

# Industrial Systems & General-Purpose Machinery Business Area Briefing

**IHI**

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株式会社 **IHI**

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## **Today's Presentation**

**(1) Process for Achieving FY2025 Performance Targets**

**(2) Measures to Maximize Cash from Vehicular  
Turbochargers**

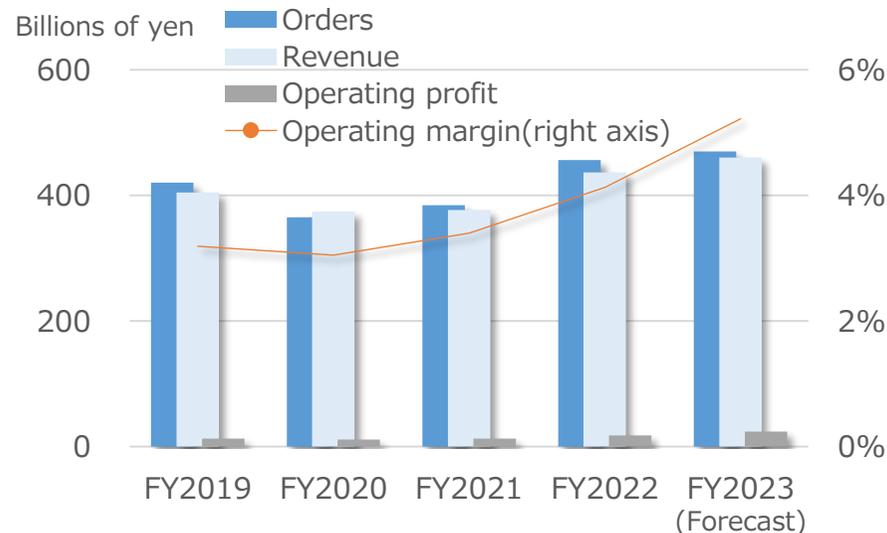
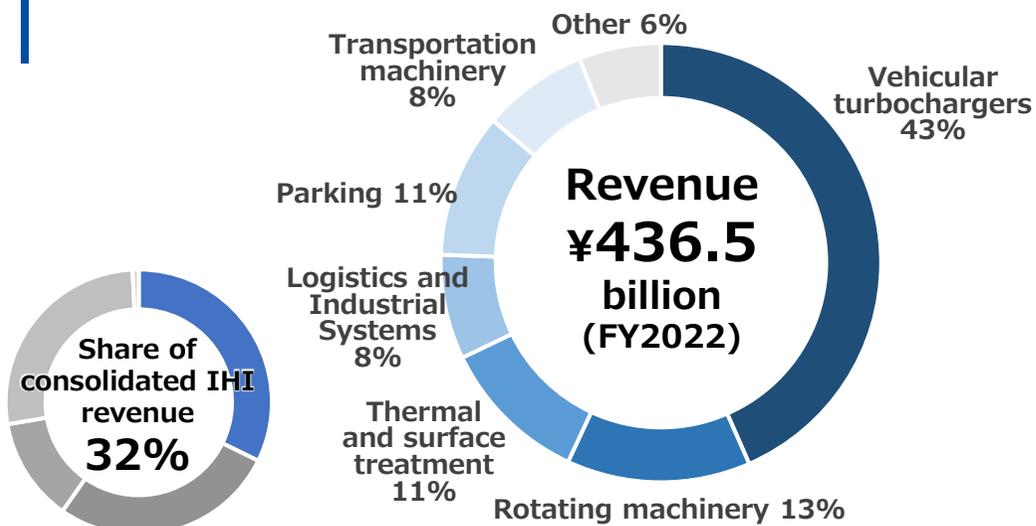
**(3) Growth Strategies in Priority Core Businesses**

**Embed and evolve rotation machinery, heat treatment and surface  
engineering, and lifecycle businesses**

# 1. Executive Summary

Resolve social issues	Help <b>decarbonize</b> industry and <b>reduce its environmental impact</b>	Provide <b>automation and labor-saving</b> solutions for shrinking workforces			
Management goals	<b>¥530 billion in revenue and ¥40 billion in operating profit by fiscal 2025</b>				
Growth strategies	Maximize cash	<p align="center"><b>Vehicular turbochargers</b></p> <p align="center">Generate cash by consistently capturing demand and improving profitability. Help decarbonize by investing in fuel cell systems and other strategic businesses</p>			
	Priority core businesses	<p align="center"><b>Rotating machinery</b></p> <p align="center">Grow by bolstering global products and services focusing on compressors and launch products in hydrogen, ammonia, and other gas markets</p>	<p align="center"><b>Thermal and surface treatment</b></p> <p align="center">Focus on decarbonization, semiconductors, and lifecycle businesses and capturing equipment sales and contract processing demand to achieve growth</p>		
	<p align="center"><b>Embed and evolve lifecycle businesses</b></p> <p align="center">Extensively tap digital infrastructure with a view to the entire value chains of customer business activities, expand the scope of business activities, create new value, and drive further lifecycle business growth</p>				
Strengths	Technologies	High-speed rotation, heat and control technology	Mass production technology	Digital solutions	Integration
	Capital	Solid delivery record	Wide product range	Diverse talent	Global network

# 2. Industrial Systems & General-Purpose Machinery Business Area Outline

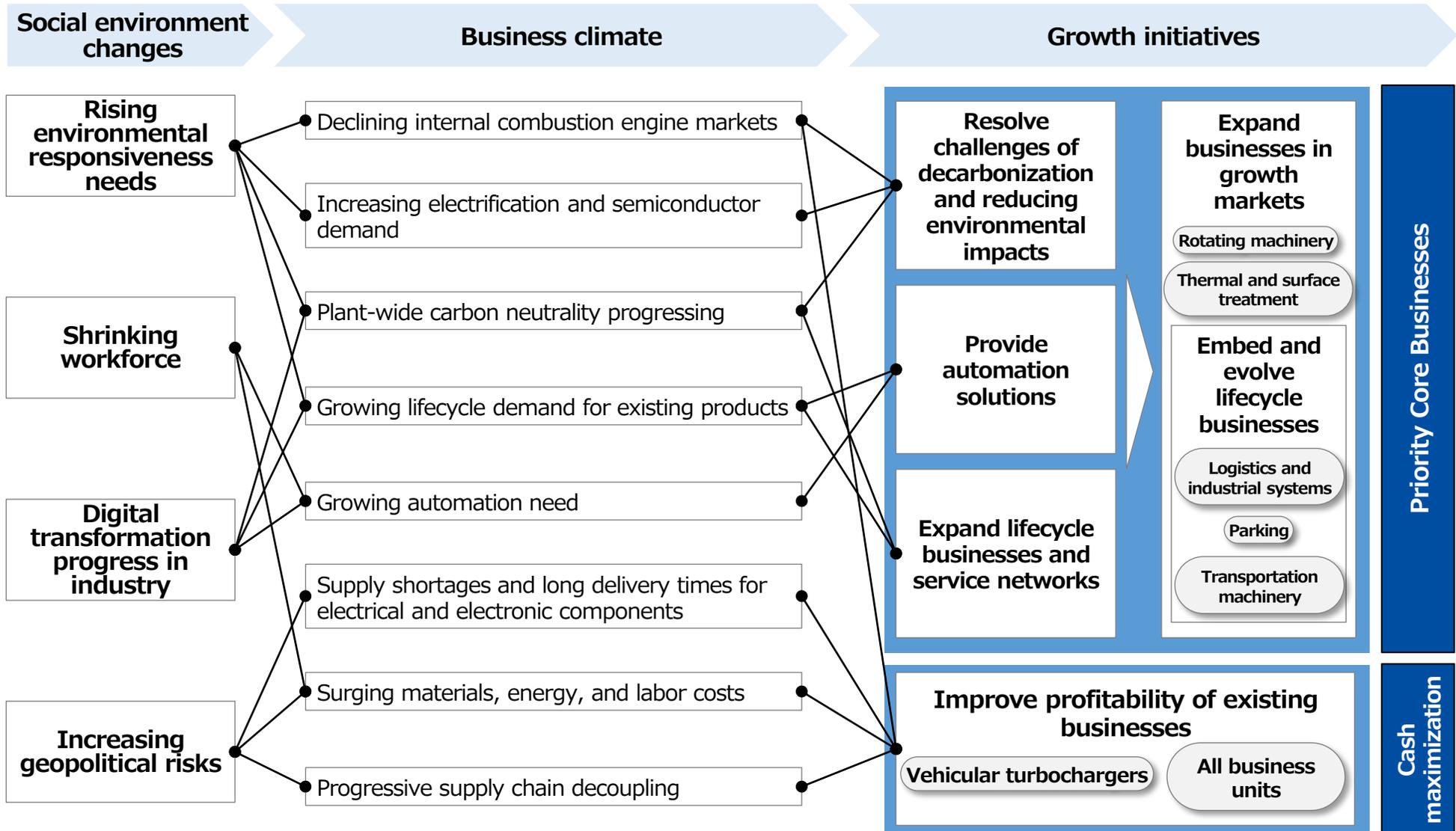


Key products	Gas handling		Materials and processes
	Vehicular turbochargers	Rotating machinery	Thermal and surface treatment
<b>Position</b>	<b>Vehicular turbochargers</b> No. 3 globally No. 1 in Japan	<b>LNG boil off gas compressors</b> No. 1 globally <b>General-purpose turbo compressors</b> No. 1 in Japan	<b>Surface treatment equipment</b> No. 1 globally <b>Vacuum heat treatment furnace and hot presses</b> No. 1 in Japan and No. 4 globally

Logistics		
Logistics and industrial systems	Parking	Transportation machinery
<b>Large automated warehouses</b> No. 4 in Japan	<b>Mechanical parking systems</b> No. 1 in Japan	<b>Unloaders</b> No. 1 in Japan

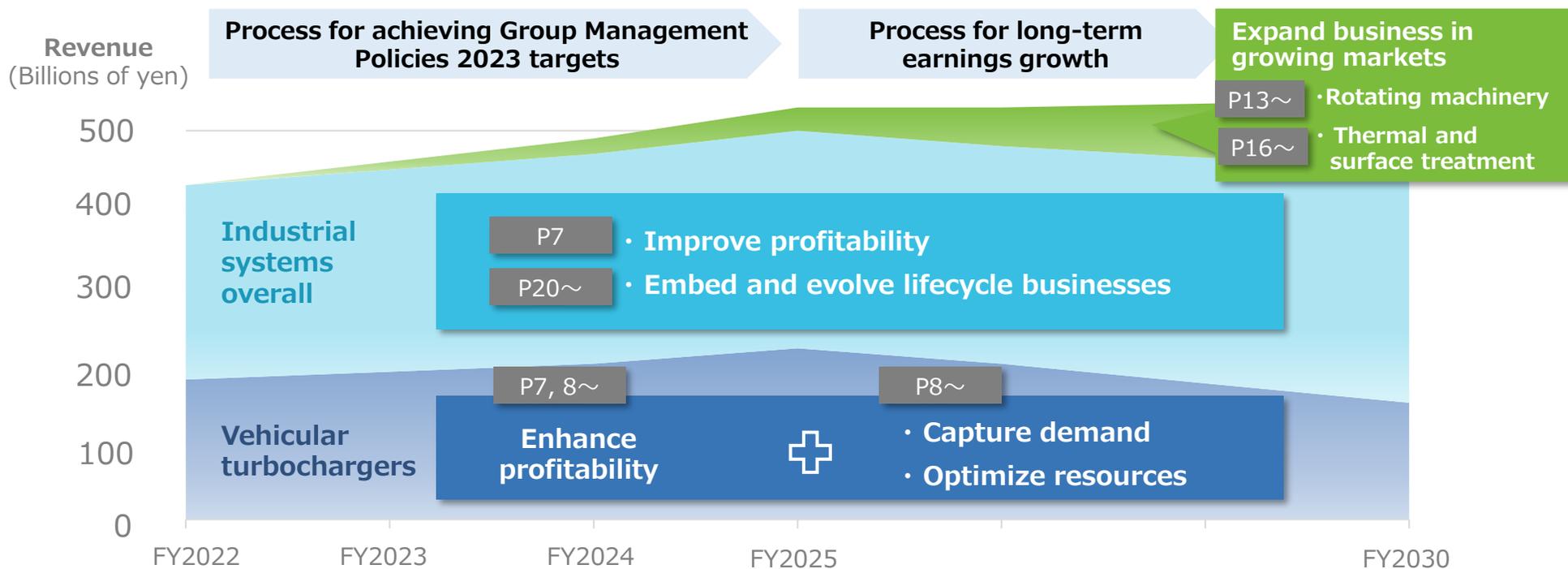
# 3. Business Environment Outlook and Assumptions

Turn growth prospects into business opportunities in a fast-changing operating climate



# 4. Business Area Earnings Growth Story

Achieve FY2025 management targets by focusing on improving profitability and expanding service businesses to capture growth in growth markets while embedding and further evolving lifecycle businesses



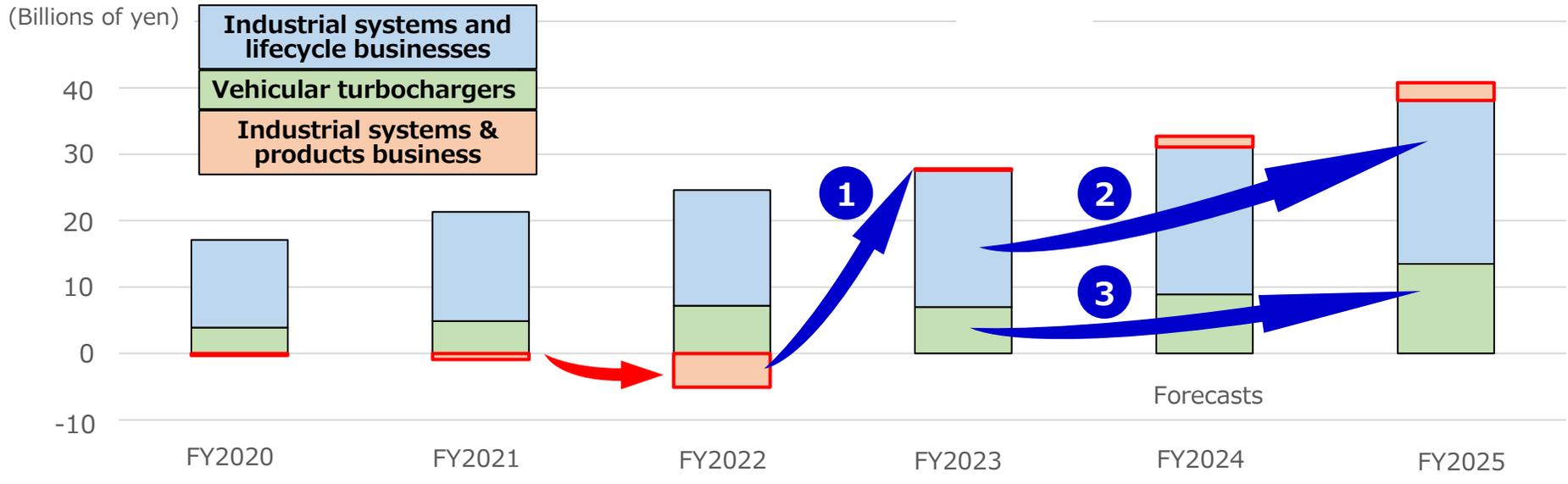
**Group Management Policies 2023**  
Segment targets  
(Billions of yen)

	Revenue			Operating profit (margin)		
	FY2022	FY2023 forecasts	FY2025 targets	FY2022	FY2023 forecasts	FY2025 targets
	<b>436.5</b>	<b>460.0</b>	<b>530.0</b>	<b>18.0</b> <b>4.1%</b>	<b>24.0</b> <b>5.2%</b>	<b>40.0</b> <b>7.5%</b>

# 5. Process for Achieving FY2025 Operating Profit Target

Improve profitability of industrial systems and products business by reflecting costs in prices and capturing orders, reaching operating profit target by enhancing profitability of vehicle turbochargers while expanding lifecycle businesses

Operating profit by business segment



## Factors in FY2022 performance

- Slow automobile production recovery
- Soaring materials and equipment, energy, and labor costs
- Electrical component and other supply shortages and long delivery times

**Profitability of industrial systems and products businesses deteriorated**

## Initiatives in FY2023 and beyond

- 1 Return to profitability in product businesses** by reflecting costs in prices  
 • Enhance profitability overall of industrial systems business by reinforcing earnings base and accelerating global expansion
- 2 Embed and evolve lifecycle businesses** to expand business
- 3 Improve profitability of vehicular turbochargers** by increasing prices, cutting procurement costs, and generating new orders

# 6. Growth Strategy: Maximize Cash from Vehicular Turbochargers

## (1) Business Overview

### Business overview

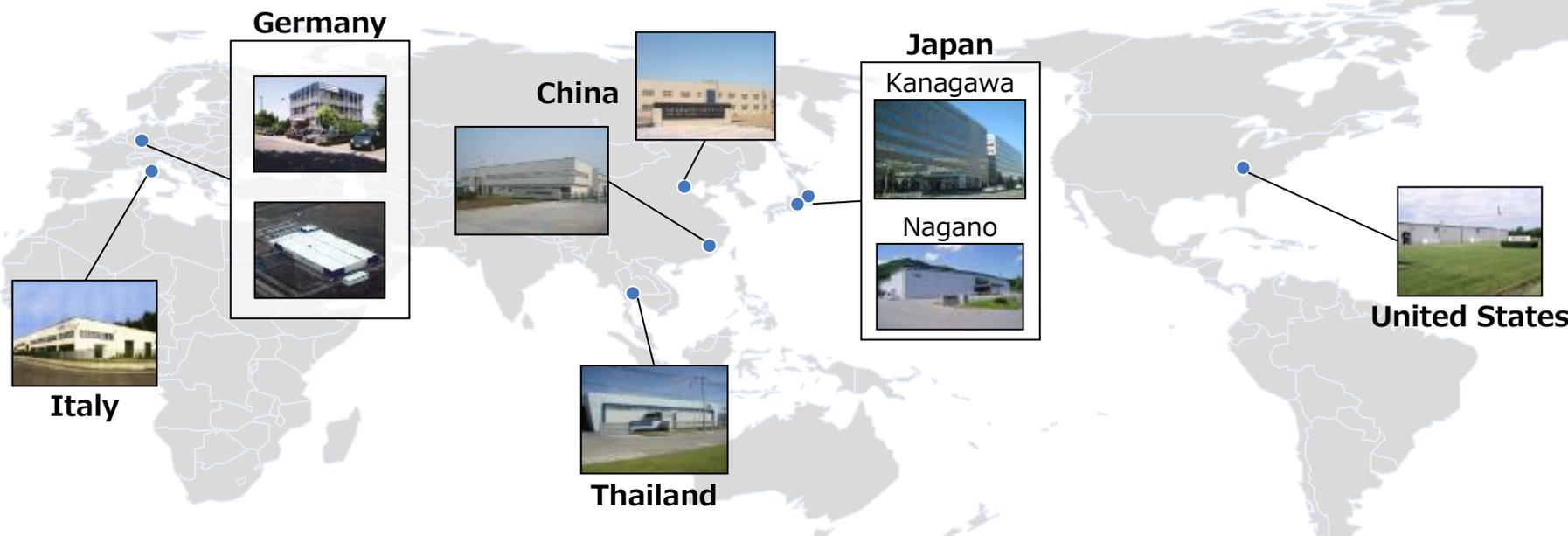
<b>Products</b>	Small turbochargers (including for vehicles, industry, and leisure applications)	
<b>Number of employees (consolidated)</b>	At March 31, 2023: 3,019	
<b>Production sites</b>	Kanagawa, Nagano, Germany, Italy, China, Thailand, and United States	
<b>Cumulative sales of vehicular turbochargers</b>	•FY2000	10 million units
	•FY2014	50 million units
	• <b>FY2022</b>	<b>100 million units</b>

### Global competitiveness



Source: Third-party research and IHI

### Vehicular turbocharger production sites



# 6. Growth Strategy: Maximize Cash from Vehicular Turbochargers

## (2) Market Trends

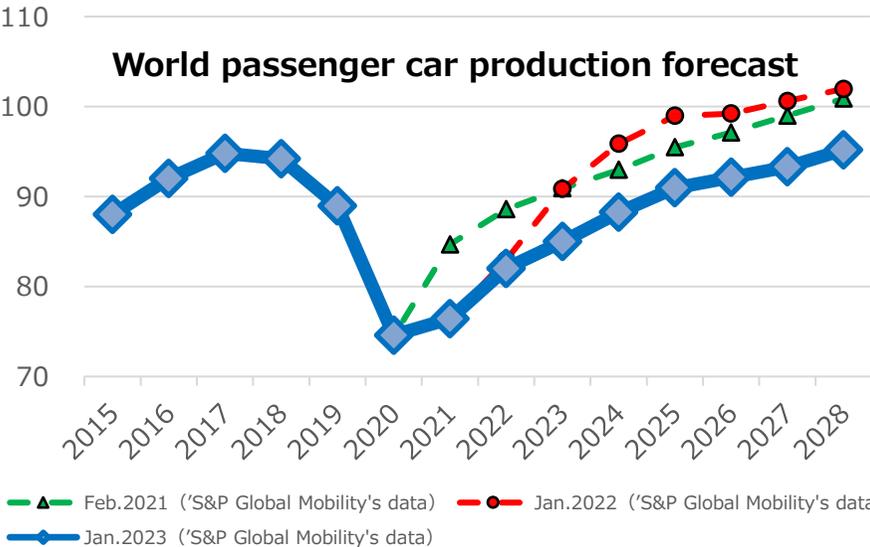
Impacts of pandemic disaster and semiconductor shortage gradually dissipating. While long-term turbocharger demand should fall amid battery electric vehicle uptakes, plug-in hybrid and other vehicle markets should remain at certain sizes

BEV : Battery Electric Vehicle, PHEV : Plug-in Hybrid Electric Vehicle

### Automobile production trends Recovery from pandemic

- Overall semiconductor shortages on track to resolution, albeit with regional and customer variations
- Production recovery pace slower than last year's forecast for FY2023 (about. 91 million units)

Millions of units

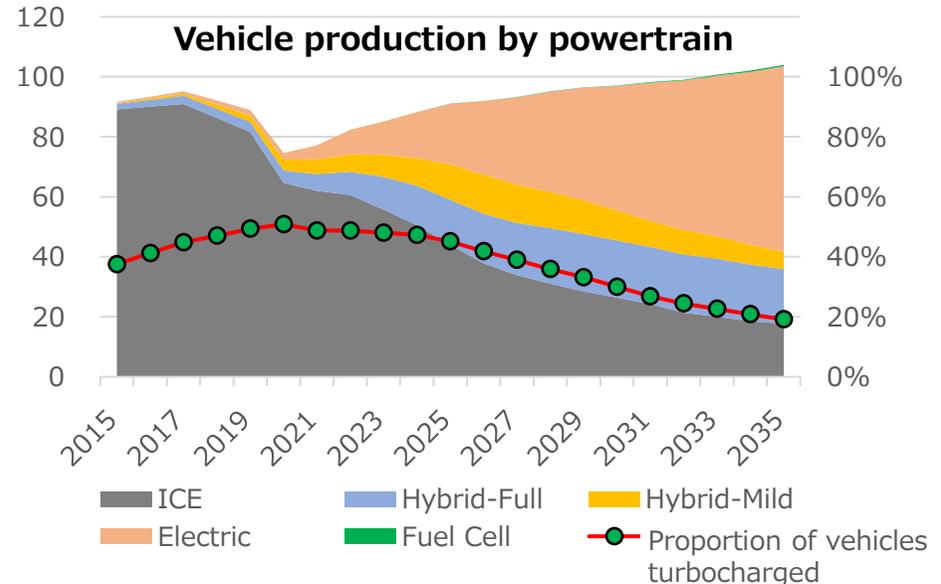


Source: S&P Global Mobility global passenger car demand forecast

### Changes in automotive market Long-term trends

- Ratio of battery electric vehicles to increase, with **proportion for internal combustion engines declining accordingly, although situations should vary by region**
- Decline rates should be large in Europe, while **markets should remain at certain sizes in China, North America, India, and emerging countries**

Millions of units



Projections as of March 2023 (Source: IHS Markit)

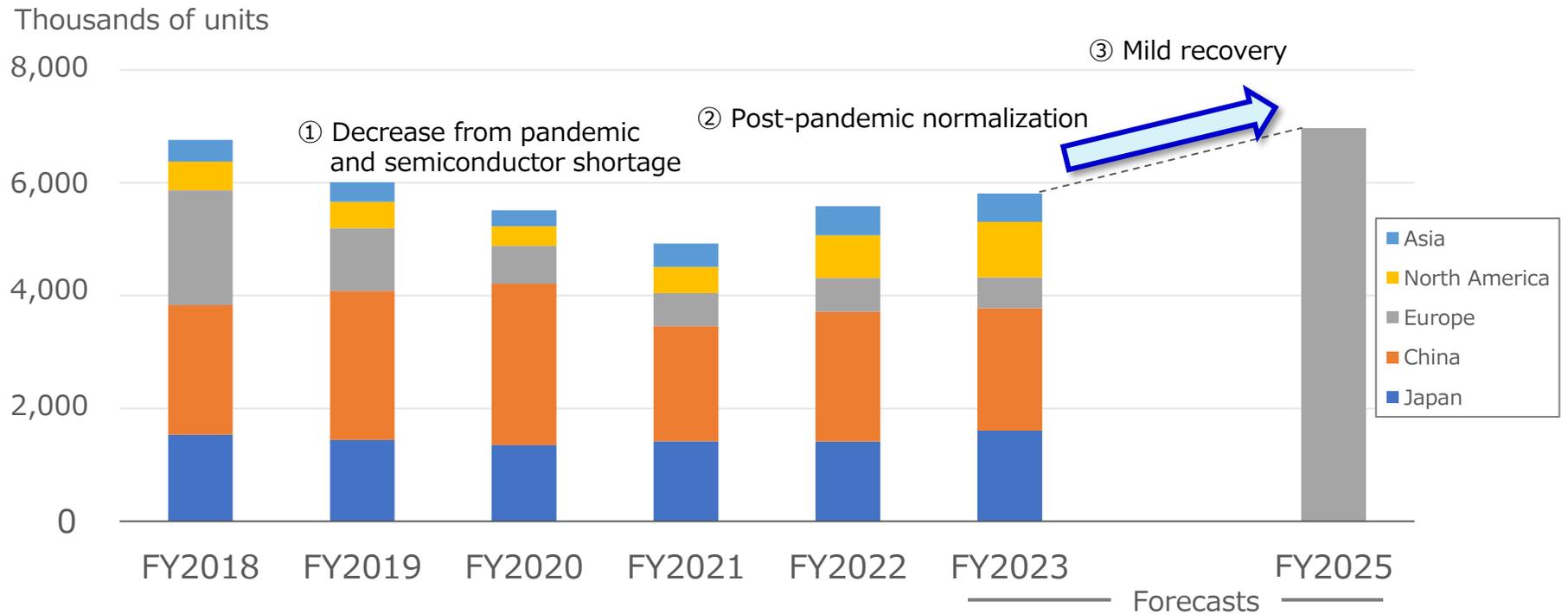
ICE : Internal Combustion Engine

# 6. Growth Strategy: Maximize Cash from Vehicular Turbochargers

## (3) Business Strategy: Existing Turbocharger Business

Unit sales of vehicular turbochargers are recovering from the pandemic's impact, and should return to pre-pandemic levels in 2025 from accumulated new orders

### Unit sales of IHI's turbochargers



① Decline from FY2019 through FY2021 owing to pandemic and semiconductor shortages

② FY2022 saw normalization from pandemic and eliminations of semiconductor shortages, with market heading upward from a year earlier

③ Automobile production should keep recovering moderately in FY2023 and beyond, with **new orders** accumulating and on track to return to pre-pandemic levels in FY2025.

## 6. Growth Strategy: Maximize Cash from Vehicular Turbochargers

### (3) Business Strategy: Existing Turbocharger Business

Generate stable cash flows in shrinking market over long term by steadily implementing measures to boost profitability and capture demand

#### Key measures

##### Improve profitability

- **Promptly pass on** materials and equipment and energy cost hikes **in prices**
- **Secure profitability** by reviewing specifications and rationalizing suppliers and costs

##### Consistently capture demand

- Maintain **robust ties with Japanese original equipment manufacturers (OEMs)**
- Strengthen relationships with the former **Big Three automakers through orders** while working with Japanese OEMs in North America
- Receive orders for **plug-in hybrid electric vehicles, a growing market**, from OEMs in China OEMs as well as in Japan and Europe

##### Expand after-sales services business

- **Expand service network**, focusing on Southeast Asia, and provide specifications matching market needs

##### Optimize resources

- Shift resources and reskill to develop fuel cell electric turbochargers
- Review scale of resources at each site in line with regional trends

## 6. Growth Strategy: Maximize Cash from Vehicular Turbochargers

(3) Business Strategy: New Businesses

Help enhance fuel cell system efficiency to materialize a carbon-neutral economy

### Commercialize and launch fuel cell electric turbochargers

Help resolve decarbonization challenges

In 2018, we supplied the world's first electric turbocharger for fuel cell air supply systems on mass-produced vehicles

#### Highlight

### Signing technical cooperation agreement with AVL

- HyTruck fuel cell system for commercial vehicles under development at AVL, the world's biggest automotive powertrain engineering company, is scheduled to fit our electric turbocharger in the HyTruck fuel cell system that it is developing for commercial vehicles

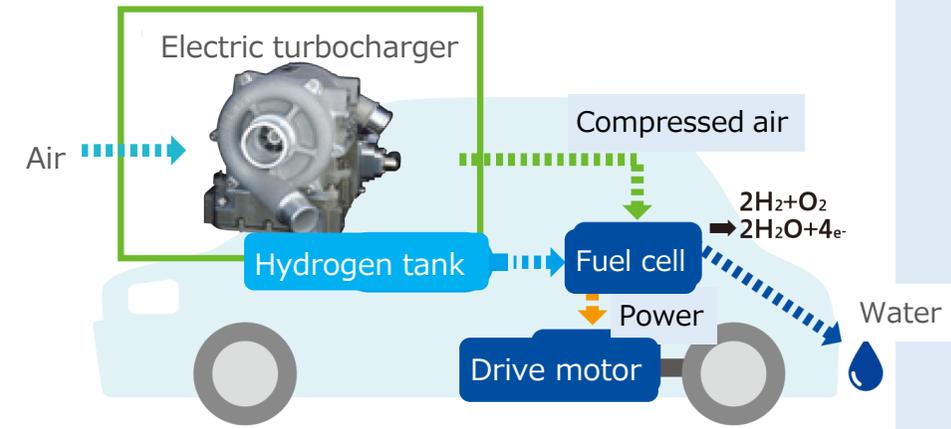


#### Highlight

### Making progress in developing and marketing products

- Reliability of 20 kW mid-class electric turbocharger verified
- Began delivering samples to several customers
- Looking to supply fuel cell systems for a range of applications

Electric turbocharger function in fuel cell vehicle



# 7. Growth Strategies: Priority Core Businesses—Rotating Machinery

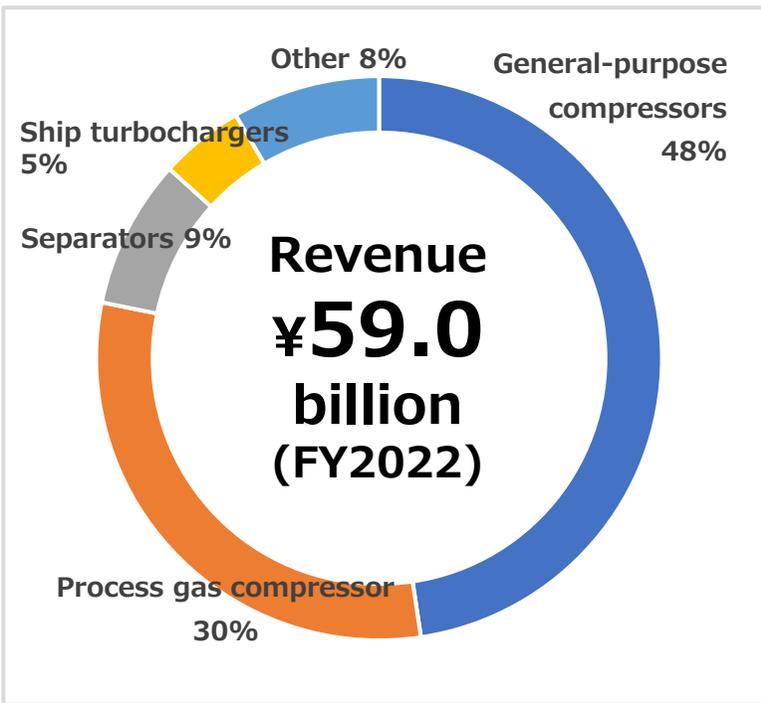
## (1) Business Overview

Rotating machinery business products and services contribute to carbon neutrality in industry, centered on compressors and separation equipment

### Key businesses

- **General-purpose compressors:** Supply compressed air efficiently for an array of plant production processes
- **Process gas compressors:** Contribute to various gas compression processes in oil and gas, chemicals, and other fields
- **Separators:** Solid-liquid separation technology using high-speed rotation for separation, dewatering, and other processes

### Business overview



### Key products



<b>Number of employees</b>	1,153 (as of April 1, 2023)
<b>Sites</b>	Japan: Works in Kanagawa, Nagano, Shiga, and Niigata prefectures Overseas: China, Turkey, Taiwan, and Singapore

### Growth strategies

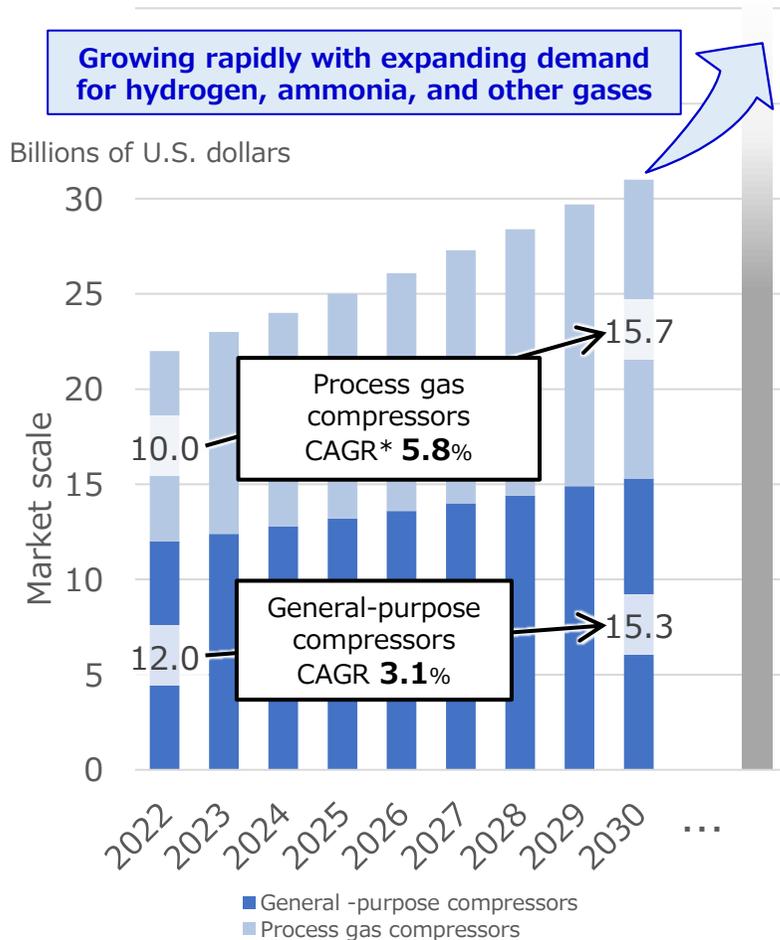
- **Strengthen solutions businesses** that help plants conserve energy and shrink their environmental footprints
- **Bolster global product and service structure** by expanding overseas units
- Expand product lineup for hydrogen, ammonia, and other **new gas value chain markets**

# 7. Growth Strategies: Priority Core Businesses—Rotating Machinery

## (2) Compressor Market Trends

Compressor market should grow on need to reduce environmental impact and rising demand for hydrogen, ammonia, and other gases; we will broaden market coverage by enhancing product lineup and expanding globally

### Global compressor market trends



Sources: Frost & Sullivan market research data and IHI

### Compressor business growth trajectory

#### Process gas compressors

**Expand lineup and build competitive edge in products**



Creating new gas handling solutions for hydrogen, ammonia, and other carbon-neutral gases becoming more mainstream, with process gas compressors likely to play leading roles

#### General-purpose compressors

**Expand global business by reinforcing units in Asia and other key regions**



Anticipating higher demand for improved energy efficiency and environmental compliance; leveraging our strengths in high efficiency and oil-free products to expand market coverage and help customers shrink their environmental footprints

\*CAGR = Compound annual growth rate

# 7. Growth Strategies: Priority Core Businesses—Rotating Machinery

## (3) Business Strategies

Expand process gas compressor products and services lineup for ammonia, hydrogen, and other new gas value chain markets

### Hydrogen and ammonia application extensions in gas value chain

Help resolve decarbonization challenges

In hydrogen and ammonia gas value chain, compression, liquefaction, pumping, and other devices are needed for production, storage and transportation, and utilization processes

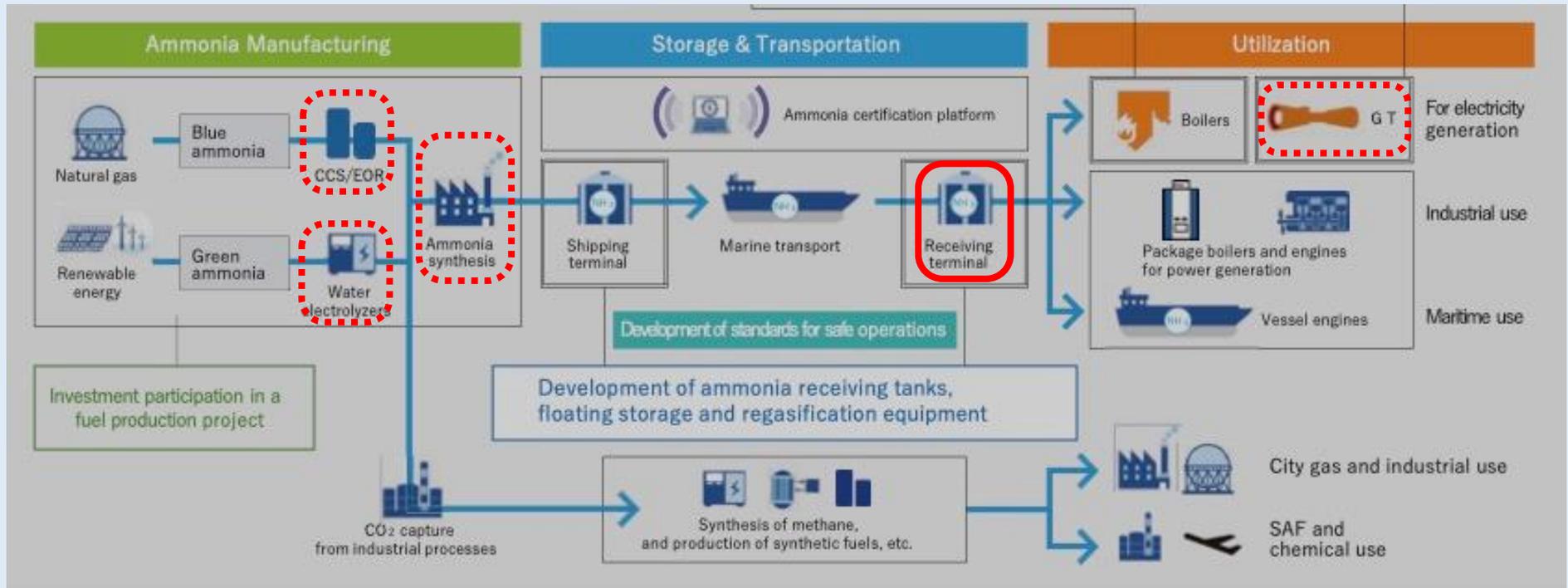


Chart from Group Management Policies 2023

Products deployed



Products with potential

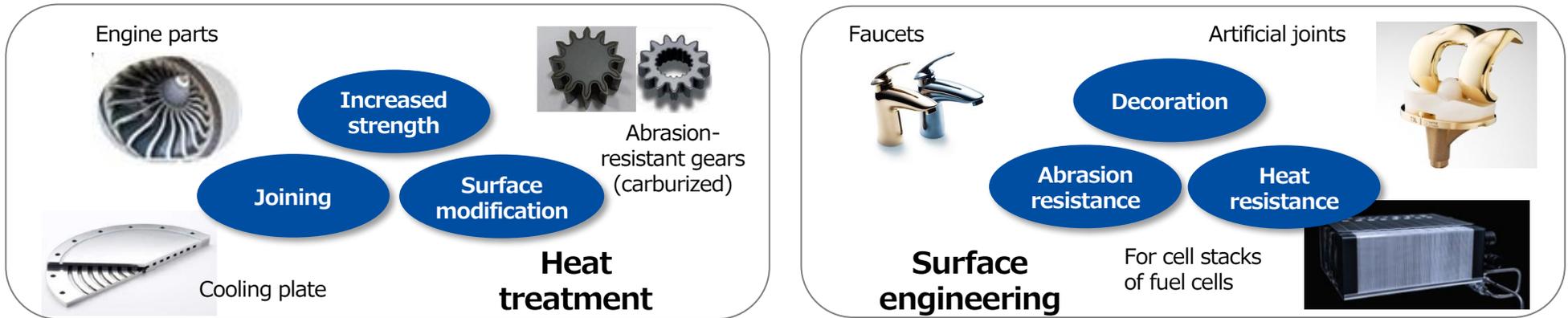


# 8. Growth Strategies: Priority Core Businesses—Heat Treatment and Surface Engineering (1) About the Business

We meet performance requirements of materials in industrial areas offering growth prospects by providing added value through heat treatment and surface engineering technologies that deliver new functions for materials

Solutions: Equipment and processing services

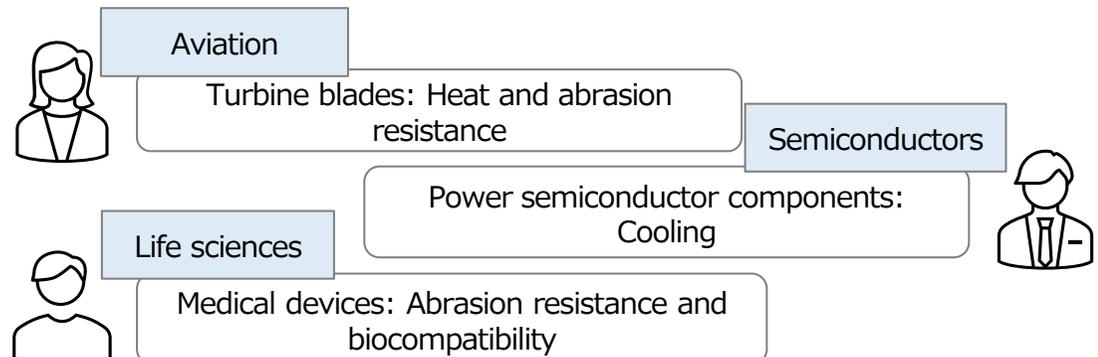
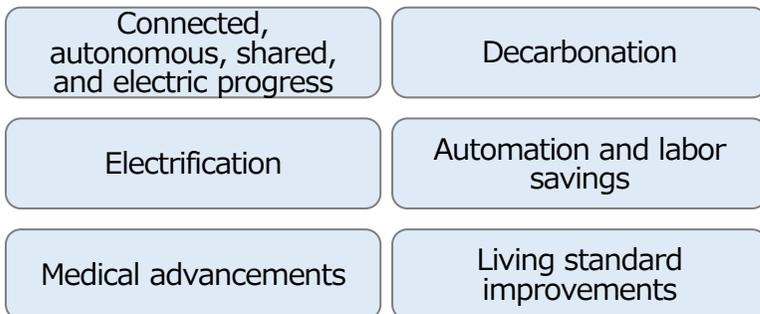
Adding value through heat treatment and surface engineering technologies that deliver new functions for materials



## Social issues

## Examples of materials needs

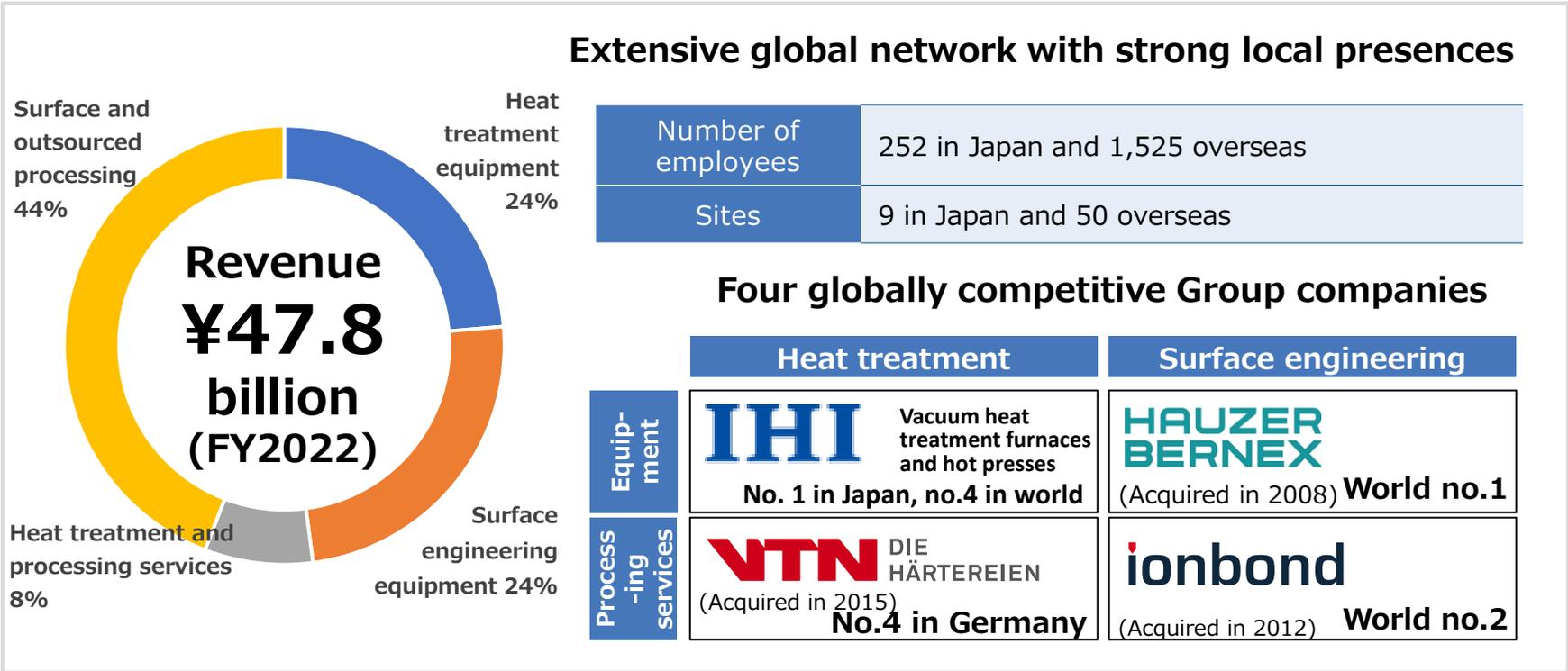
Increasing performance requirements for materials in decarbonization, digitization, and other growth areas



# 8. Growth Strategies: Priority Core Businesses—Heat Treatment and Surface Engineering (2) Business Overview

The only manufacturer with both equipment and processing services technologies in heat treatment and surface engineering fields

Business overview



Strengths

- Pioneer edge from ample variations and diverse usage and material applications
- Solutions capabilities to improve range of offerings to meet customer needs
- Ability to propose schemes incorporating equipment and processing services

# 8. Growth Strategies: Priority Core Businesses—Heat Treatment and Surface Engineering (3) Priority Segments

Heat treatment and surface engineering businesses growing on decarbonization, semiconductors, and life sciences demand; will focus on medical, aerospace, and decorative fields with core surface treatment and processing services businesses

## Heat treatment and surface engineering

### Business market growth potentials

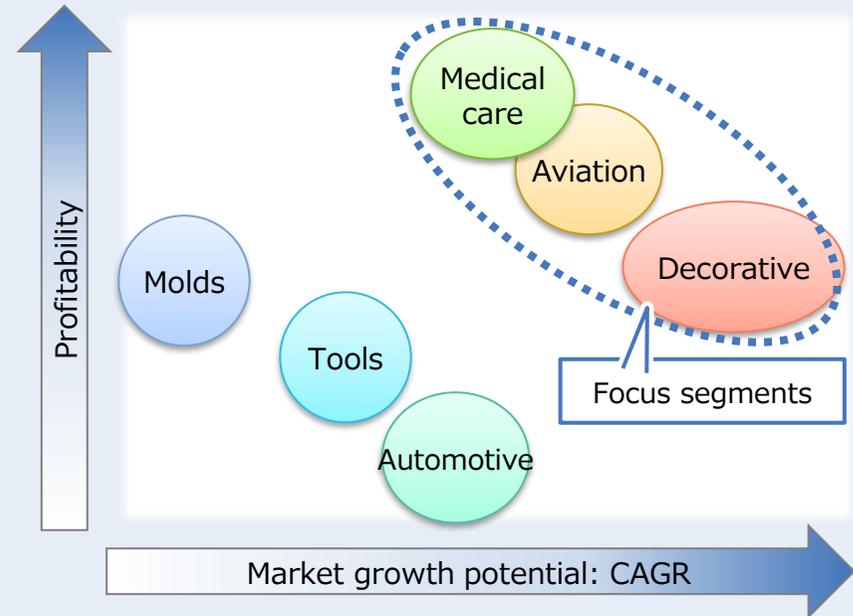
	Heat treatment	Surface engineering
Equip-ment	CAGR <b>3.2%</b> (Vacuum furnaces)	CAGR <b>6.7%</b> (PVD/PACVD processing equipment)
Process-ing services	CAGR <b>4.1%</b> (Heat treatment overall)	CAGR <b>6.2%</b> (PVD/PACVD processing services)

Sources: Mordor Intelligence 2022 and IHI

Growth drivers are **decarbonization, semiconductors, and life sciences sectors**

## Surface engineering and processing services

### Segment profitability and growth



- Growth driver is surface engineering business, an industry offering high growth potential and in which we are globally competitive
- **Focus on medical care, aviation, and decorative fields, where we anticipate growth**

Contributing to growth and development of Group businesses

**Growth Business**  
Aero Engines and Space

**Lighten aero-engine parts and enhance productivity**

**Development-focus Business**  
Clean Energy

**Materials processing engineering that helps create key hardware**  
Ammonia, hydrogen, and nuclear fields (ultra-high temperature, high pressure, and corrosion-resistant processing)

## 8. Growth Strategies: Priority Core Businesses—Heat Treatment and Surface Engineering (3) Priority Segments

Catering to expanding market for fuel cell vehicles and growing demand for surface engineering for related materials

### Developing in-line coating system for fuel cells

Help resolve decarbonization challenges

- Coating process makes **fuel cells more durable and cuts costs**
- Attracted considerable interest and **secured several orders** from domestic and overseas automobile-related manufacturers

#### IHI's strengths

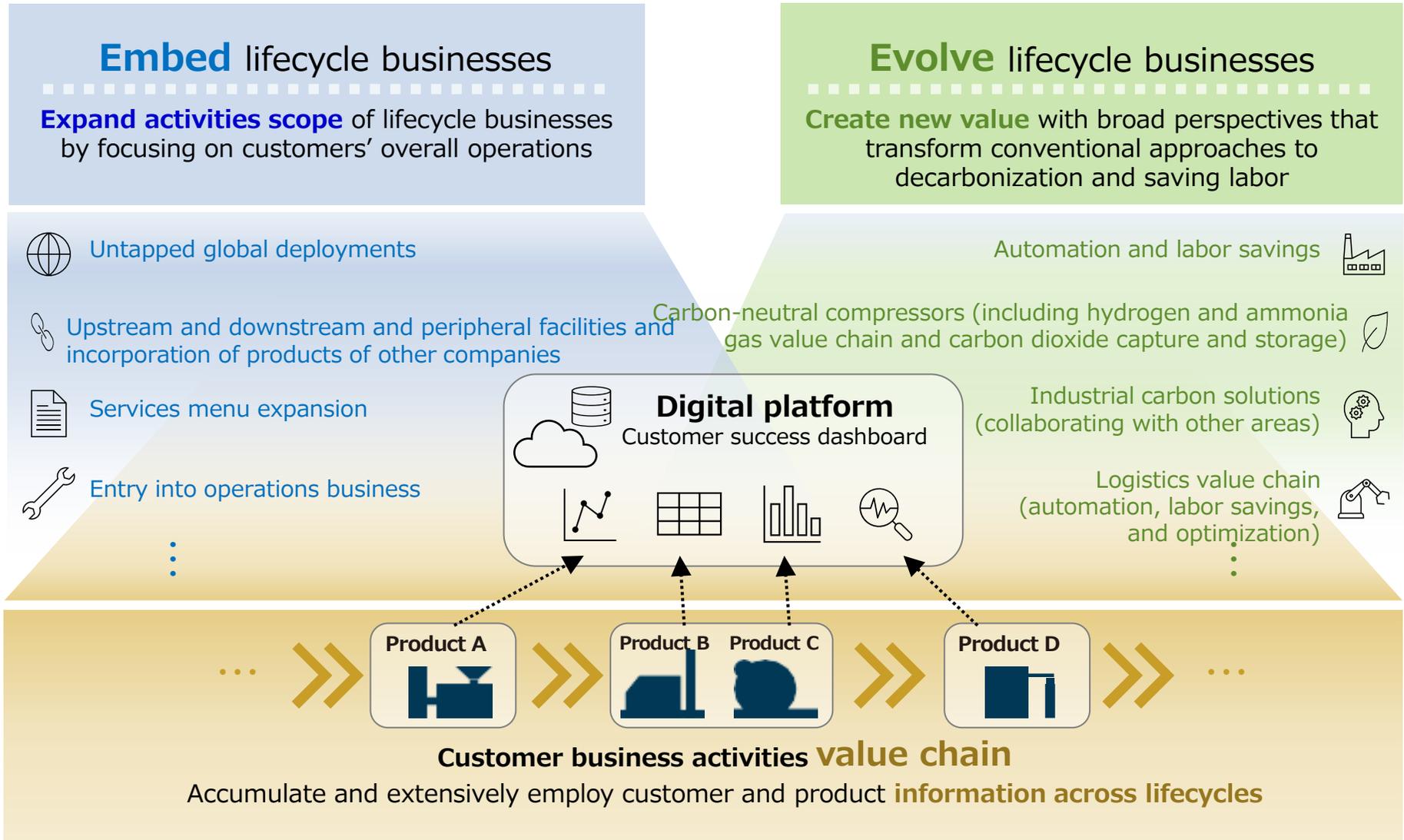
- Market recognition through coating technology for which we are **among world leaders**
- High-performance coatings leading competition and earning **high marks from customers**
- **Advanced mass production technology** based on process technology and production expertise amassed in cultivating processing services business



Corrosion-resistant, conductive in-line coating system for fuel cell bipolar plate (nine chambers)

# 9. Growth Strategies: Priority Core Businesses—Embed and Evolve Lifecycle Businesses

Pursue further lifecycle businesses growth by leveraging digital platform with view to entire value chain of customer business activities



# 9. Growth Strategies: Priority Core Businesses—Embed and Evolve Lifecycle Businesses

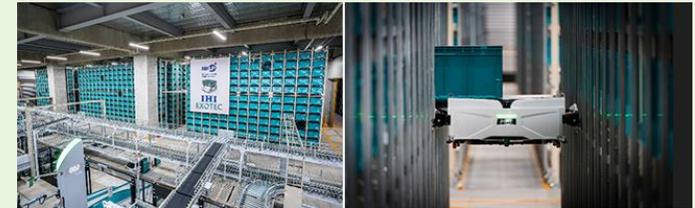
Step up efforts to embed and evolve lifecycle businesses and create new value

**Evolve**

**Logistics and industrial systems business**  
**Significant automation of warehouse operations with SKYPOD® picking system**

Mitsui Fudosan's small logistics facility adopted SKYPOD, which has contributed to warehouse automation and manpower savings and to lifting shipping capacity and cutting costs

Provide automation and labor-saving solutions



**Evolve**

**Transportation machinery business**  
**Automating on-premises transport machinery and equipment with digital platform**

Automating existing crane operations and providing operational optimization solutions resulted in unmanned nighttime shipping preparations, contributing to labor savings and enhanced crane operational safety

Provide automation solutions



**Embed**

**Parking business**  
**Maximize existing facilities' lifetime earnings through parking operations and management business**

Leveraging strengths as an equipment manufacturer to develop parking facilities operations, management, and maintenance business, thus maximizing lifetime earnings from equipment by minimizing maintenance costs while extending equipment service lives

Enter operations business



Segment vision is to provide optimal solutions for people, machines, and the environment

Resolving all customer and industry challenges

Delivering powerful technologies and services

Striving to harmonize people and machines

Segment policy

Generate earnings and cash growth by efficiently harnessing various types of capital while capturing business opportunities in growing markets

Three growth drivers

### Gas handling

- Leverage core components to expand value provided to decarbonized energy sector

Handle fuel conversion

Supply stable energy

### Materials and processes

- Expand value provided to new materials businesses based on materials processing technology
- Revolutionize technology for advanced materials

Deliver high-performance materials

Advanced production processes

Carbon neutrality

Automation and labor savings

### Logistics

- Broaden solutions value based on robotics and automation technologies
- Provide solutions to optimize logistics value chain

Streamline resources and space usage

Optimize overall value chain

Value propositions

Strengths

Technologies

High-speed rotation, heat and control technology

Mass production technology

Digital solutions

Integration

Capital

Solid delivery record

Wide product range

Diverse talent

Global network



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