

Technical Review Special Edition: New Technologies

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Welcome to this special edition of our technical review featuring our new technologies.

As a global corporation consisting of 270 companies worldwide, Mitsubishi Heavy Industries, Ltd. (MHI) is expanding its activities not only in Japan but also overseas by utilizing the Group's united efforts on advanced management of resources, in order to contribute on "move the world towards a sustainable society together with its customers and communities across the world."

The MHI Group offers a wide variety of products including air conditioners, power plants and aircraft. To take advantage of this expansive product lineup, the Shared Technology Framework was set up to facilitate cross-functional sharing of technologies and know-how among business domains. The CTO presides over the Framework, which consists of the "Technology Strategy Office," "Research & Innovation Center," "ICT Solution Headquarters," "Value Chain Headquarters," and "Marketing & Innovation Headquarters." The mission of the Framework is to strengthen medium to long-term corporate/business competitiveness by strengthening the technical platform, marketing research capability and optimizing the entire value chain including procurement. In its operation, we always aim at a high level by incorporating a variety of ideas and new technologies across the world, while closely monitoring the latest global technological trends.

In this special edition, 22 projects, mainly related to new technologies are introduced as some of our recent achievements.

With regard to manufacturing technologies, for example, 3D metal additive manufacturing molding, composite bonding and recycling, and automatic welding control using image processing and machine learning are outlined. As technologies related to after-sales services, such as tube inner-surface corrosion detection by eddy current testing, a remote monitoring system using thin-film ultrasonic testing (UT) sensors, and neutral chemical cleaning at ambient temperature to safely and quickly remove scale in boilers are presented.

The technologies to improve performance and reliability include axial fan noise prediction based on computational aeroacoustics analysis, low-vibration and low-loss bearing design for turbochargers, and the estimation of generator shaft torque transients using simulation in which the engine generator is coupled with the electric power system.

As technologies associated with the value chain in general, such technologies related to high-precision demand forecasting for factories and application of 3D virtual reality (VR) technology to product reviews and expos are introduced.

We deeply appreciate your continued support and understanding.