Technical Review Special Edition: Logistics, Thermal & Drive Systems

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Welcome to the special edition of our technical review featuring the Logistics, Thermal & Drive Systems.

In a world entering an age of big change propelled by intricately intertwined challenges such as global climate action, stable energy supply and advancement of digital technology, the time has come for industry to take up a new role as well. To overcome difficulties and make a sustainable society a reality, accelerating the actual use of products with technological innovations in society is indispensable.

Under such circumstances, the Mitsubishi Heavy Industries, Ltd. (MHI) Group has undertaken the challenge of "MISSION NET ZERO" with the aim of achieving carbon neutrality by 2040. Our main approach is to focus on decarbonization and energy conservation from both sides of energy supply and energy use.

Continuing to be a company people can trust, Logistics, Thermal & Drive Systems contributes to the sustainable development and happiness of society through its business activities. Especially in the fields of decarbonization, energy conservation and intelligent/unmanned machines, each company of MHI Group in this business area is engaged in the development of technologies and products toward the goal of achieving a safe, secure and comfortable society. In this special issue, we will introduce some of their efforts.

Presented first in the businesses of solutions and logistics equipment are the developments in the products with electrification and labor-saving features. Specifically, these include: "Smart Connections" Intelligent Logistics Solution Applying ΣSynX; New Small AGV Model "Automated Compact Truck (ACT)" Enables Mixed Fleet / Human-machine Cooperation; and Empty Container Handling Forklift "FC70H-3" in Compliance with 4th Stage of Exhaust Emission Regulations for Non-road Diesel Special Motor Vehicles.

The thermal system business focuses on developing products that can help achieve a decarbonized society or a better environment/comfort. The specific reports are about: Overview of Development of Residential-Use Air-to-Water Heat Pump Using Natural Refrigerant to Achieve Carbon Neutral Society; Large Capacity Two Stage Compressor for CO_2 Refrigerators Contribute to Global Environment; High-Efficiency Centrifugal Heat Pump Using Refrigerant with Global Warming Potential of 1; and TEK Series Electric-Driven Transport Refrigeration Units Achieve High-quality Constant-temperature Transportation Even for Last-mile Delivery.

The engine and energy business features the products/technologies for the decarbonization of society. These pertain to: Development of Hydrogen Co-firing and 100% Hydrogen Engines for Power Generation that Contribute to a Low-carbon and Decarbonized Society; CO_2 Reduction and Hydrogen Utilization Technology for Power

Generation Gas Engine KU30GSI; Development of Ammonia Co-firing Engine; Advanced Control Technologies for Customer's Business Continuity Plan for Engine Power Generation that Powers Social Infrastructure; and Verification of Contact Pressure Measurement Method for Engine Gas Sealings Using Strain Gauge.

Lastly comes the turbocharger business. The decarbonization efforts and global technological development/production systems are introduced in terms of: Development of Turbocharger for New Energy Vehicles (electric vehicles, plug-in hybrid electric vehicles, range-extender electric vehicles, and fuel cell vehicles); Reliability Improvement of Next-Generation VG Turbocharger for Gasoline Engines; Development of Air Compressors for Fuel Cells; and Function of Mitsubishi Turbocharger and Engine Europe as Turbocharger Development Center.

Logistics, Thermal & Drive Systems thus continues to develop technologies and products required to achieve a sustainable world, by joining forces with Mitsubishi Logisnext Co., Ltd., Mitsubishi Heavy Industries Thermal Systems, Ltd. and Mitsubishi Heavy Industries Engine & Turbocharger, Ltd. We would appreciate your continued support.