Technical Review Special Edition:
New Products & Technologies

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

While the prolonged COVID-19 pandemic leads to delays in the recovery of the global economy, social agendas such as SDGs are becoming more complicated and people's values are getting diversified. This results in uncertain and discontinuous changes in the needs surrounding social infrastructure. Under such circumstances, we aspire to continuously contribute to developing a sustainable society together with customers inside/outside Japan and local communities. For this purpose, "Mitsubishi Heavy Industries, Ltd. (MHI) FUTURE STREAM" are conducted to set our business direction based on several possible scenarios that are formulated based on the big picture of changes in the political, economic, social, and technological situations surrounding our business environment from a medium- to long-term perspective, and bring about innovations.

As represented by COP26 held in 2021, CO_2 reduction has officially become a global common agenda. MHI Group also declared the "MISSION NET ZERO" toward realization of carbon neutrality. This is a very ambitious goal of aiming for zero CO_2 emissions from the entire group's businesses by 2040, including helping customers to reduce emissions as well. We believe that we can play a critical role in solving the issues faced by many stakeholders both inside and outside Japan, by considering solutions suitable for the needs of each country, region and customer with different energy resources, industrial structure, etc. We will then steadily advance and turn these solutions into reality.

Having such a long-term vision, we are especially working toward "decarbonization" and "electrification and intelligence of machine systems" through MHI FUTURE STREAM activities. Specifically, this pertains to efficient development of innovative key components into which electrification and intelligence are incorporated, which is to be followed by their prompt introduction in the MHI group's growing fields such as energy transition and mobility. By making full use of control, monitoring and data analysis, we mainly promote the improvement of reliability and creation of service menus based on the deep understanding of machines. Through these activities, we will create and provide new value, and expand our business domains.

This special edition introduces 18 new products and technologies as part of our recent achievements in this context.

Presented as a defense against the pandemic that has dramatically changed our lives are the infectious disease control technologies using air conditioning systems that can be applied in vehicles and ferries for transportation systems, as well as large spaces such as large-scale commercial facilities, airports and hospitals. We also introduce disaster prevention simulation

technology as a means of improving resilience against weather disasters whose occurrence is recently getting more frequent throughout the world.

The expanded application of CO_2 capture technology and the development of fuel cells are reported as "decarbonization" initiatives against global warming. When it comes to "electrification and intelligence of machine systems", highly reliable technologies of aircraft operating systems or box making machines enabled by multi physics simulation, inverter control technology that can achieve robust performance of the equipment irrespective of the environment in which it is used, and development of small bilateral gears that can realize a large change of speed are featured.

Further included in this edition as fundamental technologies underlying safe/secure products and services are: high-precision AM technology using metal powder, virtual assembly technology that shortens work periods, vibration reduction technology for high-speed rotating machines, development of simulation tools to find the right amount of inventory based on mathematical models, and high accuracy defect detection technology in which AI is combined with the feature extraction method.

We would deeply appreciate your continued understanding and support for our activities.