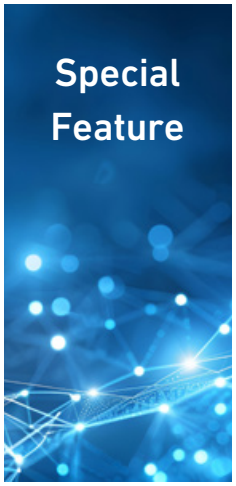


2024 Medium-Term Business Plan

2024 MTBP: Strengthen Portfolio Management

In May 2024, MHI Group announced the 2024 Medium-Term Business Plan (2024 MTBP). Under the plan, we aim to further strengthen and evolve portfolio management by leveraging the business and financial foundations established during the previous business plan period.

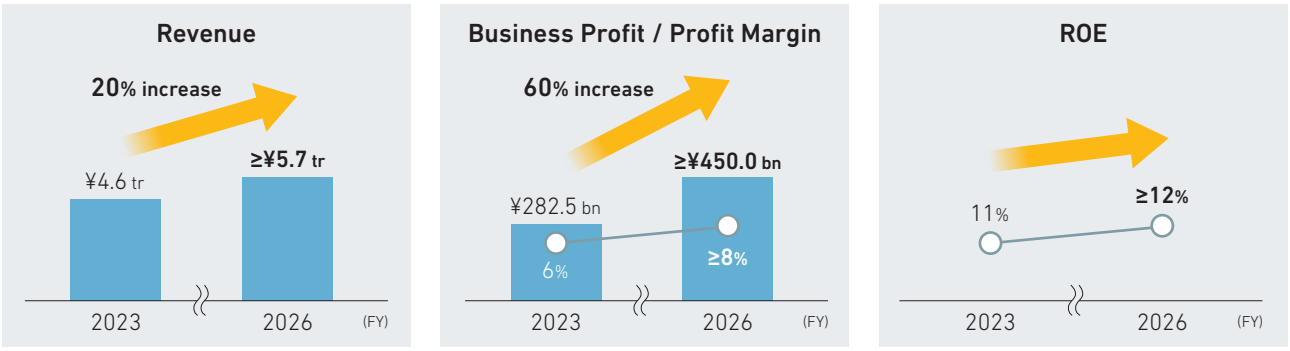
Quantitative Targets for the 2024 MTBP

During the previous plan, the 2021 MTBP, our operating environment suddenly became uncertain due to the COVID-19 pandemic. In response, rather than expanding scale, we focused on restoring and strengthening profitability and developing growth areas.

As a result, we achieved record-high business profit in FY2023 and established solid business and financial foundations.

During the 2024 MTBP, we will develop our business while balancing business growth with further profitability improvements. We aim to achieve revenue of at least ¥5.7 trillion, an increase of 20% over FY2023 level, and business profit of at least ¥450 billion, an increase of 60%, resulting in an ROE of 12% or higher.

Exchange rate assumptions: ¥140/USD, ¥150/EUR



For information on the financial strategy of the 2024 MTBP, please refer to "A Message from the CFO" (PP18–23).

Three Strategies for Achieving 2024 MTBP Goals

Strengthen Portfolio Management

We will revise our portfolio of businesses from the perspective of the Group's overall strategy to determine what is needed to further develop individual businesses and chart a course for growth. Our aim is to maximize corporate value by appropriately allocating management resources according to our portfolio-related goals.

Strengthen Technologies and Human Capital

Technologies and human resources are the foundations for strengthening portfolio management. To reinforce our technological capabilities, we will combine core technologies accumulated and refined through experience with cutting-edge technologies in new areas such as AI and quantum to create new customer value. To acquire these advanced technologies, we plan to pursue open innovation, including through investment in start-ups. To strengthen human capital, we will focus on three key areas: Strengthening recruitment and development, Reallocating resources, and Work-style improvements. In particular, we will roll out initiatives to cultivate more than 20,000 employees proficient in digital technologies by 2030.

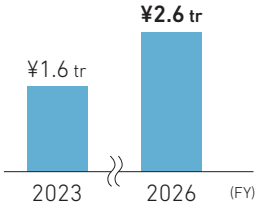
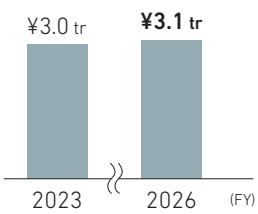
Promote MISSION NET ZERO

We are making steady progress with MISSION NET ZERO as we work to realize a sustainable, safe, and secure society. We will develop plant decarbonization techniques at Mihara Machinery Works, which is pioneering these initiatives. Then, we will reduce emissions across the company by sharing these techniques with other plants within the Group.

▶ For details, please refer to "Special Feature: MISSION NET ZERO" (PP38–49).

Strengthen Portfolio Management

We have established a robust framework aimed at ensuring sustained growth. This framework is comprised of three strategies: Ensure steady performance in growing core businesses, Commercialize future growth areas to lay the groundwork for future success, and Enhance businesses' competitiveness to boost profitability. By combining these elements together, we aim to strengthen and evolve our approach to portfolio management. In particular, we will work to increase revenue from our focus areas—growing core businesses and future growth areas—by ¥1 trillion by FY2026 and will actively allocate management resources accordingly.

Strategy	Revenue	Businesses
Focus Areas **1 Ensure Steady Performance in Growing Core Businesses** • **Contribute to stable supply of energy and national security** • **Strengthen execution capabilities through concentrated allocation of resources**		GTCC Nuclear Power Defense
2 Commercialize Future Growth Areas • **Contribute to decarbonization of both energy supply and demand sides** • **Form strategic partnerships**		Energy Transition Smart Infrastructure
3 Enhance Businesses' Competitiveness • **Strengthen profitability** Expand sales by strengthening customer relationships Expand services through digital transformation (DX) • **Develop technologies to maintain competitive advantages** • **Optimize business organization**		Energy Systems Plants & Infrastructure Systems Logistics, Thermal & Drive Systems Aircraft, Defense & Space

Focus Areas

1 Ensure Steady Performance in Growing Core Businesses

During the 2024 MTBP, we expect a significant increase of ¥1 trillion in revenue from Gas Turbine Combined Cycle (GTCC), Nuclear Power, and Defense, which achieved large order intake growth during the 2021 MTBP. We will focus resources in these areas and stably execute their order backlogs. Furthermore, as these are key products that contribute to the stable supply of energy and national security, we will steadily develop our businesses in these areas.

GTCC

Enact Strategies Based on Market Needs to Further Increase Global Market Share

The gas turbine market is expected to expand in the future due to strong demand for decarbonized fuel conversions stimulated by CO_2 emissions regulations, load-following power accompanying the expansion of renewable energy, and on-site power generation for data centers. In this market environment, we will maintain our top share by developing and validating highly reliable fuel conversion technologies and combining them with CO_2 capture in the future. We will continue to expand our supply capacity while increasing personnel and production capacity to meet this strong demand. We will also actively invest in R&D to maintain our competitive advantages and lead the decarbonization market.

M504 J-series gas turbine

Opportunities during 2024 MTBP

Market Environment

- High output, high-efficiency models now mainstream. Market to grow at a certain rate through 2030.
  - Demand for decarbonized fuel conversions stimulated by CO_2 emissions regulations
  - Demand for load-following power to stabilize grids amid expansion of renewable energy
  - Demand for on-site power generation for data centers and semiconductor plants
- Demand for hydrogen and ammonia combustion to ramp up

Initiatives to Strengthen Business

Strengthen Supply Capacity

- Improve business execution capabilities by expanding facilities and personnel

Actively Invest in R&D

- Develop technologies to solidify competitive advantages in pursuit of a decarbonized world

Propose Services Utilizing Vast Operations Data

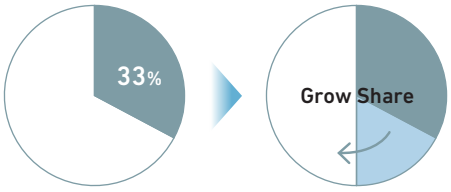
- Propose effective maintenance utilizing data obtained through remote monitoring products (TOMONI®)

MHI's Strengths

- High performance, large frame gas turbines
- High reliability through pre-launch testing at utility-scale, in-house demonstration plant
- Optimized operation with CO_2 capture systems
- Validation of future hydrogen and ammonia fuel conversion technologies outpacing competitors

Further Global Market Share Growth

Maintain top market share held since 2022



Left: CY2020-2022 actual annual market size (McCoy)
Right: CY2023-2027 annual market size forecast, MHI order volume based on 2024 MTBP period average
Note: Large frame gas turbine output range (excl. mechanical drive applications)

Nuclear Power

Steadily Pursue Initiatives in a Variety of Areas to Expand Our Business


Advanced Light Water Reactor SRZ-1200®

Against the backdrop of Japan's national policy to maximize the utilization of nuclear energy, we will steadily expand this business. In particular, we will continue to support the restart of existing plants and the establishment of the nuclear fuel cycle. We will also perform maintenance work for the long-term, stable operation of restarted plants. We also forecast the export of equipment to other countries as demand for nuclear power grows worldwide. Furthermore, as the lead company in Japan, we will continue design work on an Advanced Light Water Reactor and will develop next-generation nuclear reactors: fast reactors and high temperature gas-cooled reactors.

Opportunities during 2024 MTBP

Market Environment

- Japan's Basic Policy for the Realization of GX[1] includes the utilization of nuclear energy
- Investment appetite increasing for nuclear power as a means to achieve Carbon Neutrality and maintain stable power supplies

Business Expansion

- Support PWR[2] and BWR[3] restarts and SSFs[4] construction
- Support establishment of the nuclear fuel cycle
- Perform maintenance work for long-term, stable plant operation
- Export equipment for existing and new plants outside Japan
- Continue design work on Advanced Light Water Reactor SRZ-1200®
- Develop fast reactor and high temperature gas-cooled reactor technologies

1 Green Transformation 2 Pressurized Water Reactor
3 Boiling Water Reactor 4 Specialized Safety Facility

Initiatives to Strengthen Business

Strengthen Supply Capacity

- Expand personnel to enable parallel execution of current projects and development of fast reactors and high temperature gas-cooled reactors

Actively Invest in Facilities and R&D

- Develop technologies through government-led projects, and update and enhance production facilities

Support Maximum Utilization of Existing Plants

- Support availability improvements, operation enhancements, and preventative maintenance with a view to long-term plant operation

Defense

Expand Business by Responding to Sharp Increase in National Security Needs in Japan


Next-Generation Fighter Aircraft concept art
(Courtesy of Japan Ministry of Defense)

Our business is rapidly expanding against the backdrop of increasing needs for national security measures in Japan, and we will ensure our ability to reliably respond to the Japanese government's requests. We will continue to work on stand-off defense and missile defense capabilities, as well as to promote international joint development on the Next-Generation Fighter Aircraft. We also believe that the use of unmanned systems will increase in the future, and we will work to develop fundamental technologies in this area.

Opportunities during 2024 MTBP

Market Environment

- Japan's defense budget increasing due to rising geopolitical risks
- New defense equipment with advanced capabilities to be introduced

Business Expansion

- Stand-off defense (in all domains: air, land, and sea)
- Integrated missile defense
- Next-Generation Fighter Aircraft development
- Unmanned asset defense
  Responding to needs for unmanned aerial, underwater, and ground vehicles
- Space domain
  Needs for space asset utilization enabling communications, navigation, and information gathering

Initiatives to Strengthen Business

Strengthen Supply Capacity

- Increase personnel by around 30%, including optimization of internal human resource utilization.
  Increase development and production capacity to enable revenue increases.

Promote International Joint Development

- Participate in Global Combat Air Programme promoted by GIGO[5]

Actively Invest in R&D

- Get head start on next-generation fundamental technology development

5 GCAP International Government Organisation: An intra-governmental organization promoting the Global Combat Air Programme (GCAP), in which Japan, UK, and Italy are participating

Focus Areas

2 Commercialize Future Growth Areas

Under the 2021 MTBP, we focused on developing growth areas and identified fields with the potential for commercialization. During the 2024 MTBP period, we will work to commercialize those areas with an eye to full-scale deployment during the 2027 MTBP period and beyond. While pursuing commercialization, we will also build value chains and collaborate with other organizations through strategic partnerships.

Hydrogen and Ammonia

Combine Core Technologies and Products to Build Hydrogen and Ammonia Value Chains

Through the GX Solutions segment, which was established in April 2024, we will participate in projects around the world and form strategic partnerships to build value chains.

Furthermore, we will develop core technologies and products, such as hydrogen- and ammonia-fired gas turbines and hydrogen production systems.

Hydrogen project in Utah, U.S.

2021 MTBP

- Participated in hydrogen production, storage, and supply project in Utah, U.S. Facilities now under construction (~80% complete)
- Built Takasago Hydrogen Park and Nagasaki Carbon Neutral Park in Western Japan. Worked to develop hydrogen production systems and hydrogen/ammonia gas turbines.
- Two hydrogen hub projects with MHI involvement were nominated to receive funding from the U.S. Department of Energy

2024 MTBP

- Project in Utah, U.S. to reach completion, and power generation with hydrogen co-firing at commercial plant to begin
- Validate 100% hydrogen and ammonia firing in small and mid-size gas turbines, and 50% hydrogen co-firing in large frame gas turbines
- Establish business model using hydrogen-related and other technologies
- Form strategic partnerships, and pursue realization of projects, including hydrogen hubs in U.S. and ammonia bunkering project in Singapore

CCUS

Build a CCUS Value Chain

We are pursuing initiatives in multiple regions and industries which are tailored to the specific circumstance in each area. While working to achieve FID[1] in the projects in which we are participating, we are also developing next-generation CO_2 capture technologies to solidify our competitive advantage.

1 FID: Final Investment Decision


CO_2 capture system (process, absorbent)

2021 MTBP

- Responded to inquiries and participated in FSs[2] for many CO_2 capture projects in a variety of industries (>50 projects)
- Worked to develop core technologies and products such as a new absorbent, a modular CO_2 capture system, an LCO_2 carrier, a CO_2 compressor, and synthetic fuels
- Created CCS solutions organization through alliance with ExxonMobil.
  Partnered with licensees around the world.

2 FS: Feasibility Study

2024 MTBP

- Receive subsidies from the U.S. Department of Energy, and achieve FID on leading projects such as CCUS hubs and clusters in UK
- Develop next-generation CO_2 capture technologies, and build service infrastructure, including for remote monitoring, in order to enhance competitiveness
- Participate in JOGMEC[3] Advanced CCS[4] Projects

3 JOGMEC: Japan Organization for Metals and Energy Security
4 CCS: Carbon dioxide Capture and Storage

Electrification and Data Centers

Provide One-stop Decarbonization and Energy Conservation Solutions, Combining Energy Supply, Cooling, and Highly Intelligent EMS Systems

Leverage thermal and electric engineering technologies to provide one-stop decarbonization and energy conservation solutions, combining energy supply, cooling, and highly intelligent EMS systems.

2021 MTBP

Identified electrification and data centers as important megatrends

- Targeted one-stop solution combining power supply, cooling, and control systems
- Validated immersion cooling and power supply system technologies
- Acquired Concentric, LLC as North American service location

2024 MTBP

Fully enter data center and electrification markets

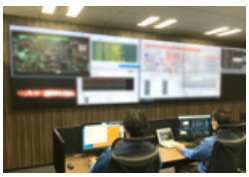
- Promote one-stop solutions business combining power supply with cooling systems
- Apply on-site power generation systems according to power demand
- Build energy management product to optimize entire systems
- Further strengthen service network

3 Enhance Businesses' Competitiveness

Our existing businesses faced challenges during the 2021 MTBP period, including those posed by the COVID-19 pandemic and the subsequent spike in inflation, so we focused on restoring and strengthening profitability. By improving profitability, we will further strengthen competitiveness while building a solid business foundation, strengthening cash generation capabilities, and investing in growth.

Examples of 2024 Initiatives

Expand sales by strengthening customer relationships	• Strengthen and expand direct sales organizations in HVAC, Logistics Systems, and others • Establish position as system integrator by providing core technologies and design services in Metals Machinery, Commercial Ships, and others
Expand services through DX	• Enhance O&M[5] with remote monitoring and automation technologies in Environmental Systems, HVAC, and others • Respond to customer needs and potential problems using AI-enabled failure prediction and preventative maintenance in Machinery Systems and others • Share in-house best practices (MHI digital products for image monitoring and audio instruction) in Metals Machinery with other businesses (such as Transportation Systems) • Strengthen after-sales services in Commercial Aviation and Aero Engines 5 Operation & Maintenance
Develop technologies to maintain competitive advantages	• Develop technologies for the decarbonization of steelmaking processes • Launch automation products in Logistics Systems and others, which coordinate equipment and operators using ΣSynX® (read as "Sigma Syncs") • Develop products using natural refrigerants such as heat pumps • Develop clean fuel–compatible products such as engines
Optimize business structures	• Consolidate and optimize production bases and sales networks • Reallocate resources to focus areas by improving operational efficiency and productivity



Machinery Systems AI remote monitoring and operational support system MaiDAS®

ΣSynX

New forklift model enabled with ΣSynX®