Technical Review Special Edition: Service Technologies

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Welcome to the special edition of our technical review featuring the service technologies.

Measures against global warming, which are urgent agendas faced by all of us on this planet, have been promoted across the world as an essential initiative to develop a sustainable society. Japan is also accelerating a variety of projects to achieve carbon neutrality by 2050. Mitsubishi Heavy Industries, Ltd. (MHI) Group declared “MISSION NET ZERO”, with which we have set ourselves to achieve net-zero CO_2 emissions from the group itself as well as from our products being operated by customers by 2040. Besides developing new technologies and creating ecosystems through energy transition, we intend to help achieve decarbonization and energy-saving development by improving the performance of our products/systems and operating them in an optimal manner. The widespread use of the internet and digital technologies has made it a norm to offer advanced support by utilizing digital technologies for product purchases and after-sales services. Given such circumstances, manufacturers no longer just sell “products”, but are placing more emphasis on the business of customer support in which “services” are offered as a package with the products. MHI Group likewise does not limit itself to product sale, but is promoting the provision of customer-oriented and solutions-based services throughout the product life cycle, for example, under long-term maintenance contracts. The resultant effects such as reduced CO_2 emissions and improved performance will help maximize customer value.

Moreover, in addition to providing services with use of the latest AI/digital technologies such as remote monitoring as well as making timely and accurate proposals for improvement based on the monitoring data, we can intelligently connect customers’ equipment and our products by "Smart Connections", making their mechanical systems more intelligent. Such efforts can bring customer value that is beyond the conventional functionalities of our products. In other words, we not only provide value through operation of our products, but also offer solutions meeting a customer’s needs. The latter includes linking and controlling a wide variety of mechanical products to achieve advanced operation, and helping customers to accumulate their know-how through machine learning.

Utilizing remote monitoring of equipment and intelligent mechanical systems, MHI Group thus maximizes customer value throughout the product life cycle, for example, by achieving a higher availability of equipment with optimal maintenance proposals, the resultant improved productivity for customers, and reduced CO_2 emissions. AI and digital technologies are also used to facilitate customer support. Specifically, it includes quick response to inquiries or problems, equipment diagnosis, service provision through the portal, and remote work support. The provision of advanced customer service experience is thus promoted as well. The elemental technologies for these services such as individual sensing technologies and inspection technologies are also developed continuously.

This special edition introduces some of our latest achievements. It mainly consists of 12 reports

featuring MHI Group's service products and technologies.

Presented as the undertakings for maximum customer value are: the application cases of remote monitoring systems (i.e., TOMONI® and MaiDAS®); the projects on AI remote monitoring, smart maintenance and autonomous driving support; and the development of e-commerce to improve customer experience in parts purchasing.

The technologies enabling smooth customer support and advanced service experience, which are described in this edition, include the safe and efficient piping inspection service using robots, and the remote work support tool to realize real-time sharing of the ongoing situation at a distant site.

The latest inspection technologies are: the AI-based image analysis to assess the remaining life of high-chromium steel piping welds; the eddy current testing (ECT) to inspect plant facilities as an alternative to magnetic particle testing (MT)/penetrant testing (PT); the ultrasonic technology enabling high-efficiency inspection on plant piping systems; and the inspection recording system by which parts damage records are accumulated to improve the inspection efficiency and quality. The development status of the inventory strategy planning system in the MRO of defense aircraft is also presented.

We hope that this edition will serve as an opportunity to deepen your understanding of our activities.

We will keep tirelessly working on technological development. We appreciate your understanding and support for our activities.