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Japan Shipyards Turn to Fuel-Saving Hybrid Fins to Fend Off Chinese Rivals

By Chris Cooper - Jun 13, 2011

Japanese shipbuilders, leapfrogged by South Korean and Chinese yards in an industry they once dominated, are counting on fuel-saving technology to help them overcome a stronger yen and high wages.

“There’s a sense of crisis in the medium-to-long term with the currency,” said Hiroshi Minami, president of Oshima Shipbuilding Co., based in Saikai, Nagasaki prefecture. “We need to focus on more fuel-efficient ships to compete.”

Japan’s backlog for ship orders is less than half the size of both China’s and South Korea’s as prices about 20 percent higher than in China dent sales in a market worth \$95 billion a year. Oshima Shipbuilding, Imabari Shipbuilding Co., Japan’s largest shipyard, and other local vessel makers are now backing global fuel-use standards, similar to cars’ mileage ratings, to highlight cost-savings for operators as oil prices rise.

“Fuel consumption is what matters,” said Klaus Nyborg, chief executive officer of Pacific Basin Shipping Ltd. (2343), whose dry-bulk fleet, excluding charters, is almost 90 percent made in Japan. “It’s the difference between breaking even or making a loss.”

A Japanese handysize dry-bulk ship typically uses about 24 tons of fuel a day, compared with 28 tons for Chinese-made ones, said Nyborg, head of Hong Kong’s largest dry-bulk shipping line. That translates into about \$2,700 a day of cost savings on fuel.

A Japan-made handysize costs about \$30 million, compared with \$25 million to \$26 million for a Chinese one, according to Rome-based shipowner d’Amico Societa di Navigazione SpA.

Stronger Yen

The price of Japanese-made ships, which is usually quoted in dollars, has climbed as the yen strengthened in three of the past four years. It rose to a post-World War II record 76.25 against the greenback in March.

Japan lost its lead as the world's largest shipbuilding country by orders to South Korea in 2005 and dropped to No. 3 behind China the following year, figures from Japan's shipbuilding association show.

China took the top spot in 2009 as the government pumped money into shipbuilders to help ensure supplies of raw materials from overseas and to prop up yards during the global financial crisis.

Chinese yards also benefited from lower wages. The average annual wage in urban China was 36,539 yuan (\$5,640) last year, compared with 3.8 million yen (\$47,300) in Japan, according to data from the China Economic Information Network and Japan's Ministry of Health, Labor & Welfare.

Fuel-Efficiency Index

Japan's shipbuilding industry is largely centered around western cities including Hiroshima, Nagasaki and Imabari. As such, it was largely unaffected by the March 11 earthquake and tsunami that devastated areas in the east, said Takao Motoyama, chairman of the Shipbuilders' Association of Japan.

To help highlight fuel efficiency, Japanese shipyards are backing the global standards set to be discussed next month by the International Maritime Organization. The United Nations agency's index will define a minimum efficiency level for various types of ships that will be raised every five years to encourage improvement, according to its website.

"It's a good move to compare the fuel efficiency of our ships with other builders," said Katsushige Kambara, president of Tsuneishi Holdings Inc., whose shipbuilding arm has yards in Japan, China and the Philippines. "We should put our strength together and lead the world."

Fuel Losses

The price of 380 Centistoke marine bunker fuel, used by ships, has jumped 33 percent this year in Singapore to \$675.50 a metric ton yesterday, in line with rising oil prices. It hit a two-and-a-half year high of \$688.50 on April 11.

Nippon Yusen K.K., Asia's largest listed shipping line, said higher fuel prices depressed current profit by 18 billion yen in the year ended March 31 compared with a year earlier. Mitsui O.S.K. Lines Ltd. said current profit was pushed down by 17 billion yen in the same period.

Dry-bulk shipping lines also face lower rates as expansion in the global fleet has outpaced China's demand for imports of iron ore and other raw materials. The Baltic Dry Index, a benchmark for commodity-shipping costs, has tumbled more than 50 percent in the past year.

A focus on fuel efficiency helped Imabari Shipbuilding more than double annual sales from bulk carriers, tankers, and other vessels in the four years ended March 2010 to 483 billion yen, said President Yukito Higaki. He declined to give the closely held company's sales figure for the year ended March 31.

On-Time Reputation

Nationwide, shipbuilders' posted sales of 2.6 trillion yen in the year ended March 31, 2010, the most since the Ship Builders' Association of Japan started compiling figures in 1975, according to its website.

The yards have also benefited from a reputation for reliability and on-schedule deliveries, said Frank G. Jensen, chief executive officer of Clipper Group, which operates more than 200 vessels, according to its website. The company intends to add more Japanese-made ships through orders and charters, he said. Pacific Basin plans the same, Nyborg said.

"It's like buying a Toyota -- you know what you're getting," he said. "With China, it's more like an unknown."

Blowing Bubbles

To pare fuel usage, Imabari has developed a hybrid fin for commodity vessels and tankers. The fin is attached behind the ship's propeller and it helps channel the flow of water to the rudder, cutting fuel use by as much as 6 percent, said Hitoshi Fujita, a director of ship design at the company. The Imabari-based shipyard is experimenting with a similar unit for narrower container ships, he said. The shipbuilder also uses lightweight steel and energy-efficient parts, said Mitsuhiro Hirose, a spokesman.

The shipyard is also testing a system to inject bubbles under the bow, which has helped lower energy use by 8 percent in tests. It is also trying a new type of paint for ship hulls that reduces friction and has cut fuel consumption by 4 percent in bulk-carrier tests, according to its website.

Tsuneishi's latest bulk carrier will reduce fuel use and cut carbon-dioxide emissions by 12 percent by the use of fins near the propeller and by boosting capacity, according to its website. The Hiroshima-based company's shipbuilding division built 61 vessels last year and had sales of 243 billion yen. It aims to construct 63 ships this year, including 49 bulk carriers and eight tankers.

Order Backlog

Nationwide, Japanese shipyards had a backlog of 71.3 million deadweight tons of orders as of May 1, compared with 143.4 million for South Korea and 184.7 million for China, according to shipbroker Clarkson Plc.

The fuel savings and the reliability of Japanese yards mean that they will continue to retain customers, said Cesare d'Amico, chief executive officer of d'Amico. About half of the company's 90 vessels are made in Japan.

"We are extremely satisfied with the quality of these ships, the design and reliability," said d'Amico. "We are still willing to give Japanese builders priority."

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