

## 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.

In recent years, with diverse social issues such as SDGs and different individual values we attach importance to, wide-ranging technological innovations are taking place in an accelerated manner. Furthermore, with the worldwide spread of COVID-19, companies around the world are expected to respond to the changes that are happening in social activities and behavior patterns including working styles, and the emergence of important and urgent new social needs. To continue contributing to social progress by steering its businesses with a vision for future change, Mitsubishi Heavy Industries (MHI) Group formulated its next business plans for this year. Therein, we have included the projects for the realization of MHI FUTURE STREAM as a growth strategy to enhance our contribution to society.

Specifically, it includes promoting “decarbonization”, realizing “the intelligence of machine systems”, developing innovative components in which electrification and intelligence evolution are employed, and creating service menus based on a deep understanding of machinery through the full use of control, monitoring and data analysis. With these, we will expand our business domains to create new value.

This special edition introduces 22 new products and technologies as part of our recent achievements in this context.

As the first step toward carbon neutrality by 2050, we are promoting decarbonization of thermal power plants. We are progressing with the application of hydrogen in thermal power plants, along with further improvement of plant efficiency. For these to materialize, the state-of-the-art 1650°C-class high-performance JAC gas turbine was placed in commercial operation in July 2020, and is reported on in this special edition together with its related technologies. As the liberalization of the electricity market progresses, the future power market will get more complicated with increasing uncertainty. We therefore present our simulation technology for the electricity market and power systems, which will be required to cope with such situations as part of the sophistication of our products/services,

Regarding intelligent machine systems, we are improving control technology with strengthened security by integrating our expertise, AI technologies such as deep learning, and networks such as IoT, in order to make our products autonomous, unmanned and labor-saving. As a specific example, our next-generation AI operation support system for waste-to-energy plants, MaiDAS<sup>®</sup>, will be

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introduced.

The following technologies that help to realize the above-mentioned products/services are also presented:

- Various inspection technologies making use of image processing systems and ultrasonic waves
- Equipment monitoring with use of digital twins
- Modeling technology that realizes failure prediction
- High-power laser technology and drape forming of composite materials
- Friction loss reduction technology

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