

# INDUSTRY & INFRASTRUCTURE

The Industry & Infrastructure and its diverse range of environmentally friendly products support people's daily lives in countless ways: air-conditioning systems in households and offices; forklifts in logistics; transportation systems and ships in the movement of people and things; and metals machinery, chemical plants, and a wide range of machinery in the industries and societies, help to make people's lives and society happier and more fulfilling. In January 2018, we completed a structural reform that transformed all operations into business companies. In this new stage of growth, through our technologies and products, we will move forward social infrastructures and living environments to the future.

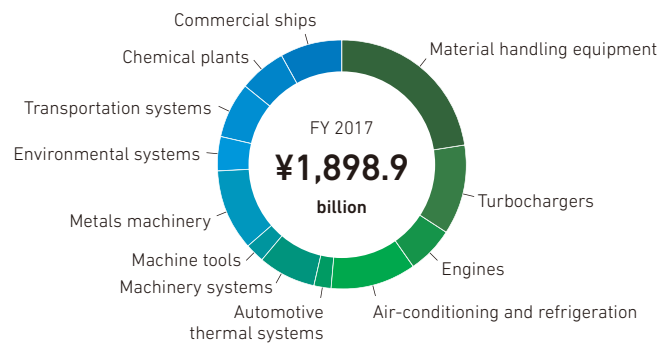
## Operating Environment and Addressing Social Issues

Recently, achieving economic development while reducing environmental impact has become an increasingly important social issue. Environmental regulations are growing more stringent in various fields, prompting MHI Group to increase social contribution through its technologies and experience. For example, more stringent international emissions regulations on ship exhaust gas will go into effect in 2020. We forecast that demand for compliant equipment will rise in response. At the same time, needs are rising for turbochargers that help improve fuel consumption and reduce CO<sub>2</sub> emissions in automobiles and for centrifugal chillers adapted for use with low-environmental-impact refrigerants.

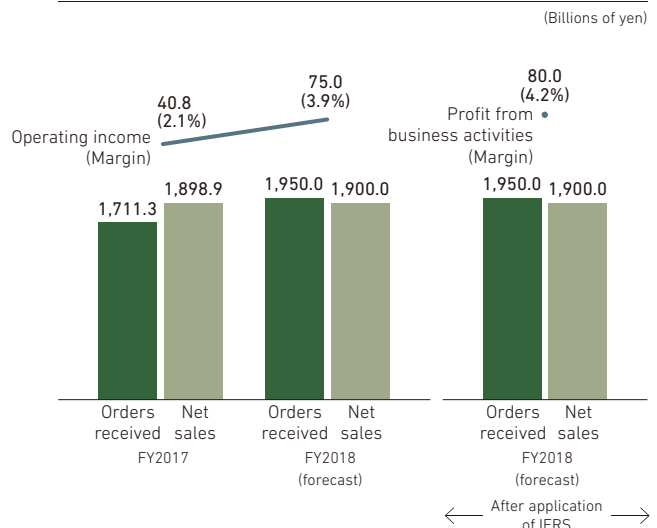
At the same time, the rapid expansion of e-commerce has exacerbated labor shortages in the global logistics market and prompted the need to improve distribution efficiency.

In the medium and long term, we expect a greater demand for initiatives that respond to urban issues such as waste treatment, as well as the shift to electrification and automation in logistics and transportation systems.

Net Sales by Core Business



Operating Performance



S Strengths	<b>Expertise cultivated in a wide range of product fields and effective utilization of resources within the domain</b>	
	<b>Material Handling Equipment</b>	• Third largest business scale in the world
	<b>Turbochargers</b>	• Development of highly efficient products leveraging high-speed rotational technologies
	<b>Thermal Systems*<sup>1</sup></b>	• Extensive product lineup and world-class environmental and energy-saving technologies
	<b>Metals Machinery</b>	• Full product lineup and global presence
	<b>Transportation Systems</b>	• Advanced system integration capabilities in urban transport and extensive experience with APM* <sup>2</sup>
	<b>Chemical Plants</b>	• Advanced EPC* <sup>3</sup> management capabilities based on extensive plant experience
	*1 Thermal Systems: Air-conditioning and refrigeration, automotive thermal systems *2 APM: Automated People Mover (fully automated, driverless vehicles) *3 EPC: Engineering, Procurement, and Construction	
W Weaknesses	<b>Tendency to be affected by short-term economic fluctuations</b>	
	<b>Commercial Ships</b>	• Relatively weak cost competitiveness on repeated construction of ships with the same specifications
O Opportunities	<b>Material Handling Equipment</b>	• Increasing market for logistics solutions with expansion of e-commerce business
	<b>Turbochargers</b>	• Growing trend toward downsized engines with turbochargers in response to environmental and fuel performance regulations
	<b>Engines</b>	• Growing power generation market in line with increases in demand for distributed power systems
	<b>Thermal Systems</b>	• Rising awareness toward environmental preservation
	<b>Metals Machinery</b>	• Increasing demand for energy savings and low-environmental-impact products, expanding demand for high-value-added products such as high-grade steel sheets
	<b>Transportation Systems and Environmental Systems</b>	• Market growth in emerging countries due to economic development and urbanization
	<b>Chemical Plants</b>	• Increasing plant investment in natural-gas-producing countries (including the U.S. and Central Asian countries)
	<b>Commercial Ships</b>	• Increasingly stringent environmental regulation of maritime transport
T Threats	<b>Rise of manufacturers in emerging countries Sense of uncertainty in the global economy</b>	
	<b>Transportation Systems</b>	• Expansion of competitors' businesses through M&A
	<b>Commercial Ships</b>	• Increasingly severe competition as the gap between supply and demand for new ships persists

## The Value We Deliver

We offer a variety of value based on the principle of creating a society that helps people live happier and more fulfilled lives. We help prevent climate change with turbochargers that reduce CO<sub>2</sub> emissions by enabling engine downsizing and with centrifugal chillers with low-environmental-impact refrigerants. At the same time, we are offering more direct solutions to climate change through marine exhaust gas cleaning systems and CO<sub>2</sub> recovery plants with the highest processing capacity in the world. Additionally, we are strengthening our solutions business initiatives related to the logistics market, which is changing and growing remarkably. At the center of these initiatives is our AGF\*<sup>1</sup>. Through automated,

unmanned, and labor-saving technologies such as the AGF, we respond to needs for safety, security, and increased efficiency. MHI will also mitigate traffic congestion and secure comfortable travel for people through transportation systems such as ITS\*<sup>2</sup> and APM. Furthermore, we will create environmentally friendly urban spaces with a variety of environmental systems, including waste-to-energy systems. We will also support industrial technology innovation with our metals machinery and machine tools. Through all of these products and solutions, we will contribute to the realization of sustainable societies.

\*1 AGF: Automated laser-Guided Forklift  
\*2 ITS: Intelligent Transport Systems

Automated laser-guided forklift



Centrifugal chiller



## 2018 Medium-Term Business Plan: Growth Strategies

After three years of portfolio management under our 2015 Medium-Term Business Plan, we have established a new structure that allows for the sustainable growth of each business. In the growing market for material handling equipment and thermal systems, we will invest proactively to expand sales and improve profitability. For turbochargers and engines, we will enhance profitability with advanced production systems and through technology differentiation. In the metals machinery, commercial ships, and engineering-related businesses\*, we will promote

structural reforms to secure earnings. Through resource sharing and better efficiency, our machinery systems, which are involved in a wide range of businesses, will function as a base for domain earnings. Meanwhile, we will aim to build a continuously stable profit structure in our machine tools business. Finally, our domain will provide a common base to enhance technical capabilities and innovation to properly execute each business's strategies and maximize value.

\*Chemical plants, transportation systems, and environmental systems

### Activities Focused on the 2018 Medium-Term Business Plan and Beyond

#### Energy efficiency

Industrial and logistics machinery and robotics

#### Synergies among businesses within I&I domain

Big data analysis, remote monitoring system development, etc.  
Domains provide one-stop support for each business

### OUR GOALS

#### Urban issues

Logistics and transportation systems, waste treatment

#### Collaboration and alliances with customers and other companies

SL-Lab  
(Sophisticated Logistics Laboratory)  
Create next-generation logistics with customers (Design conceptualization approach)

#### Technologies

Core technologies: technology sharing with cross-divisional projects/ technology sharing with system tools

Project engineering: project engineering support/ project engineering capability development

Digitalization: promotion team in Europe/ data analysis/ agile development/ design conceptualization

## Measures Aimed at Achieving Goals in the 2018 Medium-Term Business Plan

### Proactively invest in growing markets

#### Drive domain growth with expansion of business scale and earnings

<b>Material handling equipment</b>	Increase sales and earnings with multi-brand, global/local strategies for expanding markets. Strengthen solution/service businesses and differentiate through advanced technologies that anticipate megatrends
<b>Thermal systems</b>	Expand sales networks globally and increase production capacity to expand business scale. Increase thermal solutions business with low-environmental-impact refrigerants and by boosting global sales of products for electric vehicles

#### Enhance profitability through advanced production systems and technology differentiation

<b>Turbochargers</b>	Enhance business with advanced production systems and an improved operating ratio. Strengthen development capabilities to offer products for diversified power train lineups to meet more stringent environmental regulations
<b>Engines</b>	Reinforce core competencies (segment for high output range over 1 MW) and expand business scale in the distributed power systems market

#### Generate base-load for domain earnings through shared resources and better efficiency

<b>Machinery systems</b>	In mechatronics systems*, promote and expand new businesses by generating synergies through business consolidation. Develop ITS and paper converting machinery businesses in the South Asian and other markets
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#### Build a continuously stable profit structure

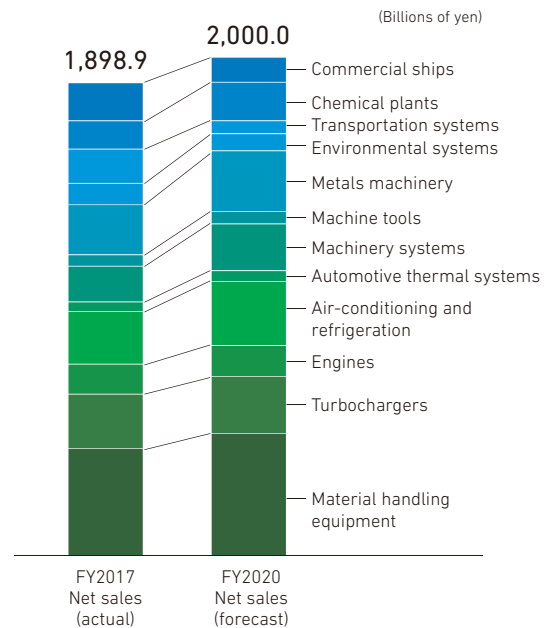
<b>Machine tools</b>	Expand overseas sales of high-value-added gear grinding machines. Upgrade lineup of machines for die and mold production and aim for an early launch of new products, such as fine laser processing machines
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#### Secure and raise earnings by reforming and improving the business structure

<b>Metals machinery</b>	Promote business model reform by expanding maintenance and service business and offering life cycle services that focus on customer value
<b>Engineering-related businesses</b>	Increase profitability by developing business before/after EPC and advancing after-sales services. Expand business field with the accumulation of engineering management capabilities
<b>Commercial ships</b>	Shift to high-density outfitted ships and value-added ships, expand marine engineering business based on environmental solutions

\* Mechatronics Systems: machinery, steel structure plants, etc.

## Breakdown of Sales Plan



## As a Member of the Local Community

Mitsubishi Heavy Industries-Mahajak Air Conditioners Co., Ltd. (MACO), the base of our air conditioner business in Thailand, has been donating facilities to be used as schoolhouses or classrooms to local elementary schools since 1998. Since its establishment, MACO has been doing its part to improve economic development in Thailand through initiatives such as job creation, export expansion, and technology exchange. MACO also endeavors to be a good corporate citizen by directly contributing to the resolution of issues facing societies in Thailand; employees listen to requests and demands from local residents and MACO works to respond to them.

Moving forward, the company will continue cooperating with surrounding regions to raise the quality of people's lives.



### Social infrastructure innovations

Future mobility and logistics

### Companywide synergies including defense and space

*i*<sup>3</sup>works collaborative activities of industry, infrastructure, integrated defense & space

Dual-use technology, cyber security  
space, mobility