

Power Systems



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Basic Strategy

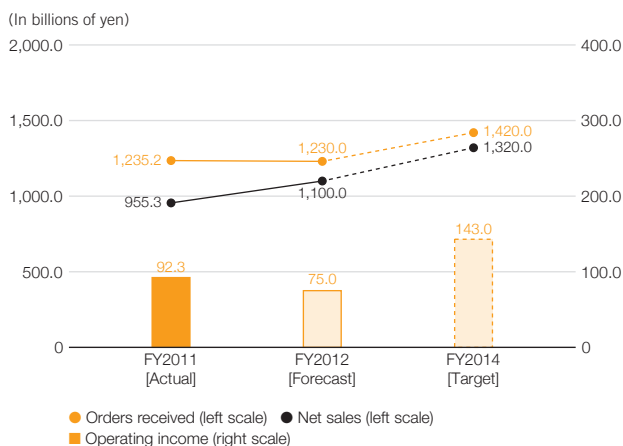
(Power Systems)

- Develop an overseas network to enhance competitiveness
- Pursue market-tailored business development
- Advance into new businesses and fields

(Nuclear Energy Systems)

- Promote domestic business by establishing new safety technologies
- Deploy resources to restore TEPCO's Fukushima Daiichi Nuclear Power Station and its future decommissioning
- Promote "selection and concentration" and alliances to accelerate the development of global business

FY2014 targets



Fiscal 2011 Review

MHI received an order for a large-sized coal-fired thermal power plant, specifically a supercritical-pressure power plant, from Taiwan, as well as continuous orders for 10 state-of-the-art gas turbines from customers in Korea. In Japan, MHI received new orders for engineering work to restore power-generation facilities damaged in the Great East Japan Earthquake, as well as new work to cope with subsequent power shortages since the disaster. In nuclear energy systems, MHI received orders for engineering work on countermeasures to improve nuclear power plant safety. The total value of consolidated orders for the Power Systems segment rose from the previous year to ¥1,235.2 billion.

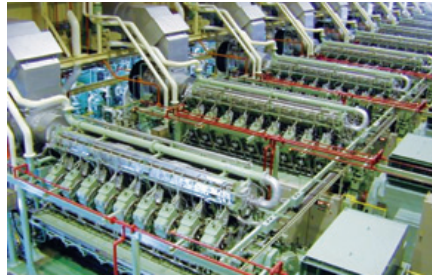
Consolidated net sales decreased to ¥955.3 billion, primarily due to reduced revenues from wind turbines. Operating income, meanwhile, rose year on year to ¥85.6 billion, mainly atop progress made on improving the profitability of plant construction work overseas. Capital investments in this segment amounted to ¥37.7 billion, and were channeled mainly into the upgrade and expansion of gas turbine production equipment. The segment also recorded ¥39.7 billion in research and development expenses, with a focus on meeting upstream to downstream market needs with respect to

Relationship Between Power Systems 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	<ul style="list-style-type: none"> • Power companies • Gas companies • Resource companies (oil, chemicals, steel) 		<ul style="list-style-type: none"> • GTCC • Large-sized thermal power plants • Nuclear energy 	<ul style="list-style-type: none"> • Environmental plants • Chemical plants 			
Machinery, Equipment & Systems	<ul style="list-style-type: none"> • Core industries (steel, etc.) • Automotive industry • Logistics, etc. 		<ul style="list-style-type: none"> • Stationary engines 	<ul style="list-style-type: none"> • Compressors • Iron and steel machinery • Crane and material handling systems 		<ul style="list-style-type: none"> • Turbochargers • Forklift trucks • Engines 	<ul style="list-style-type: none"> • Air-conditioning equipment • Machine tools
Transportation	<ul style="list-style-type: none"> • Airlines (air) • Shipping companies (sea) • Railways (land), etc. 	<ul style="list-style-type: none"> • Commercial ships 		<ul style="list-style-type: none"> • Transportation systems 	<ul style="list-style-type: none"> • Commercial aircraft 		
Defense & Aerospace	<ul style="list-style-type: none"> • Ministry of Defense (land, sea, air) • JAXA 	<ul style="list-style-type: none"> • Destroyers and submarines for the Ministry of Defense 			<ul style="list-style-type: none"> • Defense aircraft • Missiles • Space systems 	<ul style="list-style-type: none"> • Special vehicles 	



J-Series Gas Turbine



KU30GSI Gas Engine Power Plant



Rendering of proposed US-APWR North Anna unit-3 U.S. Utility, Dominion Virginia Power

energy. Specific R&D targets included utilization technologies for clean fuels, such as natural gas and nuclear, and renewable energy sources, distributed power grid systems, and high-efficiency power generation systems.

Future Initiatives

In power systems, MHI is seeking to maintain a business scale of ¥1 trillion by fiscal 2014, with sights set on increasing that to ¥1.5 trillion in the future. These efforts rest on three points. The first is to develop an overseas network to enhance competitiveness. Here, MHI will create a network of manufacturing, engineering, procurement, sales and service bases. These bases will subsequently be upgraded and expanded to enhance MHI's capacity to win and execute orders for thermal power plant projects worldwide, and strengthen its service framework. The second point is to pursue market-tailored business development. MHI has developed technology for large gas turbines in response to demand in the United States for the upgrade of aging facilities, as well as energy diversification plans in developing countries, and is targeting a global share of over 30% of this market. In emerging markets where economic growth continues, particularly India and in Southeast Asia, MHI is looking to expand both its supply capacity and orders by leveraging overseas procurement and production, and the establishment of joint ventures with local firms, to offer large-sized coal-fired thermal power plants boasting high quality and price

competitiveness. The third key point is the development of future technology. MHI will look to advance into new businesses and fields with the development of large offshore wind turbines, lithium-ion batteries and solid oxide fuel cell (SOFC)-based triple combined-cycle power generation systems*¹.

In nuclear energy systems, MHI is seeking ¥400.0 billion in orders for overseas new build in fiscal 2014, with longer-term plans to grow this figure to ¥600.0 billion by applying its current domestic business model outside Japan. MHI will take these steps while maintaining its present business scale in Japan.

In the domestic market, MHI is fully committed to improving PWR plant safety and supporting utility customers in quickly restarting existing PWR plants. In parallel, MHI will reinforce initiatives with respect to the establishment of new PWR plant concepts, the nuclear fuel cycle and fast-breeder reactor (FBR) promotion, and the decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station. In the global market, MHI is focusing on promising new build projects in the United States, Europe, Jordan, Vietnam and other markets. Moreover, MHI will expand overseas post-operational service business through alliances with overseas companies.

By making steady progress on these initiatives, MHI will fulfill its four-part mission to improve safety, supply stable power, counter global warming and ensure energy security as a leading company in the global nuclear energy field.

*1 SOFC-based triple combined-cycle power generation systems are systems currently under development that combine a solid oxide fuel cell (SOFC) with gas and steam turbines to achieve targeted power-generating efficiency of over 70%.

PICKUP

Offshore Wind Turbine Business

MHI is developing 7MW-class offshore wind turbines that eliminate gears, a frequent source of system malfunctions. This was accomplished by incorporating hydraulic drive trains specifically designed for offshore wind turbines based on hydraulic transmission technology from U.K.-based Artemis Intelligent Power, Ltd., which MHI acquired in November 2010. Demonstration testing of a 2.4MW version of the turbine will take place in Japan in 2012, followed by testing of a 7MW system in Europe in 2013. MHI plans to market the new device in 2014, with commercial mass production slated to commence from 2015.

MHI is also combining its technological capabilities in wind turbines and marine structures to develop floating offshore wind turbines, and is a participant in an experimental offshore floating wind farm project sponsored by Japan's Ministry of Economy, Trade and Industry.

