

Kawasaki completes large LNG carrier, *Energy Advance*



Kawasaki Shipbuilding Corporation has delivered the *Energy Advance* (HN: 1521), a large LNG carrier with LNG carrying capacity of 145,000m³, to Tokyo LNG Tanker Co., Ltd. Kawasaki developed the LNG carrier of this class, which can visit any LNG terminal ports worldwide, with similar dimensions to the conventional 130,000m³ class. The carrier is the fourth newbuilding of the 145,000m³ class and second delivery to Tokyo LNG Tanker.

The four LNG cargo tanks are of the independent spherical MOSS type. The heat insulation is the Kawasaki panel system that demonstrates a high heat insulation effect. This insulation system maintains the BOG rate at approximately 0.1% a day.

The cargo tanks are installed inside the compartment built with double side shells and double bottom to ensure safety so that the cargo tanks are not damaged directly.

The wheelhouse is equipped with advanced integrated navigation equipment, which has improved ship operation. Windows around the wheelhouse provide a panoramic view of 360 degrees, allowing one-man operation during

ocean-going navigation.

Cargo-handling operation is carried out at the cargo-handling room located in front of the accommodation quarters, where the Kawasaki IMCS (Integrated Management Control System) is installed for monitoring and controlling the cargo handling operation as well as monitoring engine conditions. The Kawasaki IMCS is very easy to use since it was developed by incorporating experience and suggestions from many operators.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 289.53m x 277.00m x 49.00m
x 27.00m x 11.404m

DWT/GT: 71,586t/119,233t

Cargo tank capacity: 145,410m³ (at -163°C, 98.5%)

Main engine: Kawasaki UA-400 steam turbine x 1 unit

MCR: 26,900kW x 80rpm

Speed, service: abt. 19.5kt

Complement: 43

Classification: NK

Completion: Mar. 30, 2005



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MES delivers 137,100m³ membrane type LNG carrier to Malaysia International Shipping Corp. Bhd.

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) has delivered the 137,100m³ LNG carrier, *Puteri Mutiara Satu* (HN: 1562), to Malaysia International Shipping Corporation Berhad (MISC) at its Chiba Works.

The *Puteri Mutiara Satu* is the last ship of the six *Puteri Satu* series, which were ordered by MISC from Japanese shipbuilders: three from MES and three from Mitsubishi Heavy Industries, Ltd. The ships will be used in LNG transport from Ma-

laysia to Japan.

For reference, Japan imports up to 14 million tons of LNG per year from Malaysia, and 70,000 tons of LNG, which is the amount *Puteri Mutiara Satu* transports in a single voyage, is equal to the energy consumption of about 80,000 households in one year.

The features of *Puteri Mutiara Satu* are as follows:

The cargo containment system licensed by GTT (Gaztransport & Technigaz) of France is called the "GT No. 96E. 2F" heat insulation system

(membrane system). 0.7 mm thick invar (Fe-36%Ni) material is used for the inner tank construction. Cargo pumps have the soft start system utilizing an inverter system to

reduce the impact to the pipings at start-up. The distributed control system for machinery and cargo control system is provided in the centralized control room for centralized monitoring and operation of plant and equipment. The integrated bridge system allows safe operation and also contributes to reduced manpower requirements. The ballast water can be replaced by an automatic ballast water exchanging system.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 276.00m x 263.00m x 43.40m x 25.50m x 11.01m

DWT/GT: 76,229t/94,446

Tank capacity: about 137,595m³

Main engine: Steam turbine x 1 unit

MCR: 26,800kW x 89rpm

Speed, trial max.: 21.38kt

Complement: 55

Classification: LR

Completion: Apr. 22, 2005



SHI-ME delivers 105,250MTDW D/H tanker to Amadeus Shipping UK Limited

Sumitomo Heavy Industries Marine & Engineering Co., Ltd. (SHI-ME) delivered the 105,250MTDW double-hull Aframax crude oil carrier, *Star Lady* to Amadeus Shipping UK Limited at Yokosuka Shipyard of SHI-ME on 2 June 2005.

The hull form is optimized to achieve high propulsive efficiency and is designed with highly reliable structures. The Sumitomo Stern System (SILD, NBS propeller and HLES Rudder) saves fuel consumption and improves maneuverability.

Cargo oil tanks and piping systems are arranged in triple-segregation groups for flexible cargo handling. Water ballast tanks are coated with modified epoxy coating with back up anodes for easy maintenance and inspection. The vapor emission control system (VECS) is installed, complying with the US Coast Guard require-

ments to prevent air pollution during cargo handling.

For ship safety, a fixed flammable gas detection system is provided in water ballast tanks adjacent to cargo oil tanks. The main engine is a camshaft-less 6RT-FLEX58TB with intelligent electronic control system, which can optimize and improve fuel oil consumption, and reduce exhaust gas emissions, such as NO_x, smoke, etc., at low steaming speed.

Principal particulars

L (o.a.) x L (b.p.)

x B x D x d:

239.00m x

22.900m

x 42.00m x

21.30m x

12.19m

DWT/GT: abt. 105,250t/abt. 56,500t

Loading capacity: 122,330m³

Main engine: DU-Sulzer 6RT-flex58T-

B diesel x 1 unit

Service Speed: 15.2kt at 12.19 draft

Complement: 29

Classification: LR

Completion: June 2, 2005



Trailing suction hopper dredger/oil recovery vessel *Seiryu Maru* completed for MLIT

Mitsubishi Heavy Industries, Ltd. (MHI) has completed the trailing suction hopper dredger/oil recovery vessel, *Seiryu Maru*, for the Ministry of Land, Infrastructure and Transport (MLIT) at the Kobe Shipyard. This *Seiryu Maru* was built as a replacement ship for the old *Seiryu Maru* that had been built in 1978.

Functions coping with disasters have been added to the new vessel besides those of dredging/oil recovery.

Usually, the vessel is engaged in dredging fairway and anchorage areas in Nagoya port. If an oil spill accident occurs, the ship mobilizes to the oil spill site, and engages in oil collection. In a disaster such as an earthquake, etc., the vessel can be used as a base to cope with disasters. For this purpose, an information communications system, conference room, and helicopter deck are provided.

As a dredger, the *Seiryu Maru* is the aft center trailing suction type with a drag head of 7.2m wide, which achieves the level dredging. In addition, the recycling system, which re-

turns the dredged thin muddy water in the hopper to the drag head, was adopted to improve the dredging efficiency. For dredged material handling, a land discharging

system has also been developed, which avoids marine pollution.

The oil spill recovery system is a new development. The oil recovery system is provided with two different types of oil recovery system to cope with low to high viscosity oil types, and it is possible to operate in significant 2.5m height waves. For collection of spilled oil, a jet water system is employed instead of the conventional oil boom type.

The *Seiryu Maru* is also fully automated. The integrated system is applied to dredging, land discharging, ship maneuvering, oil recovery, and engine room operation. The control



network system is installed for managing data, image, disaster, and remote diagnostic controls.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 104m x 96.0m x 17.4m x 7.5m x 5.6m

GT: 4,792t

Main engines: Two diesel engines

Navigation speed: 13.5kt (light condition)

Dredging method: Aft center drag type

Dredging pumps: 1 unit (8,000m³/h/unit)

Recycle and land discharging pump: 1 unit (8,000m³/h/unit)

Hopper capacity: 1,700m³

Recovered oil storage tank: 1,500m³

Imabari completes 88,000DWT coal carrier

Imabari Shipbuilding Co., Ltd. has delivered the 88,111DWT bulk carrier, JP AZURE (HN: 1443), to the owner, Oak Spring Maritima S. A., at the Marugame Headquarters. The JP AZURE is one of the 6th series of the 88,000DWT type bulk carrier developed by Imabari.

The vessel has been designed to meet the recent bulk carrier requirements as an oceangoing bulk carrier

suitable for carrying coal and ore cargoes. The main cargo of coal will be transported to Electric Power Development Co., Ltd. of Japan. The design has obtained a good reputation for its cargo handling efficiency and ship's operability.

The vessel consists of five cargo holds and the No.3 cargo hold can be used as a water ballast tank. The number of cargo holds of the JP

AZURE is less than those of other coal carriers of the same type. This cargo hold configuration is highly evaluated because it shortens the loading and unloading time.

And furthermore the double hull construction is applied to the cargo hold compartments, and this arrangement makes cargo handling and cargo hold cleaning easier. It provides owners and operators with superior cost performance. The vessel is also equipped with mooring equipment, which satisfies the conditions for entering coal berths in Japan.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 229.93m x 220.00m x 38.00m x 19.90m x 13.801m

DWT/GT : 88,111t/48,028t

Hold Capacity : abt 101,600m³

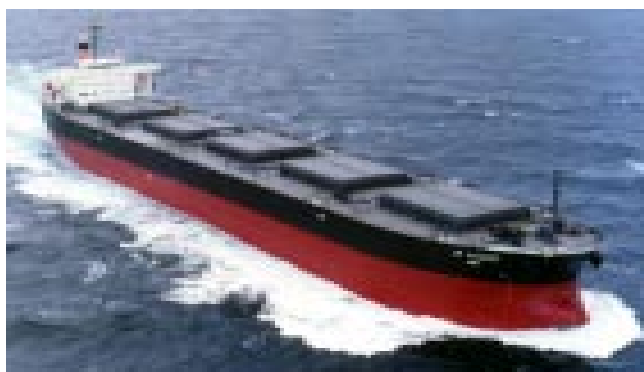
Main engine: MITSUI-MAN B&W 6S60MC (Mark VI) x 1 unit

MCR: 12,240kW x 105rpm

Speed, service: 14.7kt

Complement: 25

Classification: NK



MHI starts development of new UEC45LSE engine

Mitsubishi Heavy Industries, Ltd. (MHI) has started development of a new UEC45LSE engine with a cylinder bore of 45cm as the latest LSE series of the UE diesel engine family.

LSE engine series are now developed with the concept of Four "E"s: **E**xcellent reliability & **E**conomy, **E**nvironment friendly, **E**asy maintenance. MHI will pursue engine reliability based on the abundant experience accumulated through UEC68LSE, 60LSE, 52LSE, and 50LSE engines. The new engine is targeted to be applied to 30,000 to 40,000DWT class bulk and product carriers.

The new design concept also allows

equipping the SIP lubricating system for cylinder liners which has a good reputation in the market. Moreover, the new engine follows the UE engine feature of high economy represented by low fuel oil consumption and low lube oil consumption.

MHI own-developed high-precision analysis tools for in-cylinder combustion simulation, elasto-hydro dynamic (EHD) analysis for main bearings, etc., as well as the 3D-CAD system will be used to raise reliability, and simultaneously to shorten the time required for the development to achieve earliest marketing.

For this class of engine, 250 units of UEC52LA diesel engines have been

built and delivered mainly for 30,000DWT class bulk carriers since 1985 when the model was marketed. The UEC52LA built by licensees including Akasaka Diesels Limited and Kobe Diesel Co., Ltd. has been highly appreci-

ated in the market, for the high operational reliability of the engines, and at present, many engines are still listed in the backlog order book.

However, the 20 years since the debut has led the company to develop a new engine satisfying today's requirements for lighter, more compact, and higher performance. The UEC45LSE will thus be developed based on both new technologies of the LSE engines and reliability of the UEC52LA engines.

The new UEC45LSE diesel engine is expected by the customers as a successor to the best seller UEC52LA diesel engine. Thus, MHI will continue to exert utmost effort with licensees to market the latest UEC-LSE series featuring high performance together with the other existing series including the UEC-LSII/LSE models.

UEC45LSE specifications

No. of cylinders: 5 to 8

Output: 6,225 to 9,960kW

Cylinder bore: 450mm

Stroke: 1,840mm

Output: 1,245kW/cyl.

Engine speed: 130rpm

Mean effective pressure: 1.96MPa

Fuel oil consumption: 169g/kW

at P1 rating



Photo shows first UEC68LSE engine equipped for a 177,000DWT bulk carrier as the main engine

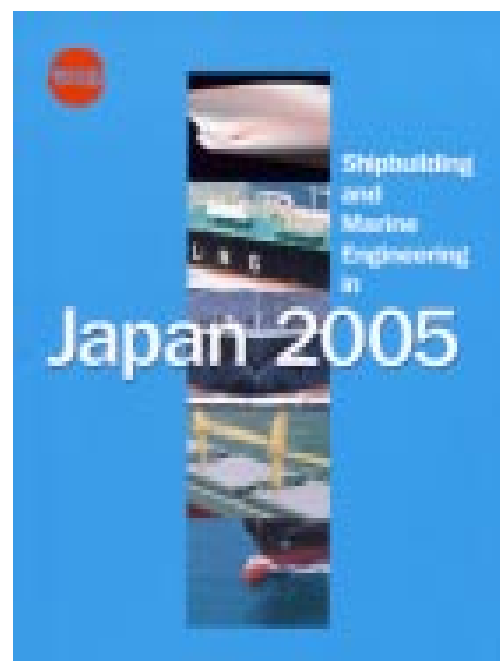
SHIPBUILDING AND MARINE ENGINEERING IN JAPAN 2005

Shipbuilding and Marine Engineering in Japan 2005 has been published by the Japan Ship Exporters' Association (JSEA) with financial support from The Nippon Foundation (Chairman: Ms. A. Sono).

The publication (210mm wide x 285mm tall, four color and 64 pages) outlines the latest shipbuilding achievements, both ships and advanced technologies. The details of ships and shipbuilding technology are compiled in a CD-ROM for readers' convenience.

Major contents include new completions, new shipbuilding technology, navigation systems, energy-saving equipment and systems, main engines, software for shipbuilding rationalization, and building and repair facilities, emphasizing technical features and R&D activities, which have been developed in the last two years.

The web site of the member companies can be accessed by clicking the URL address embedded in the first page of the respective companies. Moreover, if you want to find a specific ship, you can search by the ship type, shipyard, or the thumb nail number on the ship search pages.



New JSEA President appointed

The 89th Annual General Meeting of the Japan Ship Exporters' Association (JSEA) selected 31 directors and two auditors in Tokyo



Mr. Ito

on May 19, 2005. Subsequently, the 531st Directors' Meeting was held and selected Mr. Mototsugu Ito, President of Ishikawajima-Harima Heavy Industries, Co., Ltd. as the new JSEA President.

Mr. Ito's tenure will last the usual two years. Mr. Ito has just completed a two-year term as Chairman of the

Shipbuilders' Association of Japan (SAJ), having held the position since 2003.

At the same meeting, four Executive Vice Presidents of the JSEA were appointed: Mr. Akira Matsuda, Corporate Executive Vice President, Member of the Board of Marubeni Corporation; Mr. Sho Minami, President of Oshima Shipbuilding Co., Ltd.; Mr. Shuichi Tadokoro, President of Kawasaki Shipbuilding Corporation and Mr. Takao Sunami, Executive Managing Officer, Chief Operating Officer, Machinery Business Unit of Mitsui & Co., Ltd.

Mr. Taizo Fukuda was appointed

as the Senior Managing Director of the JSEA. Mr. Toshimichi Okano, the former President of the JSEA, was also appointed as a new Advisor to the JSEA at the meeting.

New SAJ Chairman appointed

The annual general meeting of the Shipbuilders' Association of Japan (SAJ) held on June 21 elected Mr. Takashi Nishioka as the Chairman. Mr. Nishioka is concurrently Chairman of Mitsubishi Heavy Industries, Ltd.



Mr. Nishioka

NOR-SHIPPING 2005

JSEA demonstrates recent shipbuilding technologies in Japan

The Japan Ship Exporters' Association (JSEA) participated in the 20th NOR-SHIPPING 2005 (The 20th International Shipping Exhibition and Conference) with the financial support of The Nippon Foundation and in cooperation with The Shipbuilders' Association of Japan. The event was held at the Lillestrom Exhibition Centre in Lillestrom, Norway for four days from June 7 through 10. 820 companies from 39 nations participated in the exhibition, and the attendance was an estimated 13,429 people.

The Japanese Exhibition Stand was opened with the attendance of officials related to Japanese shipbuilding industry on June 7. The Japanese ambassador to Norway Ms. Fumiko Saiga, JSEA President Mr. Mototsugu Ito, and Japanese Marine Equipment Association (JSMEA) Chairman Mr. Masahiro Tsuji were present. The official opening of the exhibition took place on June 8. Officials and distinguished guests visited each stand, and at the Japanese stand, Ambassador Ms. Saiga, and officials welcomed Mr. Borge Brende, Minister of Trade and Industry of Norway, Mrs. Lim Hwee Hua, Minister of State for Finance and Transport of Singapore, and other officials into the stand.

JSEA in cooperation with 12 Japanese shipbuilders occupied a 240m² stand area near the entrance of Hall B, and JSMEA exhibited technologies at an adjacent stand. Both associations thus represented the total Japanese experience. JSEA demonstrated the Japanese shipbuilding industry today, using photos, scale-model ships, and a plasma display system. PR videotapes provided by Japanese shipbuilders were digitized for display on

the Plasma Vision display at the exhibition with the support of the Nippon Foundation. This was a great success in increasing the exhibition effect.

A party was held on June 8 at the Radisson SAS Scandinavia Hotel, Oslo, co-sponsored by Ambassador Ms. Saiga and the JSEA President Mr. and Mrs. Ito. About 656 guests were invited from various circles including Norwegian shipowners.



Tape cutting at Japanese Stand: from left are President Ito, Ambassador Saiga, and Chairman Tsuji

Yuyo Berge

Owner: Sunny Gas Transportation, S. A.
Builder: Mitsubishi Heavy Industries, Ltd.
Hull No.: 2193
Ship type: LPG Carrier
L (o.a.) x B x D x d: abt. 230m x 36.60m x 20.80m x 10.60m
DWT/GT: 48,912t / 45,965t
Cargo tank capacity: 78,908m³
Main engine: Mitsubishi 7UEC60LS x 1 unit
Speed, service: 16.7kt
Classification: NK
Completion: March 28, 2005

Port Star

Owner: Sun Olive Line Corp.
Builder: The Hakodate Dock Co., Ltd.
Hull No.: 800
Ship type: Bulk carrier
L (b.p.) x B x D x d: 167.00m x 29.40m x 13.70m x 9.56m
DWT/GT: 31,921t/19,802t
Main engine: Mitsubishi 6UEC52LA diesel x 1 unit
Speed, service: 14.4 kt
Classification: NK
Completion: Apr. 20, 2005

Graecia Universalis

Owner: Graecia Universalis Shipping Limited
Builder: Namura Shipbuilding Co., Ltd.
Hull No.: 252
Ship type: Bulk Carrier
L (o.a.) x L (b.p.) x B x D x d: 224.90m x 215.00m x 32.20m x 19.30m x 13.962m
DWT/GT: 73,902t/39,041t
Main Engine: B&W 7S50MC-C diesel x 1 Unit
Output: 10,371 kW x 119.3rpm
Speed, trial max.: 16.87kt
Classification: LRS
Completion: Apr. 8, 2005

Ginga Cougar

Owner: Panther Navigation Inc.
Builder: Shin Kurushima Dockyard Co., Ltd.
Hull No.: 5317
Ship type: Chemical tanker
L (o.a.) x B x D x d: 159.98m x 26.8m x 14.2m x 9.00/9.85m
DWT/GT: 25,435t/16,232t
Main engine: 6UEC52LA diesel x 1 unit
Speed, service: 15.5kt
Classification: NK
Completion: Mar. 9, 2005

Bunga Kasturi Dua

Owner: Malaysia International Shipping Corporation Berhad
Builder: Universal Shipbuilding Corporation
Hull No.: 014
Ship type: VLCC
L (o.a.) x B x D x d: 329.99m x 60.00m x 29.70m x 21.60m
DWT/GT: 300,542t/157,098t
Main engine: Hitachi Zosen B&W 7S80MC (Mk 6) x 1 unit
Speed, service: 16.0 kt
Classification: ABS
Completion: Feb. 28, 2005

Grand Phoenix

Owner: Dynamic Aurora Shipping S. A.
Builder: Toyohashi Shipbuilding Co., Ltd.
Hull No.: 3572
Ship type: Car carrier
L (o.a.) x L (b.p.) x B x D x d: 199.99m x 192.00m x 32.26m x 35.80m x 9.60m
DWT/GT: 18,383t/59,217t
Main engine: MITSUI MAN B&W 7S60MC (Mark 6) diesel x 1 unit
MCR: 14,280 kW (19,416ps) x 105 min⁻¹ (rpm)
Speed, service: 19.8kt
Complement: 25
Classification: KR