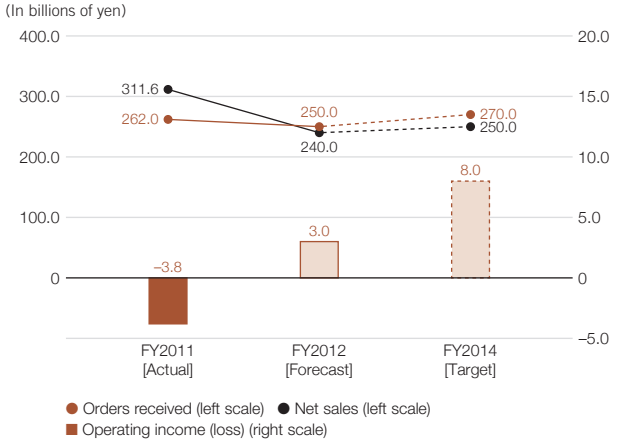
Shipbuilding & Ocean Development

Hisashi Hara
Head of
Shipbuilding & Ocean Development

Basic Strategy

- **Complement Domestic Shipbuilding Distinguished by Technologically Advanced, High-Value-Added Vessels with the Engineering Business and the Commercialization of Overseas Shipbuilding Operations**

FY2014 targets



Fiscal 2011 Review

Shipbuilding capacity continues to exceed demand for new ships. In this difficult market environment, MHI sales activities were centered on winning orders for cruise ships and LNG carriers. Consequently, orders were received for a total of 12 ships in FY2011, including orders for two large cruise ships, four new-generation *Sayaendo*-type LNG carriers, one submarine, and one research vessel. The result was a substantial year-on-year increase in consolidated orders received to ¥262.0 billion. Pending consolidated orders for Shipbuilding & Ocean Development at the end of FY2011 were for 40 ships, totaling approximately 2.1 million gross tons.

Consolidated net sales rose year on year to ¥311.6 billion, with deliveries of a total of 25 ships, including seven "pure car carriers," five patrol vessels, three container ships, and two LPG carriers. The segment posted an operating loss of ¥7.7 billion, primarily due to the adverse impact of the strong yen.

Capital investments in this segment consisted of ¥7.6 billion to upgrade and expand ship production facilities. R&D costs were ¥7.0 billion, targeted mainly at developing more eco-friendly cruise ships, LNG carriers, ferries, "pure car carriers," and other vessels, as well as R&D into large offshore structures and the development of energy-efficient devices and systems.

Relationship Between Shipbuilding & Ocean Development and Business Domains

Business domain	Customers/ Markets	Segment					
		Shipbuilding & Ocean Development	Power Systems	Machinery & Steel Infrastructure Systems	Aerospace Systems	General Machinery & Special Vehicles	Others (Air-Conditioning/ Machine Tool)
Energy & Environment	• Power companies • Gas companies • Resource companies (oil, chemicals, steel)		• GTCC • Large-sized thermal power plants • Nuclear energy	• Environmental plants • Chemical plants			
Machinery, Equipment & Systems	• Core industries (steel, etc.) • Automotive industry • Logistics, etc.		• Stationary engines	• Compressors • Iron and steel machinery • Crane and material handling systems		• Turbochargers • Forklift trucks • Engines	• Air-conditioning equipment • Machine tools
Transportation	• Airlines (air) • Shipping companies (sea) • Railways (land), etc.	• Commercial ships		• Transportation systems	• Commercial aircraft		
Defense & Aerospace	• Ministry of Defense (land, sea, air) • JAXA	• Destroyers and submarines for the Ministry of Defense			• Defense aircraft • Missiles • Space systems	• Special vehicles	

Cruise Ship “DIAMOND PRINCESS”

New-generation LNG Carrier “Sayaendo”

MALS (Mitsubishi Air Lubrication System)

Future Initiatives

Ship prices continue to gradually decline, with prices today roughly 30% lower than they were prior to the 2008 global financial crisis. At the same time, a number of factors are expected to spur demand for new shipbuilding. Demand for alternative energy, for example, is triggering increased demand for a new type of LNG carriers. Surging prices for crude oil, meanwhile, are driving increased oil and gas development activity. Replacement demand for domestic vessels, temporarily stopped by the March 2011 disaster, is also set to reemerge.

To successfully complete the 2012 Medium-Term Business Plan, MHI is promoting a domestic shipbuilding business centered on technologically advanced, high-value-added vessels. MHI is also reinforcing its engineering* business and advancing an overseas shipbuilding business.

In the domestic shipbuilding business, the Cruise Ship Project Office is spearheading efforts to optimize every aspect of quality, cost and production processes, apply 100% three-dimensional design, and innovate work methods. Backed by these moves, MHI will use the production of two new cruise ships for Carnival Cruise Lines to establish cruise ships as a core business. MHI will also distinguish itself from competitors with technologically advanced, high-valued-added LNG carriers, resource exploration vessels and other ships. For LNG carriers, MHI will win against intense competition by switching to the next-generation MOSS LNG carrier design, the *Sayaendo*, and adopting the high-efficiency Ultra Steam Turbine (or UST) as a main engine. Together, these innovations will boost fuel efficiency in LNG carriers by roughly 25%.

In the engineering business, operations are growing through outstanding ship models and energy-efficiency technology made possible by MHI technologies for the development of high-performance products and its talented team of veteran design engineers. Where shipbuilding engineering is concerned, MHI will supply energy-efficient vessels tailored to customer needs through cooperation on construction work with domestic and foreign shipbuilders, or by licensing out MHI-owned design schemes. As a marine solution provider, MHI will offer energy-efficient products with robust environmental performance as product packages consisting of the Mitsubishi Air Lubrication System (or MALS) and MHI-GEMS. MALS is a proprietary system developed by MHI that uses the power of air bubbles to reduce friction between the underside of a vessel and the water, resulting in fewer CO_2 emissions. MHI-GEMS is a gas fuel supply system that is set to become a key technology in ships that use LNG as fuel.

In overseas shipbuilding, MHI is seeking to broaden opportunities for market entry through alliances and exchanges with prominent foreign companies, with future joint ventures also possible. In a bid to enter the Indian market, for example, MHI in December 2011 signed a technology support agreement for the provision of shipbuilding technology to India-based Larsen & Toubro (L&T) Shipbuilding Limited.

The targets for Shipbuilding & Ocean Development under the 2012 Business Plan (ending FY2014) are orders of ¥270.0 billion and net sales of ¥250.0 billion, both on a consolidated basis. MHI is also eyeing operating income of ¥8.0 billion, a figure that should reflect improved earnings driven by production framework reconfiguration and the promotion of material cost reduction activities in this segment, coupled with a larger contribution from the engineering business.

*Engineering at MHI refers to a methodology for utilizing the knowledge and technology of product teams (human resource potential) to design and build facilities and systems that meet social needs.