

## **2024 Medium-Term Business Plan Progress Briefing**

# **Mitsubishi Heavy Industries Corporate Strategy**

**May 28, 2025**  
**Eisaku Ito, President & CEO**

Mitsubishi Heavy Industries, Ltd.

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During today's briefing, I will provide an update on our progress under the 2024 Medium-Term Business Plan (MTBP) and outline MHI's corporate strategy.

### ■ Review of FY2024

- Our 2024 Medium-Term Business Plan (MTBP) aims to leverage our strengthening business and financial foundations to balance business growth with further profitability improvements
- During FY2024, we achieved **historic highs** in order intake, revenue, business profit (profit from business activities), and cash flow. Order intake mainly in the Growing Core Businesses within Energy Systems and Defense greatly exceeded our plan, causing **order backlog** to **surpass ¥10 trillion**.
- Moreover, we are also starting to see positive results from various initiatives, including those aiming to expand services and improve productivity

### ■ Business Environment

- Outlooks are **uncertain** due to concerns about a global economic downturn caused by trade policies, as well as uncertainty in security frameworks
- In addition, Carbon Neutrality policies have become more rational, and **understanding of the need for a pragmatic Energy Transition** tailored to regional characteristics **has taken root**
- While preparing for this uncertainty, MHI will **respond flexibly to changes in the markets** in which we operate as we **seize and create new business opportunities**

### ■ Corporate Strategy

- MHI will respond to the changing needs of society and our customers by combining fundamental technologies with cutting-edge expertise and the diverse value we provide to our customers
- We will make **large contributions to the advancement of society** by **creating new value** unconstrained by preconceived ideas
- We will implement the new concept of **Innovative Total Optimization**, aiming to achieve **Group-wide optimization and scope expansion** with unprecedented **speed**
- We will realize a **virtuous cycle of high profitability and growth investments** in the medium to long term

### ■ Innovative Total Optimization

MHI provides a wide variety of products and services to a diverse set of customers. At the same time, we have integrated experience, technology, IT systems, and groups of experts into a common platform. There is no other company in the world that combines this level of product diversity with a common platform in quite this way.

We believe we can create significant innovation by drawing out the potential of MHI Group with Group-wide optimization and expansion of the scope of value provided by our diverse businesses in terms of both quality and quantity.

Innovative Total Optimization is a methodology reflecting this approach. It consists of the following two items:

- (1) By implementing **Group-wide optimization from two perspectives** (vertical and horizontal), we will improve productivity and increase profitability

(Vertical)

**Optimize all value chains within business units**

(Horizontal)

**Achieve functional interconnection between business units**

By so doing, we aim to halve the lead times of all operations and realize high profitability

- (2) **Provide new value to exponentially more geographies and customers, and expand our scope of work.**

· Create new value by **anticipating potential needs and making smart connections between diverse product areas**

· **Use licensing, strategic partnerships, and IT technologies** to rapidly reach new customers and regions

By combining these approaches, we will provide new value to exponentially more customers.

I tested out this methodology during my five years as CTO and demonstrated its effectiveness.

Today, as our business environment undergoes major changes, is the perfect time to make use of this methodology.

### ■ Initiatives for Achievement of 2024 MTBP

#### Growing Core Businesses

- We will **enhance business execution capabilities by increasing resource deployment**, steadily delivering products and services to our customers
- We will **aggressively and rationally execute R&D and capital expenditures** in preparation for the future of the company

#### Future Growth Areas

- We have **launched a one-stop-shop solutions business** in the expanding **data center market**
- In the **Energy Transition** businesses, we will accelerate development focusing on **economics and energy security**, which are issues standing in the way of widespread implementation

#### Businesses Requiring Competitiveness Enhancements

- We will explore new business opportunities by **utilizing digital technologies and enhancing services**
- We will work to **optimize businesses a way that suits individual business environments and the unique characteristics of those businesses**

In addition to these initiatives, we will **pursue further growth opportunities** through **strategic partnerships and inorganic investments**

### ■ Conclusion

- **We will steadily implement initiatives to achieve the 2024 MTBP**
- As changes are expected in the business environment, we will **strengthen our ability to respond promptly to signs of change**
- By implementing **Innovative Total Optimization**, we will **achieve large, sustained growth**

May 28, 2025

伊藤栄作  
Eisaku Ito



- 1. Business Environment**
- 2. Corporate Strategy**
- 3. 2024 MTBP Progress Update**
- 4. Conclusion**

The presentation materials are organized according to this table to contents.

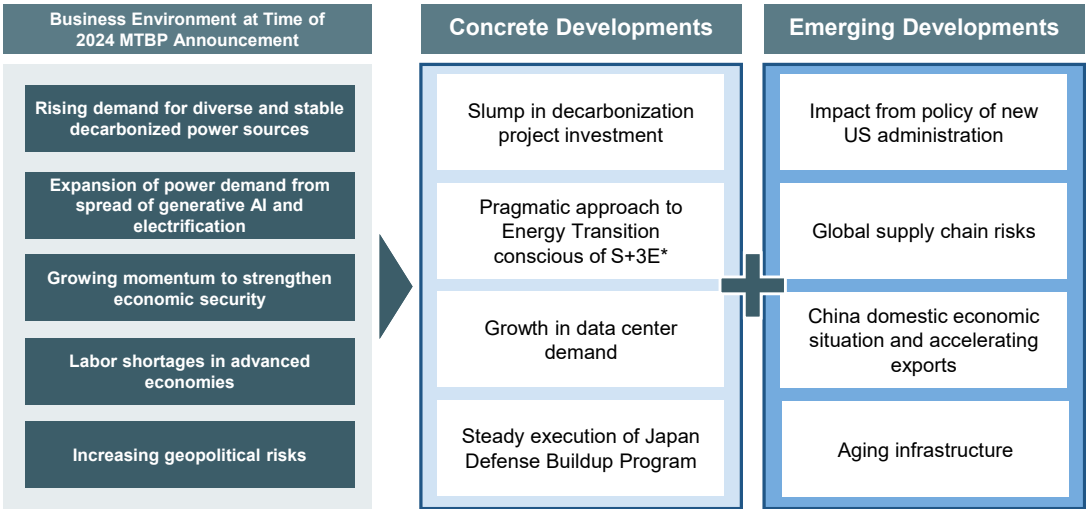
## 1. Business Environment

First, let me begin with the business environment.

# 1. Business Environment



- While implementation of renewable energy, hydrogen, and ammonia seems to be slowing, views on a pragmatic approach to the Energy Transition are developing, the role of natural gas is increasing, and opportunities are being created
- Measures needed to address newly emerging trends in business environment, such as policies affecting corporate performance



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\*Safety + Energy Security, Economic Efficiency, and Environment

Since the formulation of our 2024 MTBP, there have been some changes in our business environment. While the implementation of renewable energy, hydrogen, and ammonia has shown signs of slowing, pragmatic approaches to the Energy Transition are gaining recognition. As a result, the role of natural gas is expanding, creating new opportunities in areas such as gas turbine combined cycle (GTCC).

We believe it is essential to respond to newly emerging external factors, including policies that may impact our operations.

## 2. Corporate Strategy

Now, allow me to discuss our corporate strategy within this business environment.



## 2. Corporate Strategy



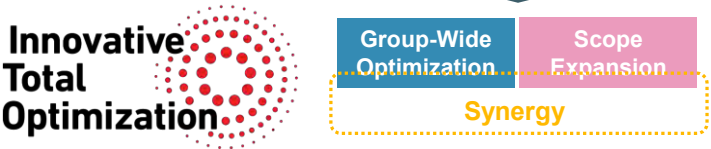
- Combine fundamental technologies with cutting-edge expertise in order to respond to changing societal and customer needs
- Unlock growth potential and create new value
- With Innovative Total Optimization concept, work toward Group-wide optimization and scope expansion, and generate synergies

### Our Mission

Combine cutting-edge technology with many years of expertise to provide solutions to the evolving challenges facing the world while enriching people's lives

### Target

Unlock growth potential and establish a virtuous cycle of high profitability and growth investments by creating new value



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Our mission is to combine cutting-edge technology with many years of expertise to provide solutions to the evolving challenges facing the world while enriching people's lives.

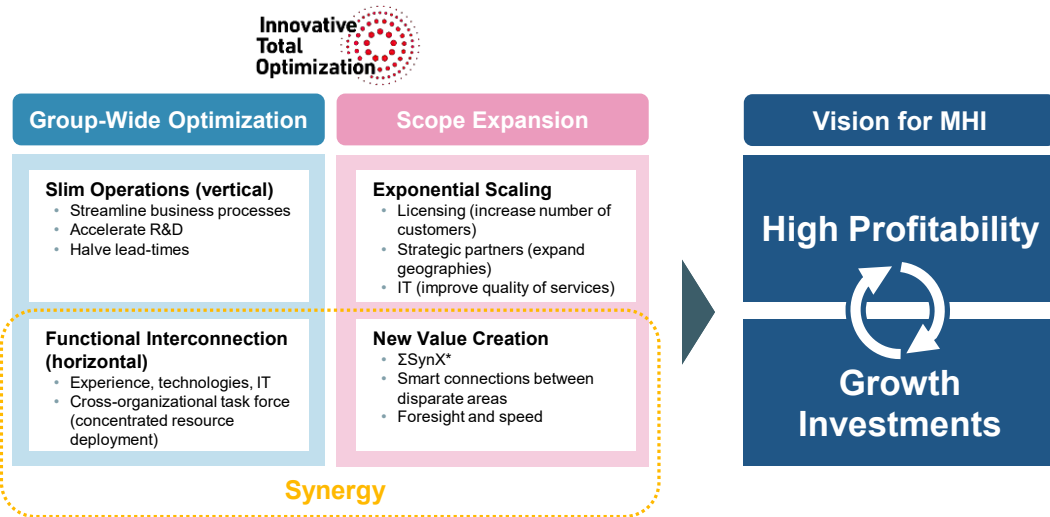
To achieve this mission, our target is to unlock growth potential and establish a virtuous cycle of high profitability and growth investments by creating new value.

As a methodology to enact this corporate strategy, we are implementing an approach we call "Innovative Total Optimization (ITO)," which aims to achieve Group-wide optimization and scope expansion, thereby creating synergy.

## 2. Corporate Strategy: Innovative Total Optimization



- Enhance productivity and profitability by strengthening inter-organizational collaboration and achieving Group-wide optimization
- Provide new value to exponentially more geographies and customers with a sense of speed, and expand scope of work
- Achieve 2024 MTBP goals, and realize a virtuous cycle of high profitability and growth investments



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\*Read as "Sigma Syncs"

The diagram on this page illustrates the ITO concept.

There are two core components to this approach: Group-wide optimization and scope expansion.

Group-wide optimization refers to our efforts to strengthen collaboration within the organization in order to enhance productivity and increase profitability.

Scope expansion involves quickly delivering new value to an exponentially greater number of geographies and customers, thereby expanding our reach.

Through these efforts, we will realize a virtuous cycle of high profitability and growth investments.

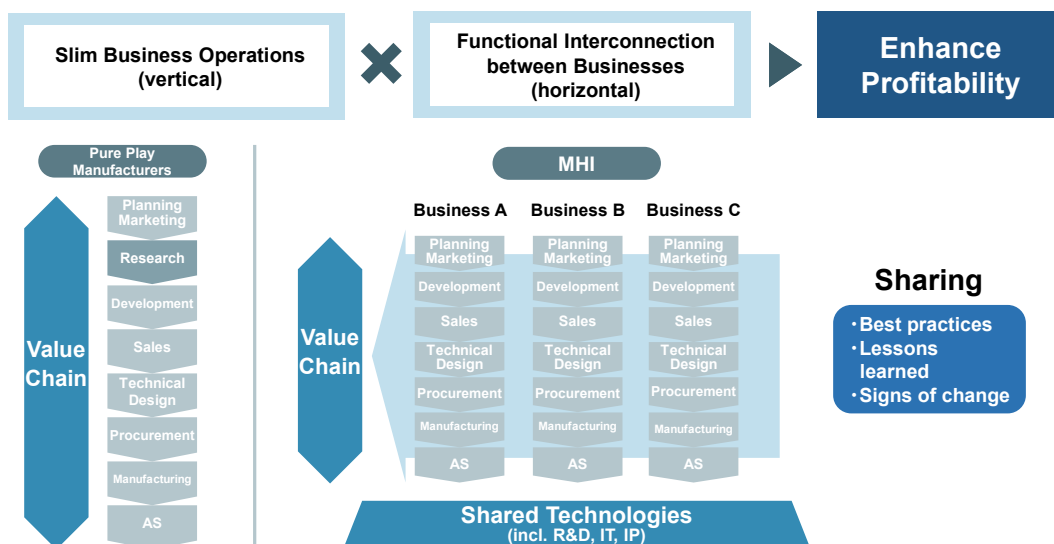
Next, I will discuss our initiatives aiming to achieve large, sustained growth.

## 2. Corporate Strategy: Innovative Total Optimization – Group-Wide Optimization (1/4)



### Group-Wide Optimization

Enhance profitability through two types of optimization



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Now, I will outline Group-wide optimization, one of the core components of ITO.

We are approaching Group-wide optimization from two perspectives: vertical and horizontal.

Regarding vertical optimization, our goal is to streamline the entire value chain of each business as much as possible. The main point here is that we have a platform that covers such areas such as R&D, IT, and intellectual property, and which is shared across the Group. Because of this, each business unit can operate in a slim, streamlined manner.

Horizontal optimization refers to functional integration between businesses. By sharing best practices, lessons learned from past failures, and information about early signs of change, we will be able to increase productivity and manage risks.

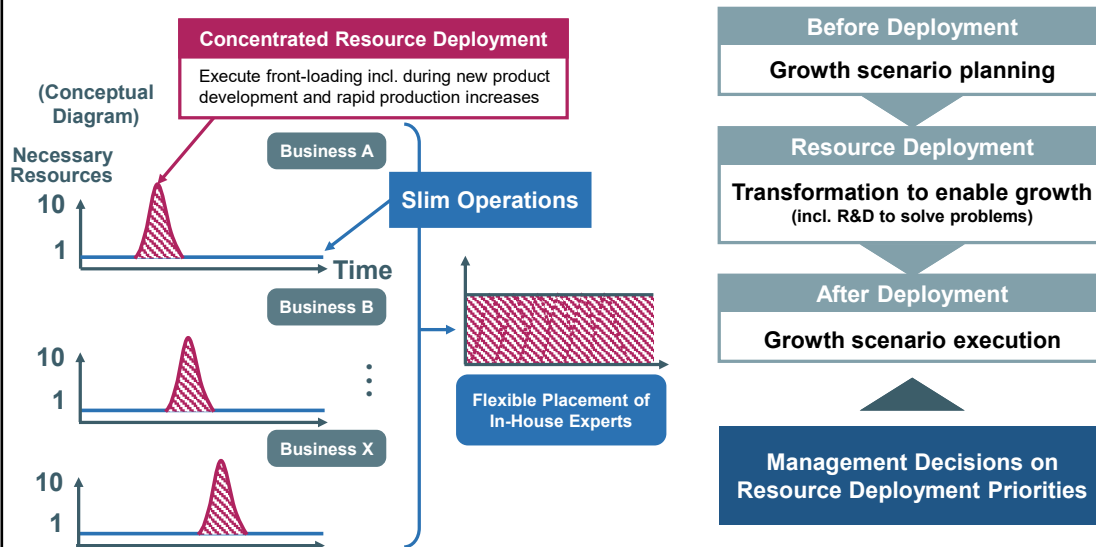
We intend to increase profitability through the combination of these vertical and horizontal optimization initiatives.

On the next slide, I will speak about the concentrated employment of resources.

## 2. Corporate Strategy: Innovative Total Optimization – Group-Wide Optimization (2/4)



- Streamline day-to-day operations as much as possible
- Concentrate deployment of resources (in-house experts) in critical phases related to medium- and long-term strategy



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MHI's business areas have grown organically in response to societal and customer needs.

Over the years, the fundamental and digital technologies, intellectual property, and other specialist knowledge and know-how being used in our businesses have accumulated in our technical and corporate divisions.

During normal operations, each business unit will streamline its operations as much as possible. Contrastingly, during critical phases related to our medium- to long-term strategy and situations where early risk mitigation is necessary, we will execute concentrated deployment of resources and in-house experts.

Each business unit will formulate a growth plan. As many growth plans will be produced in this way, top management will decide which businesses receive priority in the deployment of in-house experts.

The next slide provides some concrete examples of these initiatives.

## 2. Corporate Strategy: Innovative Total Optimization – Group-Wide Optimization (3/4)



- Accelerate R&D by anticipating changes in rapidly, drastically evolving markets
- Halve lead-times and fulfill growing orders



### Accelerate R&D

- Foresee potential market needs
- Utilize shared fundamental technologies and open innovation
- Break down technical issues.  
Perform repeated testing of hypotheses with small tasks and short cycle time
- Release products early



Automated and Intelligent Logistics Solutions

### Halve Lead-Times

- Design for X (DFX: easy-to-manufacture design)
- Automate and implement digital transformation (DX) of production
- Share best practices between organizations
- Reduce data retention by sharing information within organizations



Example Initiative: GTCC

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In a business environment characterized by rapid and dramatic change, we will work to anticipate potential market needs and leverage fundamental technologies and open innovation.

Then, in three-month cycles, we will engage in rapid, small-scale, iterative hypothesis testing to accelerate development and release products and services more quickly than pure play manufacturers.

One example of this is our automated and intelligent logistics solutions offerings.

We will implement designs that are easy to manufacture and automate production, halving lead times and addressing our growing order intake.

## 2. Corporate Strategy: Innovative Total Optimization – Group-Wide Optimization (4/4)



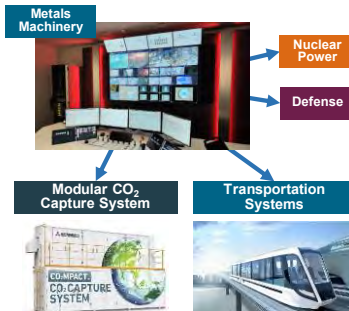
- Seize opportunities and address risks early by sharing experience, technologies, and IT across the Group



### Optimize IT System Development

#### ΣSynX Supervision

- Share advanced internal development with other businesses
- Integrated monitoring of products to support security, safety, and comfort of critical infrastructure



### Concentrated Resource Deployment

#### Seize Opportunities

##### Container Type Data Centers (DC)

- Concentrate deployment of resources in related technology areas. Develop practical (durable and reliable) products in short periods of time.
- Distributed type DC addressing need for high-speed, distributed processing and security, and coexisting with hyperscale DCs



Container Type DC

#### Early Risk Mitigation

##### Waste-to-Energy Plants

- In-house experts in each field intensively identify risks and complete continuous trial operations before customer handover
- Automated plants ready for increased waste from population growth and urbanization



Waste-to-Energy Plant

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On this page, I will outline our efforts to functionally integrate our businesses, sharing best practices, including experience, technologies, and IT systems across the Group.

We are expanding our IT system ΣSynX (read “Sigma Syncs”) Supervision – which was developed first in our Metals Machinery business – to cover other businesses. ΣSynX Supervision is a monitoring solution that ensures the safety, security, and ease of use of critical infrastructure.

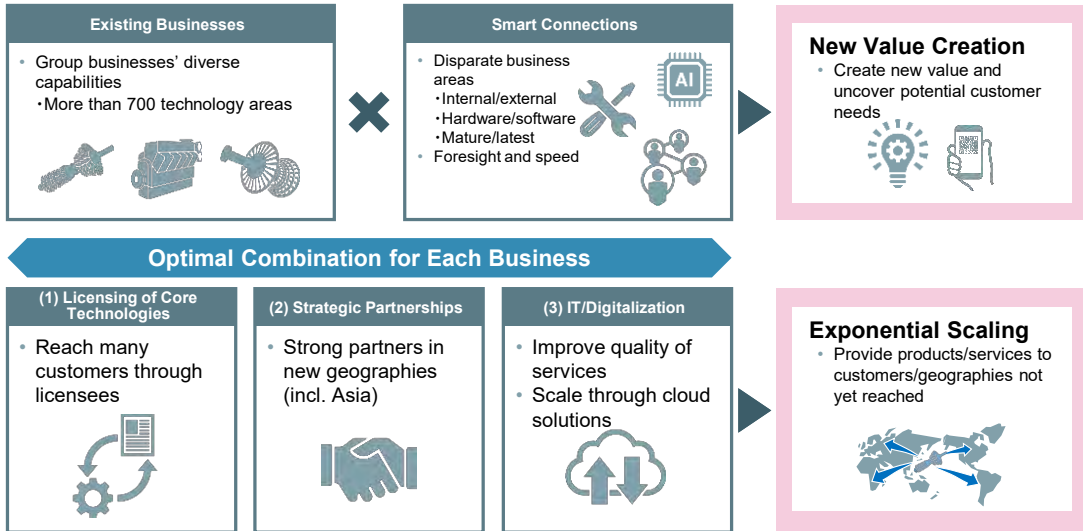
By executing the concentrated deployment of resources, we will reliably seize opportunities and mitigate risks at an early phase.

## 2. Corporate Strategy: Innovative Total Optimization – Scope Expansion (1/4)

### Scope Expansion

Make significant contributions to advancement of society by quickly providing exponentially more customers with new value

Innovative Total Optimization 



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Next, I will discuss our approach to scope expansion, a component of the ITO concept.

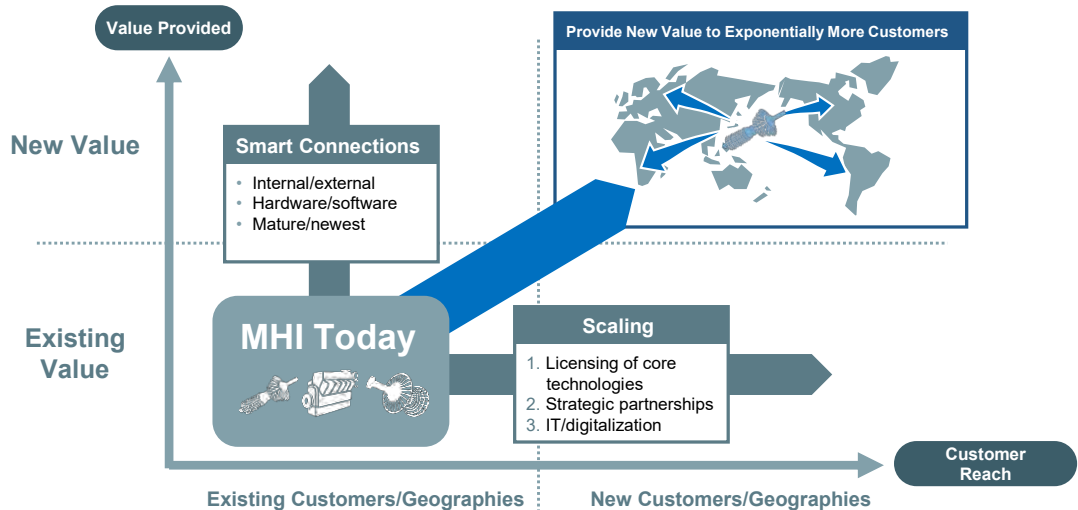
First, we will anticipate potential customer needs and, by leveraging the various capabilities of MHI Group, we will make smart connections between disparate business areas, creating new value.

By quickly delivering this new value to an exponentially larger customer base using such tools as licensing, strategic partnerships, and digital technologies, we aim to contribute significantly to the advancement of society.

## 2. Corporate Strategy: Innovative Total Optimization – Scope Expansion (2/4)



- Create new value by making smart connections between disparate business areas and existing value
- Reach new customers and geographies by utilizing licensing, strategic partnerships, and IT tech
- Combining all of these approaches, provide new value to exponentially more customers



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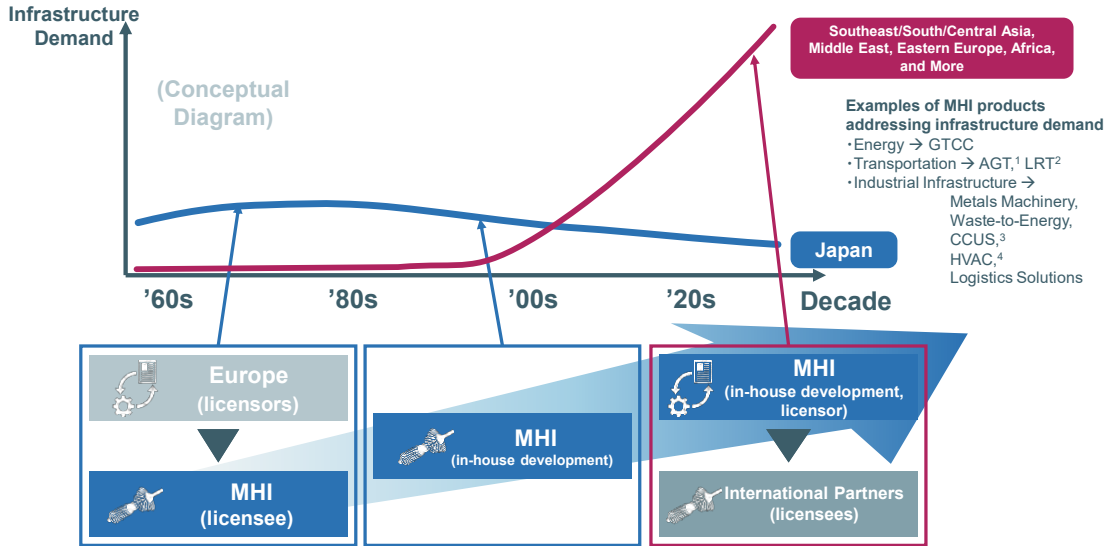
The graph on this page illustrates the concept from the previous page.



## 2. Corporate Strategy: Innovative Total Optimization – Scope Expansion (3/4)

- Solve problems for many geographies and customers through strategic partnerships around the world, addressing infrastructure demand in growing markets

**Innovative Total Optimization** 



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1 AGT: Automated Guideway Transit 2 LRT Light Rail Transit 3 Carbon dioxide Capture, Utilization and Storage 4 Heating, Ventilation & Air Conditioning

On this page, I will outline our concept of reaching new customers and geographies through licensing to our partners.

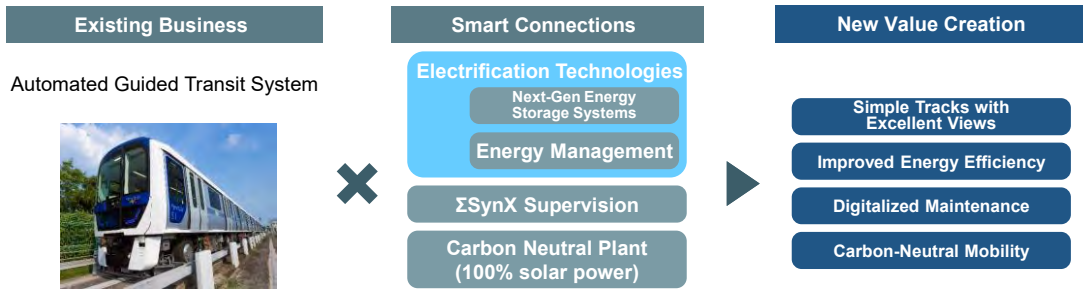
In the past, MHI imported technologies from Europe and the US. In the 1990s, we then developed many products in-house and responded to demand for infrastructure in Japan.

Going forward, we intend to contribute to growth in many regions and to solve challenges faced by a wide range of customers by licensing our cutting-edge technologies to partners across the globe.

## 2. Corporate Strategy: Innovative Total Optimization – Scope Expansion (4/4)



- Create new value by making smart connections between disparate areas and capabilities



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(\*) Automated Guideway Transit

Next, I will share some examples of where we have expanded reach, creating new value by making smart connections between disparate business areas and capabilities.

This is Prismo, a next-generation transportation system that has created new value while achieving decarbonization.

To develop Prismo, we made smart connections between our existing automated guided transit system and technologies, digital solutions, and Mission Net Zero initiatives that we had been working on in-house.

By charging rapidly while stopped at stations, we developed a decarbonized mobility product that eliminates power rails between stations and enables simple track designs with excellent views. Prismo also improves energy efficiency and allows for the application of digitalized maintenance solutions.

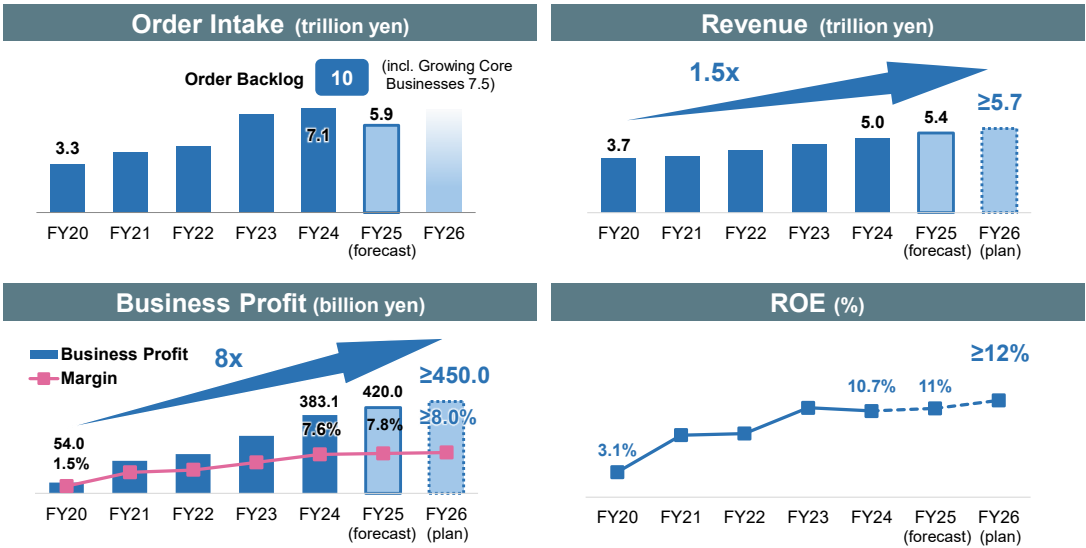
### 3. 2024 MTBP Progress Update

In the next section, I will provide a progress update for our 2024 MTBP.

3. 2024 MTBP Progress Update: Actual, Forecast & Plan



- Achieved historic highs in order intake, revenue, and business profit in FY2024
- Going forward, steadily execute order backlog exceeding ¥10 trillion

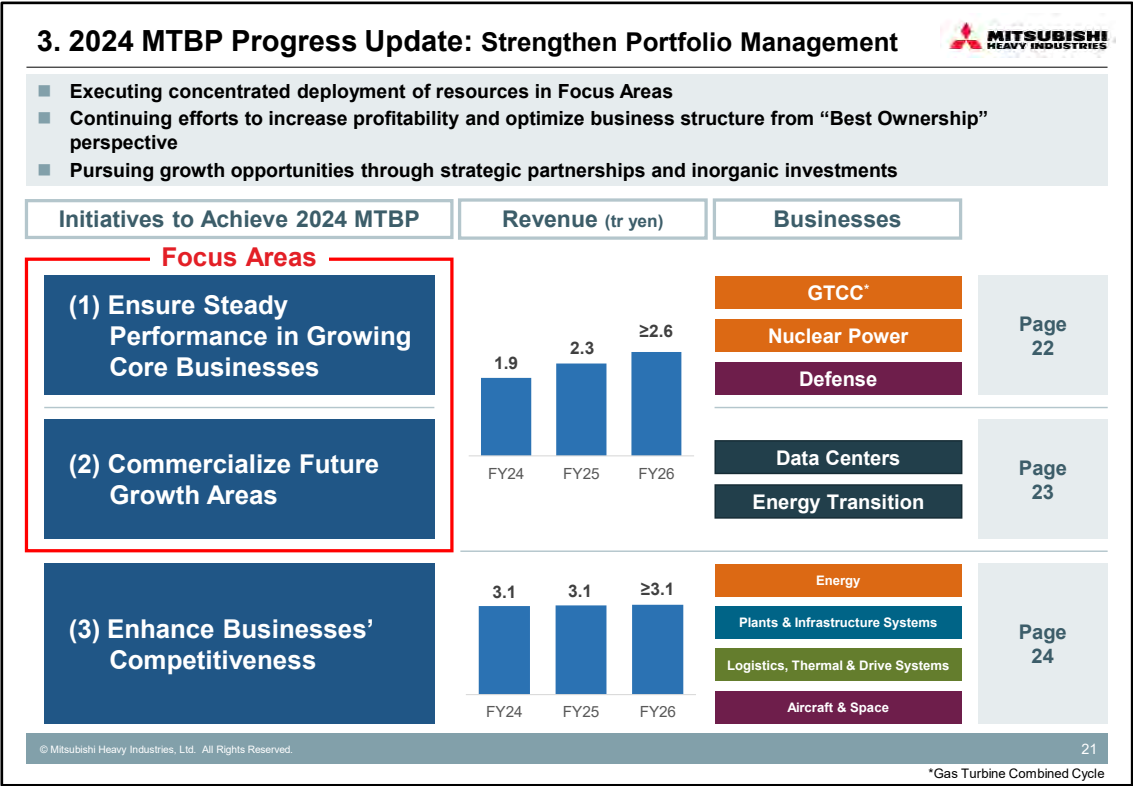


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During FY2024, we achieved historic highs in order intake, revenue, and business profit.

Particularly of note, order intake significantly exceeded our plan. Going forward, we will steadily execute our order backlog, which has exceeded ¥10 trillion.

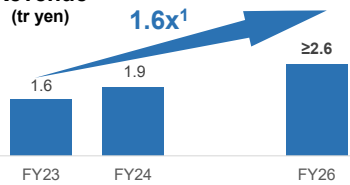


### 3. 2024 MTBP Update: Growing Core Businesses

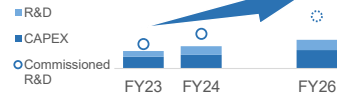
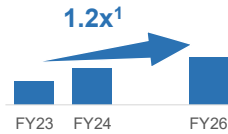


- Improve business execution capabilities in GTCC, Nuclear Power, and Defense, and reliably deliver products and services to customers
- Actively conduct R&D anticipating future developments in order to sustain growth

Revenue  
(tr yen)



■ Expand Human Capital ■ R&D/Capital Expenditures



1 FY2023 actual (base) → FY2026 plan

#### Increase Manufacturing Capacity

- Strengthen supply chain, expand facilities, and build new factories
- Enhance plant functionality, automate, and enable with IT technologies
- Support preparations for production increases with cross-organizational task force



GTCC: Savannah Machinery Works (Georgia, US)



Defense: New Komaki North Plant

#### R&D

##### GTCC

- Advanced GTCC System development
- Validation of hydrogen/ammonia firing conversions



##### Nuclear Power

- Advanced light water reactor and other next-generation reactor development



##### Defense

- Joint development project with Japan, Italy, and UK (GCAP<sup>2</sup>)
- Future technologies development (incl. unmanned systems)



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2 GCAP: Global Combat Air Programme

In our Growing Core Businesses, we are planning to grow revenue by 1.6 times FY2023 levels during FY2026, an increase of ¥1 trillion.

In order to achieve this, it will be important to deliver products and services to our customers as planned, and we are increasing resources to do so.

We are also actively investing in forward-looking R&D and other related initiatives.

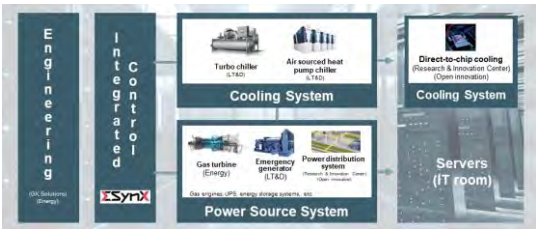
### 3. 2024 MTBP Progress Update: Future Growth Areas



- Launched one-stop-shop solutions business in growing data center market
- Accelerate development aiming to resolve issues preventing widespread implementation of hydrogen, ammonia, and CCUS<sup>1</sup>

#### Data Centers (DC)

- Provide one-stop solutions combining existing power supply, cooling, and control system products and engineering
- Respond to new customer needs, such as high load fluctuation support, with next-generation power distribution and cooling technologies, as well as intelligent mechanical systems
- Established base of operations in US. Expanding into global markets.



#### Energy Transition

##### CCUS

- Himeji CO<sub>2</sub> Capture Pilot Plant (5 t/day) began operation. Accelerating next-generation CO<sub>2</sub> capture technology development with ExxonMobil.
- Launched standardized, modular system CO<sub>2</sub>MPACT™ (1-200 t/day)

##### Hydrogen/Ammonia

- ACES construction completed. Trial operation underway.
- Developing high-efficiency hydrogen production system (SOEC<sup>2</sup>) as a step toward SAF<sup>3</sup> production



CO<sub>2</sub> Capture Pilot Plant

(Kansai Electric Power Co., Inc. Himeji No. 2 Power Station)



ACES (Advanced Clean Energy Storage)

(hydrogen production, storage, and supply project in Utah, US)

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1 Carbon dioxide Capture, Utilization and Storage 2 Sustainable Aviation Fuel 3 Solid Oxide Electrolysis Cell (high temperature steam electrolysis)

Recently, we launched a one-stop-shop solutions business in the expanding data center market.

Also, in the Energy Transition area, we are accelerating development seeking to balance economics – a barrier to widespread implementation of these decarbonized technologies – with energy security.

### 3. 2024 MTBP Progress Update: Competitiveness Enhancements



- Utilize digital technologies to standardize processes and enhance services
- Steadily working to optimize business structures

#### Enhanced Services

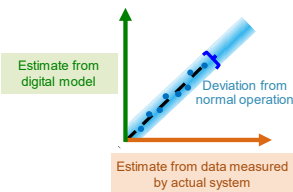
- Services for box making machines (EVOL) utilizing AR<sup>1</sup>



- Online troubleshooting and training utilizing AR technology



- Checkups based on operations data using digital twin techniques



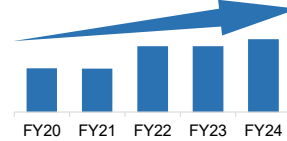
- Propose optimal operation control utilizing digital twin to predict system failures

#### Business Structure Optimization

- Execute organizational transformation tailored to business environment
  - Focus on services
  - Manufacturing incl. overseas · Consolidation of sales bases · optimization
  - Transfer headcount to Focus Areas

#### Steam Power

Services Revenue: 1.3x<sup>2</sup>



Plant serviced by MHI

- Optimize businesses to increase profitability
  - Join venture launch (Mitsubishi Generator)
  - Optimization of global operations (Metals Machinery)

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1 Augmented Reality

2 FY2020 actual (base) → FY2024 actual

With respect to businesses requiring competitiveness enhancements, we are leveraging digital technologies to promote the standardization of work processes and the enhancement of our services offerings.

We are also working steadily to optimize our business structure.



3. Strengthen Human Capital: Technology & Skill Transmission, DI-Proficient Personnel



- Combine fundamental technologies with cutting-edge expertise, responding to changing societal and customer needs
- Transmit expert skills and mature technologies and increase number of Digital Innovation (DI)-proficient personnel

Transmit Manufacturing Technologies & Skills

- Formalize expert skills and mature technologies
- Transmit skills to junior engineers



- Automate and optimize

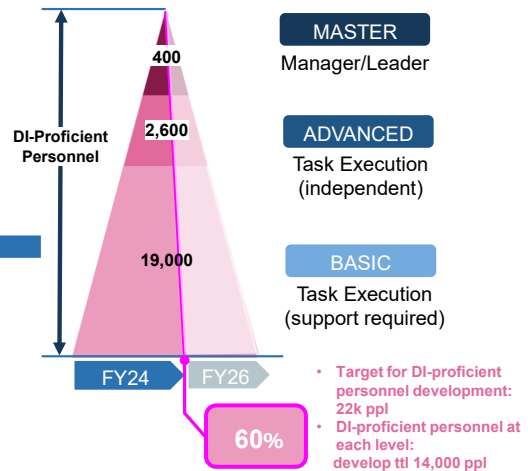


Automated high-precision machining of large structures



Automated machining of hard material parts for aero engines

Develop DI-Proficient Personnel



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We will need to combine manufacturing technologies with cutting-edge expertise to meet the evolving needs of society and our customers, thereby achieving large, sustained growth.

To that end, we are working to develop 22,000 Digital Innovation (DI)-proficient personnel.

### 3. Strengthen Human Capital: Recruitment and Growth Opportunities



- Expand recruitment efforts globally through new recruitment methods
- Improve employee engagement by providing growth opportunities and improving work styles

#### Securing Human Capital

- Secure needed recruitment numbers by leveraging diverse recruitment methods
  - Active use of internships
  - Alumni and referral recruitment, others

FY2024 recruitment figures:

approx. 3,000 ppl  
(incl. approx. 700 ppl overseas)



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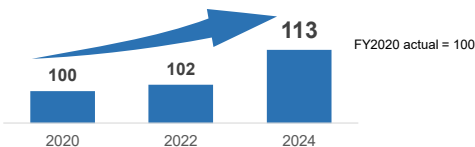
#### Growth Opportunities & Work Style Improvements

##### Japan

- Support employees taking on new challenges
  - Encourage self-directed career development (Promote dialogue, incl. coaching)
  - Expand cross-border learning programs (approx. 80 people sent to venture companies)
  - Shift resources through internal recruitment (approx. 1,000 people)
- Promote flexible work styles adapted to each stage of life
  - % of eligible employees taking childcare leave: FY2024 ≥90%
  - No. employees working reduced hours to focus on childcare: FY2024: approx. 1,200

##### Global

- Employee awareness survey results for engagement increasing



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\*MHI non-consolidated figures

Finally, let me discuss our efforts to strengthen human capital, which is essential to achieve large, sustained growth.

As our businesses expand, we are driving global recruitment efforts utilizing diverse methods.

Furthermore, we are working to provide growth opportunities and increase employee engagement by encouraging employees to challenge themselves and implementing flexible work styles adapted to each stage of life.

## 4. Conclusion

## Conclusion

- **Our business is growing steadily as we concentrate deployment of resources on our Focus Areas**
- **Working steadily to increase profitability and optimize business structures**
- **Going forward, we will implement the Innovative Total Optimization concept, thereby achieving Group-wide optimization and scope expansion with the aim of unlocking large, sustainable growth**
- **Through these efforts, we will establish a virtuous cycle of growth investments and high profitability**

Our businesses are growing steadily as we concentrate deployment of resources on our Focus Areas.

We are working steadily to increase profitability and optimize our business structures.

Going forward, we will implement the Innovative Total Optimization concept, thereby achieving Group-wide optimization and scope expansion with the aim of unlocking large, sustainable growth.

Through these efforts, we will establish a virtuous cycle of growth investments and high profitability.

This concludes my presentation. Thank you for your attention.

# Appendix

# Financial Indicators



	FY2023	FY2024	FY2025	FY2026
Revenue	¥4.6 tr	¥5.0 tr	¥5.4 tr	≥¥5.7 tr
Business Profit (%)	¥282.5 bn (6.1%)	¥383.1 bn (7.6%)	¥420.0 bn (7.8%)	≥¥450.0 bn (8%以上)
ROE	11.1%	10.7%	11%	≥12%
Total Asset Turnover	0.8	0.8	0.8	0.9
Debt/EBITDA Ratio	1.7x	1.2x	1.2x	≤1.7x
Dividend per Share	¥20 <sup>1</sup>	¥23 <sup>2</sup>	¥24 <sup>2</sup>	¥26 <sup>2</sup>

1 Dividend per share shown here adjusted retroactively to 1/10 of actual value to reflect 10-for-1 stock split effective April 1, 2024  
2 Adopted dividend on equity ratio (DOE) as shareholder return policy to achieve progressive dividend in medium to long term (announced May 28, 2024)

10<sup>th</sup> and Final Gas Turbine Unit Enters Service at Large Frame GTCC Power Plant Series in Thailand



- Completed construction of ten state-of-the-art JAC Series gas turbines with total output 6.7 GW within contract period. The gas turbines have exceeded 140,000 operating hours (as of April 2025), demonstrating their high reliability.

Photo: GTCC power plant operated by Hin Kong Power (two M70JAC gas turbines units)

Booked 6 JAC Gas Turbine Units for GTCC Power Plant in Saudi Arabia



- Total output of GTCC power plant – which consist of six M501JAC gas turbines – will be 3.6 GW, equivalent to approximately 2.5% of Saudi Arabia's domestic electricity transmission capacity
- Total orders for state-of-the-art JAC series worldwide have exceeded 100 units

Completed Construction of 50 MW Woody Biomass-Fired Power Plant in Hyuga, Miyazaki Prefecture



- Completed construction of 50-MW-class woody biomass-fired power plant, successfully handing over facility within contract period
- Focusing on the further spread of renewable energy power generation systems that make effective use of resources by utilizing biomass fuel

Completed Expansion of MHIAEL Nagasaki Aero Engine Combustor Manufacturing Plant



- Plant building approximately doubled in size to meet growing demand for engine components for short and medium range commercial aircraft. Aiming to achieve fully integrated manufacturing of combustors and increase production to 1,500 unit/year range, new production lines will gradually come online, with full operation slated for in 2026

Completed Outer Vertical Target Prototype of Divertor for ITER Experimental Fusion Reactor



- Completed outer vertical target prototype, a key component for ITER experimental fusion reactor
- Using technologies developed during manufacture of prototype, will build production units and contribute to promotion of ITER Project

Completed Delivery of Two Dry Casts for Ikata Nuclear Power Station, Shikoku Electric Power Co., Inc.



- Completed delivery of two dry casks ordered by Shikoku Electric Power Co., Inc. for Ikata Nuclear Power Station
- Set up dedicated cask assembly plant to supply high-quality dry casks with short delivery times and superior economics

**Joint Study to Establish Standard Specifications and Designs for LCO<sub>2</sub> Carriers**



- Seven domestic shipping and shipbuilding companies started joint study to establish standard specifications and ship types to realize large-scale international marine transportation of liquefied CO<sub>2</sub> after 2028
- Started development at MILES\* Co., Ltd., a joint venture with Imabari Shipbuilding Co., Ltd.  
\*MILES: Marine-design Initiative for Leading Edge Solution

**Booked Order to Rebuild Waste-to-Energy Plant in Hodogaya Ward, Yokohama**



- Received order to rebuild waste-to-energy facility (total capacity 1,050 tons/day) in Hodogaya Ward, Yokohama
- New plant will comprise three proprietary stoker incinerators developed to further optimize drying and combustion process, achieving highest level of electricity generation efficiency in Japan

**Contributing to CO<sub>2</sub> Reduction in Steel Production**



- Received orders for systems including direct-reduction plant and electric furnaces for large-scale decarbonization project in Germany
- Contributing to customer's achievement of goal to reduce CO<sub>2</sub> emissions by 4.8 million tons per year

**Contributing to Revitalization of Local Economies and Improved Convenience through O&M of New Transportation Systems**



(Photo courtesy  
Atlanta City  
Department of  
Aviation)

- Received multiple orders for new transportation systems renewal work, operation and maintenance (O&M), and increasing number of cars (includes Washington Dulles International Airport renewal and Atlanta International Airport O&M)
- Contributing to elimination of congestion caused by increases in population and tourism, as well as improvement of convenience of transportation

**Europe's First CO<sub>2</sub> Capture Plant Starts Operation with MHI Technology**



(Photo courtesy Eni S.p.A.)

- System to capture and store 25,000 tons/year of CO<sub>2</sub> at Eni's natural gas plant
- Entered service as Europe's first full-scale plant, capturing a maximum of 96% of CO<sub>2</sub> from gas turbine exhaust gas (low pressure, low CO<sub>2</sub> concentration [ $<3\%$ ])

**Three-Dimensional Variably Sized Box-Making Machine COMPOX to Optimize Product Logistics**



- Completed development of automated three-dimensional variably sized box-making machine (COMPOX) and began accepting orders from logistics sector
- Improves efficiency of logistics by optimizing box sizes, and contributes to CO<sub>2</sub> emissions reductions and addressing of societal issues such as labor shortages



# Business Highlights (3/4)

## Logistics, Thermal & Drive Systems



### ACT (Automated Compact Truck) Wins UK Archies Award 2024



- ACT, an automated guided forklift with design informed by the concept of "collaboration," received Germany's iF Design Award and Red Dot Design Award, as well as the UK's Archies Award 2024
- High praise received for innovative design, as well as safety and practicality

### Automated Picking Solution Utilizing iSynX Fully Implemented at Kirin Group's Ebina Logistics Center, the First Such System in Japan



- Introduced automation and intelligence to picking – work previously performed manually by workers, who were responsible for considering efficiency in their picking operations – utilizing iSynX
- Working to quickly alleviate shortage of logistics operators, improving work environment, and reducing work hours and waiting time for truck drivers

### Added LXZ Series Multi-System Air Conditioners Using Low-GWP Refrigerant to Line-Up

\*Global Warming Potential: CO<sub>2</sub> is assigned a GWP of 1. The lower the GWP factor, the less impact on the environment.



- Utilizes low-GWP R32 refrigerant
- Improved energy efficiency and comfort with new features included Variable Temperature Capacity Control+ (VTCG+)
- Significantly reduced footprint with a higher-density heat exchanger with reduced-diameter copper tubes. Supports up to 54 horsepower when combining individual units

### Launched New Model of Ene-Conductor Heat Source Control System



- Optimally controls centrifugal chillers and peripheral equipment, achieving further energy savings across entire heat source facilities
- Allows for control of up to eight centrifugal chiller units. Added international communication protocols anticipating increased adoption overseas.

### Achieved Rated Operation of 6-Cylinder 500-kW-class Hydrogen Engine Generator Set



- Achieved rated operation (435 kW/1,500 min-1) using 100% hydrogen fuel
- Through acceleration of processes necessary to achieve commercialization, targeting realization of Carbon Neutrality through expanded adoption of hydrogen

### Developing Turbocharger for PHEVs\* and Air Compressor for Fuel Cells (FCs)

\*Plug-in Hybrid Vehicle



Turbocharger for PHEVs



Air compressor for FCs

- Considering continued progression of transition to electrified mobility including electric vehicles, PHEVs, and FCVs (fuel cell vehicles), developing turbocharger compatible with PHEVs and electric turbo air compressor for application in FCs

Missile Systems Business



Upgraded Type-12 Surface-to-Ship Missile



Hyper Velocity Gliding Projectile

- Steadily worked on projects such as Stand-off Defense Capabilities Program
- Received order for glide phase interceptor (GPI), which is to be jointly developed between Japan and the US

Image prepared by MHI based on launch test photo available on Japan Ministry of Defense website

Joint Development of Next-Generation Fighter Aircraft by Japan, UK, and Italy



- Launched Japan Aircraft Industrial Enhancement Co. Ltd., jointly funded by The Society of Japanese Aerospace Companies (SJAC)

Image from "Progress and Budgets for Fundamental Reinforcement of Japan's Defense Capabilities" (2025 version), Japan Ministry of Defense

MHI Contributed to Boeing 787's Reaching 1 Billion Passengers with Stable Main Wing Production



©Boeing

- More than 1,200 wing boxes manufactured by MHI delivered since first shipment in 2007
- Boeing has order backlog of over 900 units, spanning around 10 years. Going forward, MHI will steadily respond to expected increase in production and work to improve productivity.

Delivered Frigates to Japan Ministry of Defense



- Delivered frigates "Yahagi" and "Agano"
- Continuing to steadily build next ships on order

H3 Launch Vehicle Program



- Successfully launched H3 Units 3 through 5
- Leveraging consecutive successful launches to grow business

Received Airbus Agility Award



- Received 2024 Agility Award at Airbus Supplier conference. MHI was highly evaluated for quick action during execution of A321 emergency door manufacturing contract.

