Steinar: 50%
Capital: 100,000 NOK
Establishment; August 31, 1999

Imabari completes VLCC, *Toba*, for Toba Shipholding S. A

Imabari Shipbuilding Co., Ltd. has delivered the 299,980DWT type VLCC, *TOBA* (HN: 8022), to the Owner Toba Shipholding S.A. at the Saijo Works. This VLCC is the second vessel developed by Imabari and designed to meet requirements for economical ship operation and environmental protection. The vessel has been designed to ensure safety and reliability at all stages of structural construction. Then the vessel has acquired the notation PS-DA and PS-FA of the NK.

The cargo compartment of the vessel consists of 15 cargo oil tanks and 2 slop tanks divided by 4 transverse bulkheads and two longitudinal bulkheads, which are protected with double-hull construction in accordance with the requirements of the MARPOL regulation 13F. High-tensile steel is applied to the hull parts where effective reduction of the hull weight is possible according to the classification recommendation. Easy access is considered for maintenance of ballast water tanks. The vessel has three independent main cargo pipe line system, which allow simultaneous loading of three types of cargo oils with three sets of 5,500 m^3/h capacity cargo pumps driven by steam turbines. The system is designed to permit each cargo oil pump to take suction from either group of cargo tanks and disharge to the main cargo pipe line system. The cargo oil manifold is de-

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First Commercial UEC Eco-Engine

Electronically controlled diesel engine completed

Mitsubishi Heavy Industries, Ltd. (MHI) has completed the first electronically controlled marine diesel Mitsubishi UEC Eco-Engine, the 8UEC60LSII-Eco. The Eco-Engine will begin service in a pure car and truck carrier of NYK Line capable of loading 6,400 cars/trucks being built at Shin Kurushima Dockyard (Toyohashi Shipbuilding).

With the electronic control system, higher maneuverability, improved start-up and stable ship operation at lower speeds can be realized, as well as environmental protection and economical efficiency.

The Mitsubishi UEC Eco-Engine has been developed with higher reliability and the latest technologies in response to worldwide regulation trends restricting exhaust gas emission.

Based on the advantages of existing UEC engines, a 15% reduction in nitrogen oxide (NO_x) emissions and suppression of generated smoke has been achieved with electronic control system of the fuel injection pumps, exhaust valves, starting air valves, and cylinder lubrication systems. Also, optimal control of the principal systems has achieved improvement in fuel consumption at partial load and lubrication efficiency. As a result, the reliability of the combustion chamber over the full range of operation is improved. By correlation of the timing adjustments between the fuel injection and the exhaust valve open/close, maneuverability at start and low speed are improved.

This marine propulsion engine has various outstanding functions for use in the 21st century. The new engine is named "Eco", which symbolizes this engine's characteristic performances of "electronic control", "ecology", "economy", "easy control (better maneuverability)", and "excellent condition".

Mitsubishi has been working on electronically controlled UEC diesel engines since 1988 and still plans work on other models such as the UEC-LSII and LSE series.

In response to various market demands, such as tighter environmental regulations, stable navigation, and higher economic efficiency, the company developed the UEC Eco-Engines with original technologies such as the stratified fuel-water injection system, engine diagnosis system (Doctor Diesel), and electronically controlled lubricating system (ECL).

Mitsubishi UEC Eco-Engine Terms

Model: 8UEC60LSII-Eco
Number of cylinders: Eight
Cylinder bore: 600mm
Piston stroke: 2,300mm
Output/Engine Speed: 16,360kW x 105rpm (P1 rating)

(Imabari.....continued from page 4)

signed and arranged in accordance with the OCIMF requirements. The vessel is equipped with a cargo vapor emission control system to prevent air pollution.

The main engine is the low fuel consumption Mitsui MAN B&W 8S80MC-C, 2-stroke diesel engine with exhaust turbocharger. Navigation systems such as the ECDIS and the AIS are installed to ensure safe navigation and operation.

Principal particulars
L (o.a.) x B x D x d: 332.99m x 60.00m x 29.00m x 20.533m
DWT/GT: 299,980t/160,068t
Main engine: MITSUI-MAN B&W 8S80MC-C x 1 unit
MCR: 27,960kW x 76.0rpm
Speed, service: 15.55kt
Complement: 34
Classification: NK

To our readers

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SSK completes Panamax bulk carrier, *Maritime Anita*

Sasebo Heavy Industries Co., Ltd. (SSK) has delivered *Maritime Anita*, a 76,000DWT Panamax bulk carrier to Four Shrine Corporation. The *Maritime Anita* is the 11th vessel of the 76,000DWT class Panamax bulk carrier series. The vessel has a forecastle deck and meets some new requirements for bulk carrier safety with water ingress detecting system, dewatering system, and reinforcement of deck fitting. The *Maritime Anita* is one of the largest class of Panamax bulk carriers, and the superior hull form with seven cargo holds and seven side

rolling type hatches provides a larger capacity of 90,911m^3. The main engine uses the latest model of Mitsui-MAN B&W 7S50MC-C with low fuel consumption performance for energy saving.

Principal Particulars:
L (o.a.) x L (b.p.) x B x D x d: 225.00m x 218.00m x 32.20m x 19.80m x 12.20m
DWT: 76,737t
Cargo hold capacity: 90,911m^3
Main engine: MAN B&W 7S50MC-C x 1 set
MCR: 9,230kW
Speed, service: 14.5kt
Classification: NK
Complement: 25

Kai-Ei

Owner: Pyxis Maritime S.A./Little Fountain Maritima S.A.
Builder: IHI Marine United Inc.
Hull No.: 3173
Ship type: VLCC
L (o.a.) x B x D x d: 333.0m x 60.0m x 29.0m x 20.5m
DWT/GT: 300,562t/159,942t
Main engine: DU-Sulzer 7RTA84TB x 1 unit
Output: 27,160kW at 74.0rpm
Speed, service: 15.7kt
Classification: NK
Completion: Sept. 30, 2004

Torrens

Operator: Wilh. Wilhelmsen ASA Group
Builder: Mitsubishi Heavy Industries, Ltd.
Hull No.: 2196
Ship type: Pure car truck carrier
L (o.a.) x B x D x d: abt. 199.99 m x 32.26 m x 36.02 m x 9.5m
DWT/GT: 14,512t/61,321t
Car carrying capacity: 6,500 Units
Main engine: Mitsubishi-UE 7UEC60LS 13,240 kW x 105.0rpm
Speed, service: abt. 20.0kt
Classification: DNV
Completion: Oct. 29, 2004

Lowlands Phoenix

Owner: Great Homes Maritime, S. A.
Builder: Namura Shipbuilding Co., Ltd.
Hull No.: 253

Ship type: Bulk carrier
L (o.a.) x B x D x d: 288.97m x 45.00m x 24.40m x 17.955m
DWT/GT: 177, 036t/89,543t
Main engine: B&W 6S70MC (Mk VI) diesel x 1 unit
Output: 16,860kW x 91.0rpm
Speed, trial max.: 17.50kt
Classification: NK
Completion: Nov. 9, 2004

Lodestar Forest

Owner: I. M. A. Lines Co., S. A.
Builder: The Hakodate Dock Co., Ltd.
Hull No: 798

Ship type: Bulk carrier
L (b.p.) x B x D x d: 167.76m x 29.40m x 13.70m x 9.55m
DWT/GT: 31,923t/19,789t
Main engine: Mitsubishi 6UEC52LA diesel x 1 unit
Speed: 14.4kt
Classification: NK
Completion: Jan. 7, 2005

Medi Genova

Owner: Leo Ocean, S.A.
Builder: Sanoyas Hishino Meisho Corp.
Hull No.: 1221
Ship type: Bulk carrier
L (o.a.) x B x D x d: 225.00m x 32.26m x 19.30m x 13.994m
DWT/GT: 75,767mt/38,855t
Main engine: MAN B&W 7S50MC-C diesel x 1 unit
Speed, service: abt. 14.5kt
Classification: NK
Completion: Oct. 28, 2004