Meet 13
Under the train floor
Air brake equipment supporting on-schedule train stops and departures

The approaching train arrives on time and stops precisely at the correct spot along the platform, partly thanks to its air brakes. MHI started manufacturing air brakes in 1924, and since then, the company has supplied many trains with air brakes, capturing a domestic market share of around 50%. The scroll compressor system is especially known for its noise reduction and low vibration and is equipped on high-speed and other express trains, around the world. Excellent brake performance ensures security and a fast stop with a short braking distance, all contributing to on-time operations. As a leading player, MHI’s air brakes are actively supporting the Shinkansen network, boasting world-class speed and safety, and also the modern urban infrastructure where timetables are met with clockwork precision.

Meet 14
Skies of the world
Wings of new lighter and stronger materials soar across the sky

The Boeing 787 Dreamliner cruises the skies of the world with its larger windows, LED cabin lighting, and unrivalled passenger space and comfort. MHI, responsible for design and development of the composite-material wing boxes, opted for carbon fiber reinforced plastic (CFRP) materials, a carbon fiber and resin composite lighter than aluminum or titanium alloys that offers superior strength, rigidity, and corrosive resistance. CFRP is difficult to process, and manufacturing the enormous wings with their 30-meter length and 60-meter wingspan was extremely challenging. Nevertheless, MHI overcame numerous technical problems to deliver the highest level of environmental performance, and combined with superior aerodynamics achieved a substantial reduction in airframe weight and improvement in fuel efficiency. In 2012, with shipment of the composite material wing box for the 100th Boeing 787, MHI established its position as the global center of aircraft wing production. And today, many more commercial aircraft are safely and economically crisscrossing the skies, thanks to the strength and flexibility of MHI CFRP wing boxes.

Meet 15
Seas of the world
Energy-saving LNG carriers meet an increasing demand for natural gas

In present-day Japan, demand for natural gas is steadily increasing as a fuel for thermal power generation. Responding to this trend, MHI developed the LNG¹⁴ carrier “Sayaendo” to efficiently transport natural gas. The carrier features a peapod-shaped continuous cover over the spherical LNG tanks—a structure that reduces ship weight and air resistance, resulting in dramatic cuts in fuel consumption. So far, MHI has received orders for 8 carriers.²⁴ Due to the U.S. led development of shale gas, massive natural gas production is expected; in 2014, MHI completed development of the next-generation LNG carrier “Sayaringo STaGE,”²⁵ engineered for the New Panamax specifications with even better performance. Increasingly these eco-carriers will be busily crisscrossing the world’s oceans.

Meet 16
Seto Inland Sea & other sea routes
New fully equipped ferry with large-class loading capacity and low fuel consumption enters service

Ferries are a convenient means of sea transport and in 2015, for the first time in 12 years on the Seto Inland Sea route between Kyushu and Osaka, a new ferry will go into service—the “Izumi” operated by Hankyu Ferry. One of the largest ferries on the Inland Sea, it boasts a load capacity of 643 passengers, 191 trucks and 177 cars.²⁶ The improved hull form, the introduction of MALS²⁷ and a reaction rudder providing greater thrust by rectifying the propeller slipstream have been introduced as energy-saving devices.

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