

Improved propulsive performance

Universal applies new energy-saving type Leadge Bow to 81,000DWT bulker

Universal Shipbuilding Corporation has developed a new bow shape called Leadge-Bow, which is applied to low-speed blunt ships such as bulk carriers or tankers for increasing propulsive performance in waves. Leadge-Bow is coined from combining "Leading" and "Edge."

This bow shape is expected to decrease the required horse power in waves by 4 to 5 % in comparison with the conventional bow. The first ship employing the new Leadge-Bow will be an 81,000DWT bulk carrier to be constructed at the Maizuru Shipyard. The Leadge-Bow has been created on the basis of the Ax-bow previously developed in 2000.

The Ax-Bow was first applied to the 172,000DWT Cape-size bulk carrier KOHYOHSAN built for Mitsui O.S.K. Lines, Ltd. in 2001. The navigation record of KOHYOHSAN has shown the required horse power is reduced by 3 to 4%, showing good performance in actual sea conditions. This has promoted the ship to the prize-winner of the Ship of The Year in 2001 awarded by The Japan Society of Naval Architects and Ocean Engineers (former The Society of Naval Architects of Japan).

Since then many Ax-Bow ships have been built by the Universal Shipbuilding Corp. Although the bow has demonstrated good performance in actual use and has been appreciated by the operators, Universal Shipbuilding Corp. has continued the study on improving ship performance in waves for the newly developed Leadge-Bow.

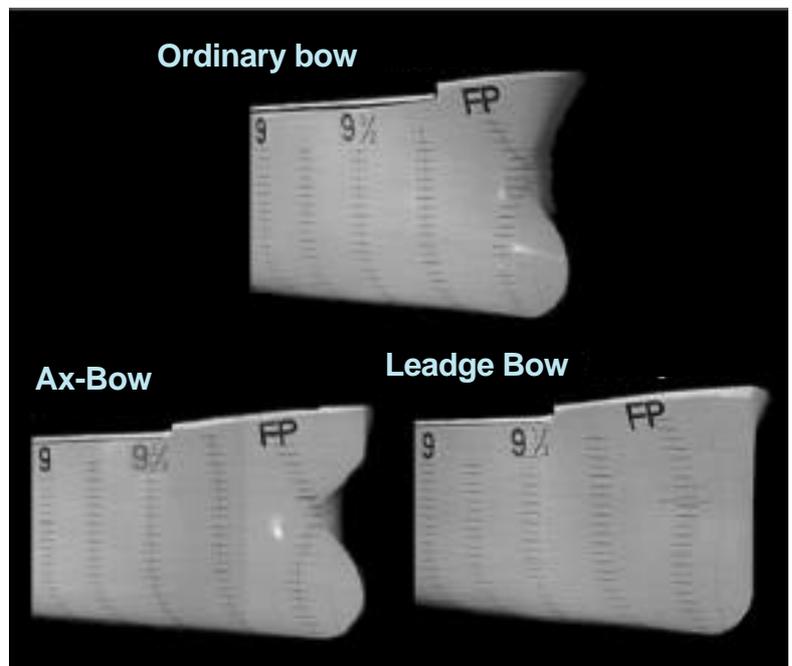
Through the study, Universal Shipbuilding Corp. has further stepped up hull performance in waves by straightening and sharpening the bow edge between the Ax-Bow above waterline and the bulbous bow below waterline, which eliminates the bulbous bow in the side view. In the model tests, this bow shape has been confirmed to give the same wave making resistance in still water as the conventional hull with bul-

bous bow, although the bulbous bow has customary been considered to reduce the wave making resistance in still water.

This means that Leadge-Bow shows the same performance in still water as conventional ships with the bulbous bow. In waves, on the other hands, Leadge-Bow can reduce the required horse power in waves by 4 to 5% compared with conventional ships, whose reduction rate is more than that for Ax-Bow.

Universal Shipbuilding Corp. applied for the patent on Leadge-Bow in 2002 and released a technical report in 2003.

Universal Shipbuilding Corp. has been focusing on improvement of the hull performance in actual use. The company began R&D on the above jointly with Osaka University in 1994. During the development, the activity has been supported with a research subsidy of The Ship & Ocean Foundation.



Leadge Bow shape compared with other typical bows



For further information please contact:

Website: <http://www.jsea.or.jp>

JAPAN SHIP EXPORTERS' ASSOCIATION

15-16, Toranomon 1-chome, Minato-ku, Tokyo 105-0001 Tel: (03) 3508-9661 Fax: (03) 3508-2058 E-Mail: postmaster@jsea.or.jp

Imabari completes Ro/Ro ship, HOKUREN MARU, for domestic owner

Imabari Shipbuilding Co., Ltd. has completed the HOKUREN MARU (HN: 604), a 13,950GT roll-on/roll-off cargo carrier, for a Japanese domestic owner at its Imabari Works.

The HOKUREN MARU employs a new design developed for high-speed vessels with a new navigation system by Imabari based on safety and environmentally friendly concepts. The ship is now operating between Kushiro, Hokkaido, and Hitachi, Ibaraki Pref.

This is the first of two sister vessels, which are replacements for predecessors. Due to the increase in car cargo transportation, the sizes have increased over the former vessels as seen in the table below.

The HOKUREN MARU has four car loading decks, and two rampway doors (drive-through access) are suitably installed at the fore and the stern of the starboard side of "B" deck.

The chassis can load from the rampways of "B" deck into the designated positions in the areas of "A," "B" and "C" decks through hinged-type slope ways. The passenger cars can be accommodated in the same way to "C" and to "D" decks through hinged type and fixed type slope ways.

The car loading deck "B" is designed with completely non-pillar construction for efficiently loading and unloading cars, and other decks also employ the non-pillar design except the areas around the slope ways. The non-pillar construction facilitates not only chassis roll-on/roll-off work but also general passenger car maneuver.

Ship maneuverability in both ports



has become easier with one bow thruster and two stern thrusters. These thrusters use controllable pitch propellers and can be operated at the starboard side of the wheelhouse bridge, where the operation console and joystick system are installed. The joystick allows one man control of the main engine, bow, and stern thrusters.

The rudder roll stabilizer (RRS) system, a new technology, is applied to automatic reduction of the listing motion caused by winds and waves during operation. Triple measures for ship motions during navigation are taken for ensured safe transport. The vessel has one pair of retractable fin stabilizers and an anti-rolling tank system that is installed on the accommodation deck. The combined effect gives passengers and the crew comfort and restrains motions of car cargoes. Moreover, deeper bilge keels are employed for anti-rolling.

All crew cabins have a private room with a toilet and bath, and higher ranks including senior officers have a duty room and bedroom.

The owner required higher ship speed for maintaining a reliable service. Therefore, the main engine uses the 8L60MC-C diesel with sufficient propulsion power to navigate at a very fast speed of 24 knots, which is faster than the same class of the conventional roll-on/roll-off cargo carrier.

To cope with such speed and fuel efficiency requirements, the vessel uses a controllable pitch propeller and uses the PBCF system.

Onboard electricity demand is supplied by two diesel generators and the main engine shaft generator. Safe ship operation is ensured with advanced navigation systems including AIS, ECDIS, and GPS systems.

Principal Particulars

L (o.a.) x L (b.p.) x B x D (Acc) x d (ext): 173.3m x 162.7m x 26.6m x 21.75m x 7.14m

GT: 13,950t (JG, treating as two decks rule)

DWT: 6,597mt at scantling draught
Main engine: KAWASAKI MAN B&W 8L60MC-C (M-VIII) x 1 unit

MCR : 17,840 kW x 123 rpm

NCR : 15,300 kW x 117 rpm

Speed, service: abt. 24 knots (without fin stabilizer)

Classification: NK NS*

Passengers : 12

Size comparison

	HOKUREN MARU	Former ship
Length, o.a	173.3m	153.6m
Breadth, mld.	26.6m	21.40m
Deck (Accom. Dk)	21.75m	17.35 m
12m chassis (headless)	135 units	100 units
Passenger car	64 cars	None

Namura completes 229,045-dwt ore carrier, GAIA CELERIS

Namura Shipbuilding Co., Ltd. has completed construction of the 229,045-dwt ore carrier, GAIA CELERIS (HN: 270), and delivered the vessel to Seaside View Maritima S. A. on April 18, 2006. This is the third of the series of this ship type, the capacity of which is the largest class among Namura's construction records.



The GAIA CELERIS has the strengthened hull like a double hull construction to cope with transport of a variety of cargo ores. The vessel has five cargo holds and nine hatches, and the cargo holds are designed to be suitable for cargo handling and carriage of iron ore.

Superior propulsive performance can be achieved due to a new hull form design developed by Namura's latest technology and long experience. The main engine is the long-stroke, low-speed, and fuel-efficient type, which drives a large diameter

propeller. This combination provides the ship with increased propulsive efficiency.

Special considerations are given to ship safety, safeguards against environmental pollution, labor saving, and economical ship operation. NK MO notion is applied to automation of machinery in the engine room.

Principal particulars
 L (o.a.) x L (b.p.) x B x D x d: 319.58m x 308.96m x 54.00m x 24.30m x 18.10m
 DWT/GT: 229,045mt/113,925t
 Main Engine: Mitsubishi 6UEC 85 LSII diesel x 1 unit
 NCR: 22,432 kW x 76.0rpm
 Speed: 17.20kt
 Classification: NK (NS* "Ore Carrier", H-ARST/S/0.4L, ESP, MNS* MO)
 Complement: 25
 Completion: Apr. 12, 2006

3.9 million cubic ft chip carrier completed by Sanoyas

The Mizushima Works and Shipyard of Sanoyas Hishino Meisho Corporation has completed the 3,900,000 cubic feet chip carrier, MIMOSA AFRICANA (HN: 1236), for delivery to CYGNET BULK CARRIER S. A. This vessel is the second vessel of this class and has a cargo hold capacity of 3.9 million cubic feet (approximately 111,000m³) developed by Sanoyas.

This vessel is the flush decker, and the accommodation quarters and engine room are located aft. Six cargo holds are arranged along the ship's centerline. Cargo hold structure is designed and arranged for efficient loading and unloading of chips.

This vessel has a large volume for cargo holds to load wood chips which have low density. Therefore, this vessel has a deeper depth than the conventional bulk carrier of the same deadweight tonnage class.

This vessel has a 975t/h chip unloader, and three deck cranes and four hoppers are installed between the hatches of the cargo holds. The main belt conveyor is laid fore-and-aft over the main deck, and a shuttle conveyor is equipped on the bow

to unload wood chips from the ship onto a shore facility. The cargo-handling equipment is designed to achieve unloading work quickly and safely. Hatch covers are the folding type driven by the electrohydraulic system.

The main engine is a low-speed, long-stroke, and two-cycle diesel engine, which is coupled with a highly efficient and large diameter propeller, for improved fuel consumption. The engine room meets the requirements for unattended

machinery operation.

Principal particulars
 L (o.a.) x L (b.p.) x B x D x d: 203.50m x 196.00m x 37.20m x 21.60m x 10.518m
 DWT/GT: 52,001mt/45,011t
 Main engine: MAN B&W 6S50MC-C diesel x 1 unit
 MCR: 12,400ps
 Cargo hold capacity (grain): 111,471m³ (3,936,587ft³)
 Classification: NK
 Complement: 28
 Completion: Apr. 20, 2006



MES completes 177,000DWT bulk carrier, ROYAL CHORALE

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) has completed the 177,000DWT Dunkerquemax Capesize bulk carrier, ROYAL CHORALE (HN: 1616), at its Chiba Works and delivered to Lepta Shipping Co., Ltd. of Liberia. The ROYAL CHORALE is the 11th vessel of the Dunkerquemax Capesize series built by MES.

The series is highly appreciated for its super wide hatch openings that facilitate cargo handling work. The

deadweight of 177,544 metric tons is also ranked among the largest Capesize class. A large cargo hold capacity of 197,050m³, which is bigger than those of conventional Capesize bulk carriers, is provided by efficient cargo hold arrangement with nine holds and nine hatches.

The ballast tanks are divided into topside tanks and double bottom side tanks, thereby effective ballasting and deballasting are achieved. It is pos-

sible to exchange the ballast water during the navigation to protect the marine environment.

The main engine is the Mitsui MAN B&W 6S70MC type, which satisfies the IMO environmental standards of exhaust gas and achieves massive improvement of fuel saving by optimum matching at the normal service output. Diesel generators also satisfy the IMO standards for exhaust gas.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 289.00m x 279.00m x 45.00m x 24.40m x 17.95m

DWT/GT: 177,544t/88,491t (d = 17.95m)

Main engine: Mitsui MAN B&W 6S70MC diesel x 1 unit MCR: 16,860kW x 91rpm

Speed, service: 15.0kt

Complement: 25

Classification: NK

Completion: Mar. 3, 2006



Naikai completes passenger/car ferry, JINWA

Naikai Zosen Corporation completed construction of the 499GT coasting passenger/car ferry for Nakajima Kisen Co., Ltd. of Japan at the Setoda Works on July 26, 2006. The ferry will ply between Mitsuhamma Port of Matsuyama and the Nakajima Islands, both located in the Seto Inland Sea.

The ferry is designed with the barrier-free concept to cope with the increase in the number of people of advanced age in the islands. The facilities such as passenger cabins and toilets built on the car deck are barrier-free and arranged for disabled and/or elderly people, which complies with the requirements of the barrier-free standards. The cabins have a recliner and a table and chairs, and a sofa to offer comfortable travel.

The ferry has a very smart outward appearance, matching the sense of modern life. The cabins have a large window to fill the cabins with brightness. While the ferry has a slender hull form for increased ship speed, large

bilge keels are used to reduce rolling.

The twin main engines, propellers, and rudders are employed for increasing ship's operability and maneuverability. The bow thruster is used to facilitate berthing and unberthing maneuver at respective ports. Vehicles can roll on and roll off the car decks through the ramp doors at the bow and stern.

Principal particulars

L (o.a.) x L (o.a.) x B (mld.) x D x d (designed): 49.50m x 43.00m x 11.00m x 3.70m x 2.65m

GT: 462t

Car carrying capacity: 4 trucks or 18 passenger cars on the car decks

Passenger capacity: 310 passengers (within 1.5 hours or less)

Complement: 6

Main engines: Daihatsu 60DKM-20 x 2 units (two propellers)

Engine output:

956kW x 900/255min⁻¹

Speed, max. trial: 5.571kt

Speed, service: 14.0kt

Classification: JG, still water areas

Completion: July 26, 2006



SHI-ME delivers 105,250MTDW D/H tanker to Ambrosia Shipping Inc.

Sumitomo Heavy Industries Marine & Engineering Co., Ltd. (SHI-ME) delivered a 105,250MTDW double-hull Aframax tanker, AMBROSIA to Ambrosia Shipping Inc. at the SHI-ME Yokosuka Shipyard on June 21, 2006.

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 requirements 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.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d: 239.00m x 229.00m x 42.00m x 21.30m x 12.19m

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

Loading capacity: 122,330m³

Main engine: DU-Sulzer 6RTA58T diesel x 1 unit

Service Speed: 15.2kt at 12.19 draft

Complement: 23

Classification: LR

Completion: 21 June 2006

Koyo Dockyard Co., Ltd. of the Imabari Group delivered the OOCL DUBAI, a 5,888TEU type container carrier, on June 29, 2006 to Southern Route Maritime S. A. The OOCL DUBAI is the fourth of eight sister carriers operated by Orient Overseas Container Lines (OOCL), or the 22nd container carrier of the same type built by the Koyo Dockyard.

The OOCL DUBAI can carry 2,660TEUs in the container holds and 3,228TEUs on the upper deck. The holds can stow nine tiers (including one tier of high cube containers) and 14 rows, and the upper deck can stack seven tiers and 16 rows of containers. The simple hull construction is adopted for increasing container stowage space, permitting loading of 1,071 units (including 24 units in the hold) of 45ft containers and 103 units of 48ft containers in response to increasing container capacity.

Each hatch coaming has three hatch cover panels, and 17 sets of lashing bridges are installed on the upper deck. A total of 586 connectors are provided for air cooling type reefers in the holds and on the upper deck. Moreover, the holds can carry dangerous goods including Class 1 (explosives). The ship hull strength was de-

Koyo completes container carrier, OOCL DUBAI for Southern Route Maritime

signed by considering various ways for container-handling operation. The automatic heeling system is installed to adjust any listing during cargo handling.

Fuel oil tanks are arranged below the water line to prevent oil outflow by collision with a tug boat or berth fenders, etc. The fuel oil overflow pipes are arranged in the second deck passage space to avoid outflow on the upper deck. Low sulphur tanks are provided to cope with MARPOL An-

nex VI. Moreover, the stern tube air sealing device is provided for prevention of marine oil pollution.

The crew can access the boatswain store, steering gear room, and the container holds through the second deck passage only.

Principal particulars

L(o.a.) x B x D x d: 280.54m x 40.00m x 24.0m x 14.00m

DWT/GT: 66,940t/66,462

Main engine: MITSUI-MAN B&W 10K98MC (MARK VI) x 1 unit

MCR: 57,200kw x 94.0rpm

Speed, service: 25.0kt

Complement: 25

Classification: NK

Flag: Hong Kong

Completion: June 29, 2006



MAERSK SHEERNESS

Owner: Mendelssohn STAR
Schiffahrtsgesellschaft mbH & Co.
KG
Builder: IHI Marine United Inc.
Hull No.: 3201
Ship type: Container Carrier
L (o.a.) x B x D x d: 335.00m x
42.80m x 24.40m x 14.00m
DWT/GT: 97,517t/94,724t
Main engine: DU-Sulzer 12RT-flex
96C diesel x 1 unit
Speed, service: 24.5kt
Classification: GL
Completion: May 31, 2006



IKAN SERONG

Owner: Ever Rock Navigation, S. A.
Builder: Mitsui Engineering & Ship-
building Co., Ltd.
Hull No.: 1614
Ship type: Bulk carrier
L (o.a.) x L (b. p.) x B x D x d:
189.99m x 182.00m x 32.26m x
17.90m x 12.55m
DWT/GT: 56,023t/31,247t
Main engine: Mitsui-MAN B&W
6S50MC-C diesel x 1 unit
MCR: 9,480KW x 127.0rpm
Speed, service: 14.5kt
Classification: NK
Completion: June 28, 2006



IBRI LNG

Owner: Dune LNG Carrier S. A.
Builder: Mitsubishi Heavy Indus-
tries, Ltd.
Hull No.: 2215
Ship type: LNG carrier
L (o.a.) x B x D x d: abt. 289.50m x
49.00m x 27.00m x 11.40m
DWT/GT: 71,766t/118,608t
Cargo tank capacity: abt.145,000
m³ (at -163°C, 98.5%)
Main engine: KAWASAKI UA-400
steam turbine x 1 unit
MCR: 26,900kW x 80 rpm
Speed, service: abt.19.5 kt
Classification: NK
Completion: July 14, 2006



POS LEADER

Owner: White Orchid Marine S. A.
Builder: The Hakodate Dock Co.,
Ltd.
Hull No: 807
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: 31,907t/19,796t
Main engine: Mitsubishi-
6UEC52LA diesel x 1 unit
Speed: 14.4kt
Classification: KR
Completion: July 3, 2006



DANANN ISLAND

Owner: Kotobuki Shipping Corpora-
tion, S. A.
Builder: Sanoyas Hishino Meisho
Corp.
Hull No.: 1238
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 13.995m
DWT/GT: 75,637mt/38,891t
Main engine: MAN B&W 7S50MC-
C diesel x 1 unit
MCR: 12,200ps
Cargo hold capacity: 89,201m³
Speed, service: abt. 14.5kt
Classification: NK
Completion: May 17, 2006



UMIAK I

Owner: Fednav Limited
Builder: Universal Shipbuilding Cor-
poration
Hull No: 10003
Ship type: Ice-breaking bulk carrier
L (o. a.) x B x D x d: 188.80m x
26.60m x 15.70m x 11.751m
DWT/GT: 31,992t/22,462t
Main engine: MAN B&W 7S70ME-
C diesel x 1 unit
Speed, service: 13.5kt
Classification: DNV
Completion: Apr. 18, 2006

