



## High-speed ferry Hamanasu wins The Ship Of The Year 2004



The Japan Society of Naval Architects and Ocean Engineers (former The Society of Naval Architects of Japan) has awarded its 15th Ship Of the Year 2004 award to the *Hamanasu*, a 34,181GT high-speed ferry, built by Mitsubishi Heavy Industries, Ltd. for Shin Nihonkai Ferry Co., Ltd. in June 2004. The award ceremony took place at the Nippon Kaiun Club in Tokyo on July 21, 2005.

The screening committee session organized by specialists and writers for the six selected vessels was held with an audience at the Yokohama Grand Intercontinental

### Principal particulars

Classification: JG, Non-International (Greater Coastal Service)

Principal dimensions

L (o.a.) x B (mld.) x D (mld.) x d (design mld.): 224.82m x 26.00m x 20.40m x 7.20m

DWT/GT: 6,649t/34,181t

Loading capacity

Number of passengers: 820

Trucks & trailers (12m): 158/Cars: 65

Service speed: 30.5 knots

Main engines: 2 x Wartsila 12V46C (12,600kW) diesels

Propulsion: 1 x ABB Azipod + 1 x CPP (Hybrid CRP Pod Propulsion)

Main generator engines: 2 x Wartsila 12V46C(12,600kW)

Aux. generator engine: 1 x Daihatsu 8DK32C (2,910kW)

Hotel on June 3 and the committee selected *Hamanasu* as The Ship of the Year 2004 as the world's first vessel employing the hybrid CRP-POD propulsion system. The propulsion system can achieve the world's highest navigation speed of 30.5 knots with dramatic fuel savings of over 13% compared with conventional propulsion.

The second prize was awarded to the unique asymmetric catamaran ferry *Glover*, designed by MHI Marine Engineering Co., Ltd. and Epsilon Co., Ltd., and built by Setouchi Craft Co., Ltd.

### Hamanasu & Akashia

#### First Hybrid CRP-POD Propulsion High-speed Ferry in the World

*Hamanasu* and *Akashia*, the first vessels adopting a hybrid CRP-POD propulsion system, were designed and built at Nagasaki Shipyard and Machinery Works of Mitsubishi Heavy Industries, Ltd. and delivered to Shin Nihonkai Ferry Co. Ltd. on June 25 and 28, 2004.

This design concept allows high performance in terms of both propulsion efficiency and maneuverability. Furthermore, the vessels are the longest and two of the fastest ro-pax ferries in the world.

*Hamanasu* and *Akashia* have been in service in a Japanese domestic route between Maizuru, Kansai district and  
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Otaru, Hokkaido Island traveling for 20 hours. Three conventional ferries were replaced by these two high-speed ferries, which provide attractive service for passengers and cargo logistics and improve operational economy.

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**The hybrid CRP-POD propulsion system** consists of a single POD propulsion unit associated with a conventional mechanical propulsion plant. The POD unit is arranged just behind the single Controllable Pitch Propeller (CPP) with single-skeg hull form. This can eliminate the resistance of twin shafts and supporting brackets. Further, the pod propeller is contra-rotating with the mechanical powered propeller for achieving high propulsion efficiency by reducing tangential water flow.

This innovative concept has yielded significant fuel savings (over 13%) to the operator in comparison with the conventional twin shaft design. Excellent propulsion performance of the hybrid CRP-POD system was confirmed not only by the trial maximum speed of 32.04 knots but also by the operational record since June 2004.

With the hybrid CRP-POD propulsion system, the POD unit provides significant lateral force in any direction, meaning that maneuvering within harbors and other confined waterways is much easier than conventional twin screw vessels. This improvement not only facilitates ship operation but also reduces the risk of collision or stranding in heavy weather conditions and reduces the cost of tug boat assistance.

The power and revolutions of both CPP and POD can be controlled by a single telegraph handle located on the bridge console and ECR console simultaneously by a CRP controller unit. The CRP controller unit regulates the load balance of CPP and POD to optimize the propulsion performance and to ensure the safe operation of the system. When in harbor or in case of emergency, the CPP and POD can be operated independently.

**The mechanical-drive plant** consists of two Wartsila 12V46Cs diesel engines and another two Wartsila 12V46C for electric generation plant for the POD and general use. This arrangement has the benefit of commonality of spare parts. The POD propulsion unit is an ABB Azipod type 21.

This hybrid power plant combined with mechanical plant and electric power plant provides high propulsion performance to compensate for the initial investment in the electric power plant and POD system.

**The ship is provided with seven decks.** The lowest deck, Deck 1, is for loading passenger cars. Deck 2 and Deck 3 are for loading large trucks and trailers; lane length of these two decks is about 2,300m in total. Decks 4 to 6 are for accommodations for passengers and crew.

The ship is provided with three shore ramps and two shell doors. Shore ramps are located on the aft part of Deck 2. One of the shore ramps is at the center and the others at the sides. The shell doors are located on the aft part of Deck 3 to be connected to shore side ramp facilities. Trucks and trailers loaded on Deck 3 can be turned with a turntable 14m in diameter, which is located on the aft part of Deck 3. For access to Deck 1, one fixed type internal ramp way is provided on Deck 2 aft with a weather tight cover.

**Accommodations consist of 193 passenger cabins** including four suite cabins, 40 deluxe cabins, and dormitory cabins on Deck 4, Deck 5 and Deck 6 accommodating a total of 820 passengers. Public facilities for the 20 hour trip are provided: two restaurants, cafe terrace, conference room, forward saloons, children's room and public bath with sauna are arranged mainly on Deck 5.



**Interior** design in the public space of each vessel has a different motif based on "nature" to provide a unique atmosphere for passengers. For Hamanasu, the motif is "space and stars," and for Akashia, the motif is "the Earth."

Entrance (left) and cafe terrace (below)





**Universal Shipbuilding****Orders received for Mediterranean Max type LNG carriers**

Universal Shipbuilding Corporation has received two orders for construction of 75,000m<sup>3</sup> LNG carriers, from Mediterranean LNG Transport Corporation and Skikda LNG Transport Corporation. The carriers will be put in service for transport of LNG produced in Algeria to European countries located along the Mediterranean Sea coast. The carriers are designed to have the optimal size for the Mediterranean Sea area, and are called Mediterranean Max.

Algeria is the second largest LNG exporting country (next to Indonesia) in the world. Natural gas produced in the gas fields located inland is sent to LNG export terminals where natural gas is cooled down to minus 163°C for export as LNG.

In the Mediterranean Sea area, many medium and small LNG carriers are in service at present although most carriers are 30 years old or more. In the next ten years, these carriers will be replaced by newbuildings. European countries at present depend upon natural gas via pipe lines from the North Sea, Russia, Libya, and Algeria. However, the supply capacity has already reached the limit. Due to this and the increasing demand for LNG in Europe, replacement of exist-

ing LNG carriers is now becoming essential to secure LNG supply capacity by marine transport, which will become more important.

Meanwhile, Universal Shipbuilding has been focusing on the limitations to the ship's length, width, and draft at the LNG receiving terminal ports located in the Mediterranean Sea. The company has developed the Mediterranean Max type LNG carrier to provide optimal cargo capacity to the limitations as an important ship type, and has carried out marketing of the carrier for local exporters and importers.

The new ship type will be the standard for LNG transport in the Mediterranean Sea because the design superiority has highly been evaluated in the process of marketing, resulting in the first order for newbuildings.

Universal Shipbuilding will continue to promote marketing of the Mediterranean Max type LNG carriers.

**Features**

- Every main Mediterranean LNG



receiving terminal port can accept the Mediterranean Max.

- Energy-saving type with the use of SURF BULB/SSD
- Employment of a large capacity bow thruster provides easy ship maneuverability within a port.
- LNG cargo containment facilities use the GTT Mark III membrane type, with high reliability.

**Principal particulars**

L (o.a.) x L (b.p.) x B x D x d: 220.0m x 210.70m x 35.00m x 22.55m x 9.75m

Deadweight: 37,700 MT

Cargo tank capacity: 75,500m<sup>3</sup> (-163°C, 100%)

Boil off rate: 0.20%/day

Main engine: Steam turbine x 1 unit

MCO: 15,000KW x 94 min<sup>-1</sup>

CSO: 13,500KW x 90.8 min<sup>-1</sup>

Speed, service: 17.5kt

Classification: BV

**Kawasaki completes newly developed VLCC**

Kawasaki Shipbuilding Corporation has delivered the 315,000DWT VLCC, *Katsuragisan* (HN: 1563), to Rhapsody Shipping S. A. at the Kawasaki Sakaide Works. The vessel is designed to have the maximum load-

**Katsuragisan**

ing capacity that is allowed to pass through the Strait of Malacca. This is the first VLCC employing the newly developed hull design.

As a most advanced VLCC, *Katsuragisan* can shuttle between the Gulf and Japan via the Malacca Strait and can enter any major berth. The bunker tanks of the vessel have

double hull construction like the cargo tanks for marine pollution prevention in an accident. For fuel saving, the rudder bulb with fins (RBS-F) and highly efficient propeller are used.

**Principal particulars**

L (o.a.) x L (b.p.) x B D x d: 333.00m x 324.00m x 60.00m x 29.00m x 20.896m (full load)

DWT/GT: 311,620t/160,292t

Cargo tank capacity: 351,580m<sup>3</sup>

Main engine: Kawasaki-MAN B&W 7S80MC-C diesel x 1 unit

Speed, service: 15.55kt

Complement: 30

Classification: NK

Completion: July 15, 2005



**Altair Trader with double-hulled fuel oil tanks****MES completes new generation Malaccamax VLCC**

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) has completed construction of the 299,985 VLCC, *Altair Trader* (HN: 1600), for Fortitude Shipping Navigation S. A. of Panama at the Chiba Works.

Although MES delivered two Malaccamax VLCCs two years ago, the *Altair Trader* is designed with the new hull form called Mitsui Malacca Doublemax. Both the deadweight and the cargo tank capacity are maximized for efficient transport of crude oil of typical specific gravity.

The owner and MES have anticipated that the double hull construction will become mandatory for bunker tanks in the future IMO rules, so that the double hull of the bunker has been implemented for the vessel. Thus marine pollution prevention is fully considered in the hull construction together with double hulls for the cargo tanks.

Moreover, the vessel equips the MIPB-Wing (Mitsui Integrated Propeller Boss with Wing), which is a newly developed device to improve propeller propulsion efficiency. The

service speed and fuel oil consumption efficiency have been improved together with both advanced bow and stern forms.

The main engine adopts the electronic-control lubrication system for engine cylinders to decrease ship operation costs, and the steam turbo generating system is also employed, which recovers thermal energy from the exhaust gas of the main engine.

Other installations include the fixed type flammable gas detecting system arranged in the ballast tanks and the pump room to confirm safe working environment; GPS and differential GPS for ship positioning by satellite; electronic chart display and information system (ECDIS) and automatic ship identification system (AIS) that ensure safe navigation and ship operation; and color CCTV sys-



tem in the engine room, which include an alarm function in case of fire and carry out monitoring from the wheelhouse and the engine control room.

**Principal particulars**

L (o.a.) x L (b.p.) x B x D x d: 333.00m x 324.00m x 60.00m x 28.80m x 20.338m

DWT/GT: 299,985t/160,216t

Cargo tank capacity (100%): 354,275m<sup>3</sup>

Main engine: Mitsui-MAN B&W 7S80MC-C diesel x 1 unit

MCR: 27,160kW x 76rpm

Complement: 30

Classification: NK

**IHIMU completes 87,000DWT bulk carrier, *Alam Penting***

IHI Marine United Inc. (IHIMU) delivered the *Alam Penting* (HN: 3185), 87,000DWT Over Panamax size bulk carrier with double hull structure, to Eminence Bulk Carriers Pte. Ltd. on 19 July, 2005 at its Yokohama Shipyard.

The *Alam Penting* is the third of a

series of FUTURE-87 type bulk carrier succeeding to the superior features of the well established FUTURE series developed by IHIMU. In order to meet strict environmental guidelines, the *Alam Penting* has been designed with the double hull structure to minimize the risk of any major pollutant spills.

Seven cargo holds are suitable for carrying grain, and are strengthened for heavy cargo loading when holds Nos. 2, 4 and 6 may be empty for carrying ore, which allows the vessel to carry a greater range of

cargoes. Side rolling hydraulic chain-drive type hatch covers are fitted.

The *Alam Penting* has also well-appointed fittings for easy operation and maintenance, and fuel efficient hull form with IHIMU LV Fin is adopted. Grain cargoes can be loaded with untrimmed ends. The ship complies with the requirements of IACS Bulk Carrier Safety.

**Principal particulars**

L (o.a.) x B x D x d: 229.00 m x 36.50 m x 19.90 m x 14.10 m

DWT/GT: 87,000t/47,000t

Main engine: DU-SULZER 6RTA-58T diesel x 1 unit

Output: MCR 10,300kW x 95.0 rpm

NOR 8,550kW x 89.3 rpm

Speed, service: 14.5kt

Complement: 25

Classification: LRS



## Naikai completes 48,500DWT methanol carrier, *Patagonian Mystic*

Naikai Zosen Corporation has completed construction of the 48,500DWT methanol carrier, *Patagonian Mystic* (HN: 690), for delivery to New Seagull Shipping S. A. at the Setoda Works. The carrier has the double hull construction conforming to the international requirements for the prevention of marine pollution to transport methanol, petroleum products, and Class III chemical products. The ship has the maximum permissible width for passage through the Panama Canal.

Fourteen cargo tanks are provided, each with a hydraulic-drive cargo pump. Two seawater ballast pumps are provided for eight ballast tanks

adjoining the cargo tanks, installed in the port and starboard No. 3 ballast tanks.

The living quarters and the engine casing are isolated so the quietness of the cabins is ensured. The 2.2m high ceiling of the cabins gives an open feeling to the crew.

The main engine is a highly reliable and fuel efficient two-stroke low-speed diesel engine.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 186.00m  
x 178.00m x 32.20m x 18.40m x



11.60m (designed)  
DWT/GT: 49,414t (full load)/29,606t  
Cargo tank capacity: 58,495.528m<sup>3</sup>  
Main engine: Hitachi-MAN B&W  
6S50MC-C diesel x 1 unit  
MCR: 9,480 kW x 127 min<sup>-1</sup>  
NCR: 8,530 kW x 123 min<sup>-1</sup>  
Speed, service: 14.6kt  
Classification: ABS  
Complement: 25  
Completion: July 15, 2005

### Largest annual production record

## MES diesel production totals 3.48 million BHP in fiscal 2004

### Total of 47.96 million BHP since 1928

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) has achieved the largest annual production record of diesel engines with a total of 3.48 million BHP (177 units) at its Machinery Factory of the Tamano Works in fiscal year 2004.

The aggregated production since 1928 when the company built the first diesel engine has become 47.96 million BHP. MES engine production involves only the Mitsui-MAN B&W type. Production in FY 2004 included 177 engines including 13 large bore engines (98cm and 90 in diameter)



built for container carriers. The figure exceeded the largest annual production record with a total 2.57 million BHP (125 units) achieved in FY 2003.

The satisfactory schedule of engine production has urged MES to expand its production capacity by adding a new assembly shop with an area of 4,500m<sup>2</sup> adjoining the No. 1 assembly factory, which will be completed in October this year. The company is now anticipating a higher level of engine production. MES will reach an accumulated engine output of 50,000,000 BHP in the same month, the world record for engine horse power in a single brand. In addition, the company will complete 3.66 million BHP (191 units) in 2005 and 4.24 million BHP (209 units) in 2006.

### Diesel engine production in the last five years

FY 2000: 99 units for 167 million BHP  
FY 2001: 122 units for 240 million BHP  
FY 2002: 122 units for 253 million BHP  
FY 2003: 125 units for 257 million BHP

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FY 2004: 177 units for 348 million BHP  
FY 2005: 191 units for 366 million BHP  
FY 2006: 209 units for 424 million BHP  
\* Anticipated production in fiscal 2005 and 2006.



*Wana Bhum*

**Owner:** Regional Container Lines Pte. Ltd.  
**Builder:** Mitsubishi Heavy Industries, Ltd  
**Hull No:** 1107  
**Ship type:** Container carrier  
**L (o.a.) x B x D x d:** abt. 194.9m x 30.60m x 16.80m x 11.40m  
**DWT/GT:** 30,832t / 23,922  
**Loading capacity:** 2,378TEUs  
**Main engine:** Mitsubishi 7UEC68LSE x 1 unit  
**Speed, service:** abt 22.0kt  
**Classification:** NK  
**Completion:** June 15, 2005

*Nectar*

**Owner:** Crystal Mountain Investment Inc.  
**Builder:** Sumitomo Heavy Industries Marine & Engineering Co., Ltd.  
**Hull No.:** 1310  
**Ship type:** Tanker  
**L (o.a.) x B x D x d:** abt. 239.00m x 229.00m x 42.00m x 21.30m x 12.19m  
**DWT/GT:** abt. 105,250t/abt. 65,500t  
**Main engine:** DU-Sulzer 6RTA58T diesel x 1 unit  
**Speed, service:** abt. 15.2kt  
**Classification:** DNV  
**Completion:** July 8, 2005

*Shin Nichiho*

**Owner:** Shinope Maritima S. A.  
**Builder:** Universal Shipbuilding Corporation  
**Hull No.:** 242  
**Ship type:** Bulk carrier  
**L (o.a.) x B x D x d:** 299.95m x 50.00m x 24.10m x 17.88m  
**DWT/GT:** 203,180t/101,953t  
**Main engine:** MAN B&W 6S70MC Mk6 x 1 unit  
**Speed, service:** 14.50kt  
**Classification:** NK  
**Completion:** Apr. 22, 2005

*Port Alice*

**Owner:** Citrus Maritime, S. A.  
**Builder:** The Hakodate Dock Co., Ltd.  
**Hull No:** 801  
**Ship type:** Bulk carrier  
**L (p.p.) x B x D x d:** 167.00m x 29.40m x 13.70m x 9.56m  
**DWT/GT:** 31,871t/19,791t  
**Main engine:** Mitsubishi-6UEC52LA diesel x 1 unit  
**Speed:** 14.3kt  
**Classification:** NK  
**Completion:** June 28th, 2005

*Lotus Blossom*

**Owner:** Crest Ocean Traders S. A.  
**Builder:** Sanoyas Hishino Meisho Corp.  
**Hull no.:** 1227  
**Ship type:** Bulk carrier  
**L (o.a.) x L (b.p.) x B x D x d:** 225.00m x 217.00m x 32.26m x 19.30m x 13.994m  
**DWT/GT:** 75,804mt/38,871t  
**Main engine:** MAN B&W 7S50MC-C diesel x 1 unit  
**Cargo hold capacity:** 89,201m<sup>3</sup> (grain)  
**Speed, service:** 14.5kt  
**Classification:** NK  
**Completion:** June 22, 2005

*COSCO DALIAN*

**Owner:** South Great Shipping Inc.  
**Builder:** Imabari Shipbuilding Co., Ltd./Koyo Dockyard Co., Ltd.  
**Hull No.:** 2192  
**Ship Type:** Container carrier  
**L (o.a.) x B x D x d:** 278.94m x 40.00m x 24.00m x 14.00m  
**DWT/GT:** 67,209t/66,380t  
**Main engine:** Mitsui MAN-B&W 10K98MC diesel x 1 unit  
**Output:** 77,770ps  
**Speed:** 25.6kt  
**Classification:** BV  
**Completion:** Mar. 31, 2005