2021 Medium-Term Business Plan Progress (FY2021-2023)

October 29, 2021
Seiji Izumisawa, President & CEO
2021 Medium-Term Business Plan is progressing smoothly

Business environment recovering. Continuing efforts to improve profitability.

Accelerating growth area initiatives:
- Working to meet diverse regional needs in the Energy Transition space
- Making steady progress toward launching New Mobility & Logistics businesses

MHI Group is proud to declare our commitment to achieve Carbon Neutrality by 2040
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I. 2021 MTBP Overview
2021 MTBP Targets

2021 MTBP (FY21-23)

Strengthen profitability

Profitability
- Business profit margin 7%
- ROE 12%

Develop growth areas

Growth
- New business revenue-
  - 100 billion yen by FY23
  - 1 trillion yen by FY30

Financial stability
- Total assets turnover 0.9
- Maintain current level of interest-bearing debt

Dividends
- Record-high dividend per share
II. Strengthening Profitability
### Progress Toward FY2023 Targets

- Making good progress in line with plan toward achievement of FY2023 targets [(1) through (4) in the chart below]
- Implement new profitability improvements to compensate for delayed recovery in Commercial Aviation Aero Structures [(5) in the chart below]

<table>
<thead>
<tr>
<th>Business Profit (bn yen)</th>
<th>Path to FY2023 Target Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2021 Forecast</td>
<td>Business profit (bn yen)</td>
</tr>
<tr>
<td>Business profit margin</td>
<td>FY2023 Target</td>
</tr>
<tr>
<td>160.0</td>
<td>Business profit margin 7%</td>
</tr>
<tr>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>

(1) COVID-19 recovery
- Logistics, Thermal & Drive Systems:
  - Expecting return to pre-COVID levels during FY21
  - Aiming for growth outpacing market recovery in growth areas (Logistics Systems and HVAC) by strengthening sales networks, expanding solutions portfolio, and innovating products

(2) Existing business growth
- Aero Engines:
  - Recovering gradually. Increase in-house manufacturing capability with new Nagasaki Plant.

(3) Profitability improvements & organizational transformation
- Commercial Aviation Aero Structures:
  - Recovery delayed. Continue fixed cost level optimization.

(4) SG&A reductions
- • Streamline corporate functions through integration with Mitsubishi Power
- • Continue asset management efforts

(5) New profitability improvements
- • Capture new demand arising from changing markets (Metals Machinery, Machinery Systems, and others)
- • Expand business opportunities through businesses acquired through M&A (Naval & Governmental Ships, CRJ)
(1) COVID-19 Recovery

- Aero Engines and Logistics, Thermal & Drive Systems recovering. Implementing profitability improvements in line with recovery.
- Aero Structures recovery delayed. Continue shoring up business fundamentals in anticipation of future recovery.

<table>
<thead>
<tr>
<th>Business</th>
<th>Revenue (vs. FY2019)</th>
<th>Forecast &amp; Key Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics, Thermal &amp; Drive Systems</td>
<td>HVAC &amp; Car A/C Engines</td>
<td>Forecasted to return to pre-COVID levels in FY21</td>
</tr>
<tr>
<td></td>
<td>Turbochargers</td>
<td>-15% ➔ -5% ➔ ±0% ➔ +20%</td>
</tr>
<tr>
<td></td>
<td>Logistics Systems</td>
<td>Short-haul travel recovering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Nagasaki Components Factory began operation, increasing in-house production capability.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Targeting improved profitability in line with market recovery.</td>
</tr>
<tr>
<td>Commercial Aviation Aero Engines</td>
<td>Commercial Aviation</td>
<td>Profit expected to drop further due to prolonged market stagnation from COVID-19</td>
</tr>
<tr>
<td></td>
<td>Engines</td>
<td>Reduce fixed cost levels in line with revenue while pursuing all available options to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>improve profitability in anticipation of industry recovery</td>
</tr>
<tr>
<td>Commercial Aviation Aero Structures</td>
<td></td>
<td></td>
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<tr>
<td>(Tier 1)</td>
<td></td>
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<tr>
<td></td>
<td>FY2019</td>
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<td></td>
<td>FY2020</td>
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<tr>
<td></td>
<td>FY2021</td>
<td></td>
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<tr>
<td></td>
<td>FY2023</td>
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</tbody>
</table>
(2) Existing Business Growth

- Top-line already returning to pre-COVID levels. Aiming for growth in FY2023 outpacing market recovery.

<table>
<thead>
<tr>
<th>Business</th>
<th>Key Initiatives</th>
<th>1H FY21 Actions</th>
<th>Actions in 2H &amp; Beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics Systems</td>
<td>Reinforce sales networks</td>
<td>• Deployed EQD$^1$ sales methodology to existing networks</td>
<td>• Increase market coverage by expanding direct sales networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Grew equipment rental business</td>
<td>• Increase lease and rental market share</td>
</tr>
<tr>
<td></td>
<td>Expand solutions portfolio</td>
<td>• Launched high-efficiency AGF to high customer interest</td>
<td>• Expand application of AGV and AGF$^2$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Developed AGF for refrigerated warehouses</td>
<td>• Introduce intelligent and AI-enabled components</td>
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<tr>
<td></td>
<td></td>
<td>• Launched AI-based human detection systems for large forklifts to high customer interest</td>
<td></td>
</tr>
<tr>
<td>HVAC</td>
<td>Reinforce sales networks</td>
<td>• Strengthened large centrifugal chiller after-sales service organization in Dubai</td>
<td>• Expand sales networks in Europe and other regions</td>
</tr>
<tr>
<td></td>
<td>Innovate products</td>
<td>• Launched new VRF$^3$ to high customer interest</td>
<td>• Grow new VRF$^3$ sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recognized as the Best Brand of Air Conditioners and received award for most satisfied customers in Australia</td>
<td>• Develop new room and package air conditioners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heat pump chiller product awarded Grand Prize at Protect the Ozone Layer, Prevent Global Warming Awards. Strong customer interest in Europe.</td>
<td>3 Variable Refrigerant Flow</td>
</tr>
</tbody>
</table>

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1 Equipment Depot became a subsidiary of MHI in 2019
2 Automated Guided Vehicle (AGV), Automated Guided Forklift (AGF)
3 Variable Refrigerant Flow
(3) Profitability Improvements and Organizational Transformation
(4) SG&A Reductions

Efforts to achieve FY2023 targets progressing in line with plan

<table>
<thead>
<tr>
<th>Business</th>
<th>21 MTBP Initiatives</th>
<th>Progress</th>
<th>Actions in 2H &amp; Beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam Power</td>
<td>• Large shift to after-sales service</td>
<td>• Transformed into after-sales service-focused organization (Oct 2021)</td>
<td>• Specialize in services for decarbonization</td>
</tr>
<tr>
<td></td>
<td>• Fixed cost reductions</td>
<td>• Consolidating boiler manufacturing at Nagasaki Machinery Works (end FY2022)</td>
<td>• Optimize manufacturing capacity</td>
</tr>
<tr>
<td></td>
<td>• Reorganize business organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Plants</td>
<td></td>
<td>• Strengthened project management and consolidated organizations and locations. Divestiture of French operations completed.</td>
<td></td>
</tr>
<tr>
<td>Metals Machinery</td>
<td></td>
<td>• Stabilizing business structure including by participating in Dubai Metro O&amp;M business</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>• Stabilize profitability by shifting to after-sales service</td>
<td>• Received multiple orders for LNG Gas Fuel Supply Systems</td>
<td>• Accelerate deployment of decarbonization businesses and shift to after-sales service</td>
</tr>
<tr>
<td></td>
<td>• Eliminate loss-making EPC projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Ships</td>
<td>• Strengthen shipbuilding engineering</td>
<td>• Completed divestment to Nidec Group (Aug 2021)</td>
<td></td>
</tr>
<tr>
<td>Machine Tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG&amp;A</td>
<td>• Targeting 20% reduction</td>
<td>• Streamlined corporate functions through integration with Mitsubishi Power</td>
<td>• Leverage DX to achieve further optimization</td>
</tr>
<tr>
<td></td>
<td>• Pursue business process optimization, organizational consolidation, and restructuring</td>
<td>• Increased liquidity through asset management initiatives</td>
<td>• Continue asset management efforts</td>
</tr>
</tbody>
</table>
<pre><code>                       |                                                                                     |                                                                                                                                         |                                                                                        |
</code></pre>
(5) New Profitability Improvements

- Leverage MHI Group’s strengths to capture new demand in wake of COVID-19 and drive toward decarbonization
- Grow business opportunities through synergies with businesses acquired through M&A

<table>
<thead>
<tr>
<th>Business</th>
<th>1H FY21 Order Intake (vs. 1H FY19)</th>
<th>Business Environment</th>
<th>New Initiatives</th>
</tr>
</thead>
</table>
| Metals Machinery          | 120%                              | • Rebound in capital investment. Increasing investment in solutions that reduce environmental impact. | • Reduce CO₂ emissions and expand sales of high-efficiency production facilities  
  • Grow after-sales service with such tools as digitalization and predictive maintenance                                              |
| Machinery Systems         | 110%                              | • Volume of logistics increasing due to economic recovery in U.S. Demand for cardboard increasing | • Increase sales of high-speed, high-volume box making machine EVOL in U.S. and expand into Japanese and European markets               |
| Engines                   | 110%                              | • Demand recovering in emergency power generators for global manufacturers and data centers especially in China | • Expand bidding targets by obtaining TLC certification¹  
  • Expand sales network in China and increase productivity of MHI Group manufacturing facilities                                        |
| Naval & Governmental Ships | —                                 | • Mitsubishi Heavy Industries Maritime Systems, Ltd. began operation  
  • Demand increasing for minimally-manned and automated technologies including unmanned surface vehicles | • Expand product lineup (auxiliary naval ships)  
  • Increase productivity by promoting PMI  
  • Develop next-generation ships and unmanned marine systems with cross-organizational team                                              |
| CRJ                       | —                                 | • Demand for CRJ maintenance strong due to rapid recovery of domestic air travel in U.S., a major market | • Expand West Virginia Service Center  
  • Fill out CRJ after-sales service lineup with Regional One partnership in U.S.                                                                 |

¹ A product and manufacturer quality certification for telecommunications equipment sold in China
III. Developing Growth Areas
III-1. Energy Transition
Major Market Trends and MHI Group Actions

Major Market Trends

U.S.
- Abundant renewable and fossil fuel resources
- Energy storage demand increasing with growing share of renewables
- Large enterprise activities stimulated by tax credits
- Decarbonization tech startups also active

Europe
- Increasing demand for decarbonization solutions in industrial sectors in EU and surrounding countries
- U.K. leads with CCS and hydrogen projects utilizing the North Sea

Asia (excl. Japan)
- Shift from coal to natural gas in short term
- Renewables, CCS, and low carbon fuel conversion in medium to long term

Japan
- Large expansion of renewables; sustainable utilization of nuclear power; CO₂ emissions reductions in thermal power (including hydrogen/ammonia mixed firing and CCUS)
- Government formulated Green Growth Strategy and kicked off 2 trillion Green Innovation Fund

MHI Group Actions

Drive technology development toward commercialization

Invest broadly to build hydrogen & CO₂ solutions ecosystems

Contribute to decarbonization in all industries with a tailored approach addressing regional needs
Path to achieving Carbon Neutrality

Build an innovative solutions ecosystem to realize a carbon neutral future

Decarbonize existing infrastructure
Build a hydrogen solutions ecosystem
Build a CO₂ solutions ecosystem
## Energy Transition Initiatives

### Progress of Projects in which MHI is Participating

- **Customer needs increasing for decarbonization of existing thermal power plants**
- Needs for upstream oil & gas customers increasing as well
- **Completed first restart of nuclear power plant in operation for over 40 years** (Mihama Nuclear Power Plant Unit 3)
- **Multiple energy storage projects in development in U.S. showing progress**
- FEED¹ studies in U.K., Germany, and Australia also progressing
- Inquiries increasing for hydrogen compressors and liquid hydrogen booster pumps
- Inquiries for carbon capture increasing in U.S. and Europe
- **New CCUS projects started with TotalEnergies and Suez**
- Kicked off CO2NNEXT™ Proof of Concept working group

### MHI Technology Development Progress

- Developing ammonia combustor (for Thermal Power)
- Successfully tested 35% hydrogen mixed combustion in small and mid-sized engines
- **Developing next-generation light water nuclear reactor and small modular reactor technology**
- Validating hydrogen power generation systems at in-house facilities
- Completed validation of KS-21™ carbon capture absorbent
- Successfully tested offshore CO₂ capture
- Obtained AiP (Approval in Principle) for liquefied CO₂ carrier cargo tank

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¹ Front End Engineering Design, a precursor to EPC during which technical issues and cost estimates are considered
Decarbonizing Existing Infrastructure (1/3)
Global Market Overview

- Offering a diverse portfolio of CO₂ reduction solutions, including fuel conversion and digital solutions (TOMONI™) in order to meet the immediate needs of each country.

**Europe: Utilizing renewables**
- Participating in **hydrogen conversion of existing gas turbine facilities** using hydrogen produced from renewables incl. in U.K. and Netherlands
- Hydrogen Conversion
- TOMONI™ Upgrade

**Middle East: Diversifying out of oil**
- Promoting **GTCC output and efficiency improvements and hydrogen conversions** for existing natural gas thermal power plants aiming to diversify the region out of oil
- Hydrogen Conversion
- TOMONI™ Upgrade

**Japan: Renewables to increase in future**
- Following Japanese government’s Green Growth Strategy, promoting conversion of existing coal and natural gas thermal power plants to hydrogen, biomass, and ammonia fuels
- Hydrogen Conversion
- Biomass/Ammonia Conversion
- TOMONI™ Upgrade

**SE Asia: Coal decreasing**
- Jointly advising on policy with national power utility PLN and Bandung Institute of Technology regarding **validation of biomass mixed firing** using existing thermal power plants in Indonesia
- Hydrogen Conversion
- Biomass/Ammonia Conversion
- TOMONI™ Upgrade

**North America: Renewables increasing**
- Energy storage demand increasing. Efforts underway to jointly promote comprehensive decarbonization including **hydrogen conversion of existing gas turbine facilities** with U.S. power utility Entergy
- Hydrogen Conversion
- TOMONI™ Upgrade

- Customer needs forecasted to increase by approx. 5x during FY2021

FY20 Customer Needs
FY2021 Customer Needs (Forecast)
Decarbonizing Existing Infrastructure (2/3)
Decarbonization of Industrial In-House Power Generation

- In hard to abate industries (including petrochemicals, pulp & paper, steelmaking, and cement), which contribute 1/4 of all CO₂ emissions within Japan, many companies operate in-house power generation systems. Most of these systems use a boiler which produces electricity, heat, and steam.

- Simply replacing a factory’s boiler with a renewable power source would remove an important source of heat and steam, which is a critical problem.

No. 1 market share in Japanese domestic in-house power generation equipment

Broad experience with complex processes supplying heat and steam

Example of decarbonization of industrial in-house power generation

- Fuel conversion to natural gas, replacement of boiler with gas turbine
- Fuel conversion to hydrogen or other carbon-free fuels

Offering a variety of decarbonization solutions which maintain simultaneous supply of electricity, heat, and steam

In-House Power Generation Installed Capacity (Japan)¹

- Engines: 4GW (1,057 facilities)
- Gas Turbines (GT): 4GW (1,965 facilities)
- Boiler + Steam Turbine: 13GW (608 facilities)

Example: Existing coal-fired 60 MW-class boiler (CO₂ emissions: 500 kton/year)

- Fuel conversion to natural gas
- Boiler + Steam Turbine → GT Cogeneration
- GT 30% H₂/ammonia mixed firing
- GT 100% H₂/Ammonia firing

Table:

<table>
<thead>
<tr>
<th>Solution</th>
<th>Reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel conversion to natural gas</td>
<td>approx. 45%</td>
</tr>
<tr>
<td>Replacement of boiler</td>
<td>approx. 60%</td>
</tr>
<tr>
<td>Fuel conversion to hydrogen</td>
<td>approx. 70%</td>
</tr>
</tbody>
</table>

1: Source: Japan Agency for Natural Resources and Energy survey data (FY2020)
Decarbonizing Existing Infrastructure (3/3)
Nuclear Power’s Contributions to Decarbonization

- Actively supporting the restart of existing plants, building Specialized Security Facilities\(^1\), and working to complete the nuclear fuel cycle in order to achieve the Japanese government’s energy policy, which calls for 20-22% of the country’s energy to be generated by nuclear power by 2030.

- Working to develop and commercialize a next-generation light water reactor and small modular reactors in the leadup to 2050

- Also pursuing development of high temperature gas-cooled reactors, fast reactors, and fusion reactors to satisfy the future’s diverse energy needs

### Initiatives through 2030

#### Energy Sources in Japan
(Source: 6th Strategic Energy Plan)

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>2019</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>approx. 1,024 TWh</td>
<td>approx. 930-940 TWh</td>
</tr>
<tr>
<td>Renewables</td>
<td>approx. 6%</td>
<td>approx. 20-22%</td>
</tr>
<tr>
<td>LNG</td>
<td>approx. 930-940 TWh</td>
<td>approx. 20-22%</td>
</tr>
<tr>
<td>Coal</td>
<td>approx. 6%</td>
<td>approx. 20-22%</td>
</tr>
</tbody>
</table>

#### Initiatives through 2030

- **Restarts and Specialized Security Facilities**
  - Completed first restart of Japan’s first nuclear power plant to remain in service over 40 years

- **Completing the Nuclear Fuel Cycle**
  - Working to complete construction of nuclear fuel reprocessing and MOX\(^2\) processing plants

- **Further Safety Improvements**
  - Targeting commercialization of world’s safest nuclear reactor in mid-2030s

#### Initiatives through 2050

- **Small Modular Reactors (SMR)**
  - Completed concept design of integrated small modular reactor
Building a Hydrogen Solutions Ecosystem
Projects under Development in U.S.

- Need for energy storage needed to ensure reliable power supply increasing as renewable energy share grows
- Participating in both short-term (battery) and long-term (hydrogen storage) energy storage projects with the goal of contributing to creation of a hydrogen solutions ecosystem

Puget Sound Energy (Apr 2021)
Developing strategy and project to achieve PGS’ goal of Beyond Net Zero Carbon by 2045

Capital Power (Dec 2020)
Received order for hydrogen-ready, natural gas-fired M501JAC GT

Bakken Energy (Jun 2021)
Building hydrogen hub in North Dakota for production, storage, transport, and use of hydrogen

Advanced Clean Energy Storage Project (Sep 2021)
Building hydrogen hub for hydrogen production, storage, transport, and industrial use as well as electricity generation. Chevron offered to join as investor in Sep.

Texas Brine (May 2021)
Developing hydrogen hub utilizing salt domes (executed MOU for development)

Southern Power (May 2021)
Adding 72 MW and 88 MW BESS equipment to existing facilities

Key Capture Energy (Aug 2020)
Received orders for 3 BESS units totaling 200 MW

Entergy (Sep 2020)
Developing project to achieve Entergy’s goal to halve CO₂ emissions (vs. 2000 levels) by 2030

Danskammer (Jan 2019)
Hydrogen-ready, natural gas-fired M501JAC GT (535 MW) selected by customer

Harrison (Jan 2020)
Hydrogen-ready, natural gas-fired M501JAC GT (1,084 MW) selected by customer

Chickahominy (Feb 2019)
Confirmed customer intent to place order for hydrogen-ready, natural gas-fired M501JAC GT (1,600 MW)

Bakken Energy (Jun 2021)
Building hydrogen hub in North Dakota for production, storage, transport, and use of hydrogen

Key Capture Energy (Aug 2020)
Received orders for 3 BESS units totaling 200 MW

Entergy (Sep 2020)
Developing project to achieve Entergy’s goal to halve CO₂ emissions (vs. 2000 levels) by 2030

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Building a Hydrogen/CO₂ Solutions Ecosystem
Progress on Global Projects

- **UK Industrial Cluster**
  - FEED² in progress

- **South Australia green hydrogen/ammonia project**
  - FEED in progress

- **Hamburg Hydrogen Project**
  - Reached agreement with partners on project collaboration

- **Low-carbon tech collaboration w/ Equinor**
  - Workshop regarding potential collaboration underway

- **Validation of carbon free hydrogen reduction steelmaking**
  - The first ever HYFOR¹ pilot plant began operation

- **LCO₂ carrier with TotalEnergies**
  - Reached agreement on joint validation (new project)

- **Industrial CCUS w/ Suez**
  - Executed MOU for joint study (new project)

- **BECCS pilot test at Drax Power Station**
  - Executed license agreement

- **TCM CO₂ recovery pilot test**
  - Completed validation of KS-21™ absorbent

- **Alberta cement plant carbon reduction**
  - Completed study on potential CO₂ capture project

- **CCS for an LNG plant in Texas**
  - Continuing study under framework agreement

- **H₂ CO₂**

¹ HYFOR: Hydrogen-based fine-ore reduction
² Front End Engineering Design, a precursor to EPC during which technical issues and cost estimates are considered
III-2. New Mobility & Logistics
Energy supply and use are two halves of the whole when it comes to achieving Carbon Neutrality.

Contributing to realizing a safe, secure, and comfortable world by developing intelligent machine systems in the energy use space.

New Mobility & Logistics Positioning

Lifestyle
- Safety
- Security
- Comfort

Enhancing people’s lives

Energy Use
- Energy Conservation
- Decarbonization Automation

New Mobility & Logistics

Infrastructure to Support CASE Mobility

Electrification Components

Automated Logistics

Cold Chain

Energy Supply
- Decarbonization

Energy Transition

Hydrogen Solutions Ecosystem

Decarbonization of Existing Infrastructure

CO₂ Solutions Ecosystem

(Examples of MHI initiatives)
Approach to Commercialization

- Developing automation, energy conservation, and decarbonization solutions together with our customers by integrating a variety of machinery systems over a common platform

1. Enhance components
   - Achieve automation and energy conservation through autonomous components
   - Decarbonize components
   - Promote shift from proprietary tech to open innovation

2. Develop intelligent machinery systems
   - Connect groups of machinery systems over a common platform
   - Leverage individual component characteristics to create intelligent systems
   - Optimize operation of complex machinery systems and decrease operators and energy consumption

3. Collaborate with the customer
   - Identify customers’ pain points
   - Accelerate concept validation with agile development

Expand value and business scope

- Automation
- Energy Conservation
- Decarbonization

Start-up developing high-efficiency gallium oxide semiconductors
Engineering company based in Spain providing design, testing, and certification services to the automotive industry

HARDTECH HUB
ΣSynX: Intelligent Machinery Systems Platform

ΣSynX is MHI’s common platform designed to synchronize and coordinate between a variety of machinery components, transforming them into a single, intelligent system.

Connect
- Synchronize and coordinate a variety of machinery systems
- Remotely supervise groups of intelligent machines
- Provide customer with maintenance and consumables replenishment

Intelligently Automate
- Achieve automation leveraging individual component characteristics
- Ensure worker safety with smooth coordination between humans and machines
- Rapidly test concepts in virtual environments

Optimize
- Utilize Digital Twin modeling, which is based on knowledge about a variety of machinery systems
- Achieve comprehensive solutions with composite machinery systems

1 Read as “Sigma Syncs”
Automated Logistics & Cold Chain Initiatives

- Solve labor shortages with automation and conserve energy by combining HVAC and power supply systems

**Logistics, HVAC, and Power Supply Components**
- High-Efficiency Automated Forklift
- Next-Generation Forklift (Concept)
- High-Efficiency CO₂ Chiller
- Renewables use/Fuel conversion

**Customer Value**

**Intelligent Logistics**
- Warehouse throughput 2x+
- Warehouse storage efficiency +20%
- Decarbonization with natural refrigerant
- 20-30% decrease in energy consumption

**Decarbonization and Energy Conservation of Refrigerated Warehousing**

**Human-Machine Coordination**
- Coordination between operator and machine
- Coordination incl. with other-OEM devices
- Precise warehouse environmental controls
- Optimization of energy supply/use

**Automation**

**Energy Conservation**

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Electrification Components: Usage Cases for Data Centers

- Conserve space and energy while reducing CO₂ emissions by integrating HVAC and power supply systems and increasing efficiency with semiconductor technology acquired through open innovation.

**HVAC and Power Supply Equipment**

- HVAC:
  - Dry Chiller
  - Air-Cooled Chiller
  - Turbo Chiller

- Power Supply:
  - Hydrogen Power (Gas Turbine/Gas Engine)
  - BESS¹

**Open Innovation**

- Efficiency Improvement/Decarbonization
- High-Efficiency Semiconductor Technology
- Decarbonization

**Customer Value**

- Integrated management of multiple data centers
- Optimization of power supply & HVAC systems

- Achieve high density/minituarization 20 ft → 12 ft container
- Power Usage Effectiveness 1.1 or below

- CO₂ reduction -65k ton/year²

**Synx**

- Predict & Plan
  - Integrate power supply & HVAC functions
  - Optimize energy usage
  - Remote operation

- Energy Conservation
- Automation

¹ Battery Energy Storage System
² When supplying 20 MW base load power supply with 100% hydrogen
Infrastructure to Support CASE Mobility: Initiatives for Autonomous Driving Systems Validation Services

- Develop testing and verification services for autonomous driving systems by combining complementary physical testing and high-fidelity simulations

**Integrated Environment Testing System**
- Testing by freely combining weather and driving conditions
- Easily able to reproduce any testing conditions

**Customer Value**
- Highly reliable physical testing
- Large reduction in development time and cost
- Offer expertise in international standards/certification
- Assist in execution of efficient, comprehensive verification

**Simulation**
- Predict & Plan: Comprehensive validation under diverse conditions
- Test & Evaluate: Ensure reliability by calibrating model according to measured results

**Digital Twin**
- Weather Conditions × Driving Scenarios
- Efficiently test large number of scenarios
- Automation
- Energy Conservation

**Complementary Virtual and Physical Testing**
**New Mobility & Logistics Initiatives: Summary**

- Efforts underway to decarbonize, automate, and conserve energy in energy-using businesses with high growth potential

### Automated Logistics & Cold Chain

- **Decarbonization**
- **Automation**
- **Energy Conservation**

<table>
<thead>
<tr>
<th>Market Trends</th>
<th>Examples of New Solutions</th>
<th>FY26 Market Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Automation</td>
<td>• Intelligent logistics</td>
<td>Approx. 2 tr yen</td>
</tr>
<tr>
<td>• Energy conservation</td>
<td>• Refrigerated warehousing</td>
<td></td>
</tr>
<tr>
<td>• Ensure safety of food and medicine</td>
<td>• Carbon neutral port</td>
<td>AGF Industrial chiller</td>
</tr>
</tbody>
</table>

### Electrification Components

- **Decarbonization**
- **Automation**
- **Energy Conservation**

<table>
<thead>
<tr>
<th>Market Trends</th>
<th>Examples of New Solutions</th>
<th>FY26 Market Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Promote electrification</td>
<td>• Data centers</td>
<td>Approx. 5 tr yen</td>
</tr>
<tr>
<td>• Miniaturization of equipment &amp; systems</td>
<td></td>
<td>(data centers)</td>
</tr>
<tr>
<td>• Energy conservation</td>
<td>•</td>
<td></td>
</tr>
</tbody>
</table>

### Infrastructure to Support CASE Mobility

- **Automation**
- **Energy Conservation**

<table>
<thead>
<tr>
<th>Market Trends</th>
<th>Examples of New Solutions</th>
<th>FY26 Market Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>• C: Connected</td>
<td>• Autonomous driving systems validation support services</td>
<td>Approx. 1 tr yen</td>
</tr>
<tr>
<td>• A: Autonomous</td>
<td>• Automated transport services for vehicle shipment</td>
<td></td>
</tr>
<tr>
<td>• S: Shared</td>
<td>• Automated valet parking</td>
<td></td>
</tr>
<tr>
<td>• E: Electric</td>
<td></td>
<td>(Autonomous driving systems validation)</td>
</tr>
</tbody>
</table>
IV. Carbon Neutrality Declaration
MISSION NET ZERO

Through our group products, technologies, and services that help reduce CO2 emissions, as well as new solutions and innovations to be developed with partners around the world, Mitsubishi Heavy Industries Group will contribute to realizing “Net Zero” emissions for the world as a whole.

To this end, each and every one of our employees is embracing and internalizing “Mission Net Zero” and will act to implement a “Net Zero” future.

<table>
<thead>
<tr>
<th>Target Year</th>
<th>Reduce CO₂ emissions across MHI Group Scope 1&amp;2</th>
<th>Reduce CO₂ emissions across MHI’s value chain Scope 3 + reductions from CCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>-50% (compared to 2014)</td>
<td>-50% (compared to 2019)</td>
</tr>
<tr>
<td>2040</td>
<td>Net Zero</td>
<td>Net Zero</td>
</tr>
</tbody>
</table>

Scope 1&2: The calculation standard is based on the GHG Protocol.
Scope 3: The calculation standard is based on the GHG Protocol. However, we also account for reductions achieved by CCUS as an MHI original index.

GHG: Greenhouse Gas   CCUS: Carbon dioxide Capture, Utilization and Storage
Roadmap to Achieve Carbon Neutrality (1/2)

- **Oct 2020**
  - Reduce CO₂ emissions across MHI Group Scope 1&2
  - Reduce CO₂ emissions across MHI’s value chain Scope 3 + reductions from CCUS

- **Mar 2024**
  - Energy conservation/Implement proprietary technologies/Implement decarbonized energy sources
  - Develop and commercialize decarbonization businesses (fuel conversion/energy conservation/electrification)

- **2030**
  - Decarbonize factories

- **2040**
  - Achieve Net Zero
  - 50% reduction (compared to 2014)
  - 50% reduction (compared to 2019)
  - 2040: Achieve Net Zero
  - Expand CCUS business
  - Japan & other countries plan to achieve Net Zero

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Roadmap to Achieve Carbon Neutrality (2/2)

Reduce CO₂ emissions across MHI Group
Scope 1&2

Implement proprietary technologies at MHI factories

Energy Conservation
Energy management

Implement proprietary technologies
Heat pump chillers
H₂, CCUS, etc.
Implement decarbonized energy sources

Reduce CO₂ emissions across MHI’s value chain
Scope 3 + reductions from CCUS

Rapidly establish decarbonization technologies and drive commercialization

Expansion of CCUS business

Energy conservation/ electrification
New Mobility & Logistics
Electrify and improve efficiency of existing businesses

Fuel Conversion
Energy Transition

CO₂ Emissions

2014 2021 2030 2040

P&L CO₂

Energy Transition

0 500 1,000 1,500

0 2021 2030 2040

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Contributions to Customers’ Scope 1&2 Reductions

- Contribute to our customers’ Scope 1&2 reduction efforts in addition to our own Scope 1, 2, and 3 reductions
- Offer a variety of solutions to reduce CO₂ emissions from our customers’ existing facilities

Japan’s Annual GHG Emissions Reduction Plan

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2019</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required reduction from present levels</td>
<td>1.5</td>
<td>1.0</td>
<td>0.5</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Example of CO₂ Reduction Solutions for Existing Facilities**

<table>
<thead>
<tr>
<th>Solution</th>
<th>Reduction Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace coal-fired thermal power plant with natural gas GTCC</td>
<td>-60% to -65%</td>
</tr>
<tr>
<td>30% mixed hydrogen firing in GTCC/engine</td>
<td>-10%</td>
</tr>
<tr>
<td>100% hydrogen firing in GTCC/engine</td>
<td>-100%</td>
</tr>
<tr>
<td>20% biomass/ammonia mixed firing in coal-fired thermal power plant</td>
<td>-20%</td>
</tr>
<tr>
<td>100% biomass/ammonia firing in coal-fired thermal power plant</td>
<td>-100%</td>
</tr>
<tr>
<td>Restart and extend operating life of nuclear power plants (replacement of fossil fuel power generation)</td>
<td>-100%</td>
</tr>
<tr>
<td>Hydrogen reduction steelmaking + electric arc furnace</td>
<td>-65%</td>
</tr>
<tr>
<td>Replace engine forklift with electric forklift</td>
<td>-65%</td>
</tr>
<tr>
<td>Replace boiler with heat pump</td>
<td>-65%</td>
</tr>
</tbody>
</table>

MHI Group is contributing to the realization of a Carbon Neutral world, and through technology we will reduce the cost of this critical transition.
V. Appendix
1H FY2021 Highlights (1/4): Energy Systems

Grew high-efficiency GTCC business

- Received order for 1.5 GW-class GTCC in Uzbekistan
- Contributing to CO₂ reductions with M701JAC, the latest model of high-efficiency GTCC

Completed reactor structure replacement work

- Improved safety of KEPCO Mihama Nuclear Power Plant Unit 3 in accordance with new safety standards
- Contributed to safe operation of Japan’s first nuclear reactor to remain in service for over 40 years

Developing ammonia combustor for thermal power plant boilers

- Contributing to CO₂ emissions reduction with ammonia fuel
- Pursuing 100% ammonia combustion utilizing existing facilities

Solar power project in U.S.

- Acquisition and operation of a solar power project in U.S. with Osaka Gas

Completed TF coils for ITER in Southern France

- Manufactured the fourth toroidal field (TF) coil, the world’s largest toroidal superconducting coil, for experimental fusion reactor ITER

Implemented intelligent solutions product TOMONİ™

- Implemented TOMONİ™ at a geothermal power plant in Mexico
- Improved performance and reliability of distributed power sources

(Photo Source: Grupo Dragón)
Enhancing transportation systems after-sales service business

- Participating for the first time in international urban rail transportation operation businesses:
  - Dubai Metro: Operation & maintenance
  - Dubai Tram: Operation services

CO₂ capture and storage business

- Executed framework agreement for CCS system at an LNG plant in Texas, U.S.
- Progress toward the world’s first system to capture CO₂ from an LNG liquefaction plant’s exhaust
  Source: NextDecade Corporation

Developing liquefied CO₂ carrier

- Began study on LCO₂ carrier with TotalEnergies (France)
- Accelerating CCUS value chain technology and market development to contribute to CO₂ emissions reduction

Expanding box making machine sales

- Demand for cardboard is increasing in line with growing distribution volume in the manufacturing sector as a whole. Increasing sales of one of the world’s fastest (400 sheets/min) box making machines (EVOL) mainly in North America

Contributing to environmentally friendly cities

- Supplied incinerators to the first non-industrial waste-to-energy plant in Xiaogan City, Hubei Province, China
- The two incinerators were the latest stoker-type with a capacity of 750 tons/day each

Contributing to CO₂ reduction in steelmaking

- HYFOR pilot plant began operation
- Achieved the world’s first fine ore direct reduction process using hydrogen and reduced capital investment amount and operating costs
  HYFOR: Hydrogen-based fine-ore reduction

Source: NextDecade Corporation
Recognized as Best Brand of Air Conditioners and ranked #1 in customer satisfaction in Australia

- Named 2021 Best Brand of Air Conditioners by Australian consumer advocacy group CHOICE for fourth year running. Received 2021 Most Satisfied Customer Award in air conditioners category from consumer trends research agency Canstar Blue for third year in a row.

Municipal gas + hydrogen combustion test

- Successfully performed municipal gas + hydrogen mixed combustion test using commercial gas engine for cogeneration system use (joint effort with Toho Gas)
- This was the first time that rated power output was produced with 35% mixed hydrogen combustion in Japan

Contributing to realization of the carbon neutral port

- Contributing to realization of the carbon neutral port (CNP) through development of new models of cargo handling equipment as well as conversion of existing equipment to hydrogen fuel cells
- Tire-type gantry crane
- Fuel cell forklift

Laser-guided autonomous forklift for refrigerated warehouses (Japan first)

- Developed Japan's first laser-guided autonomous forklift for use in refrigerated warehouses in collaboration with Nichirei Logistics Group Inc.
- This product aims to reduce the burden on workers in low-temperature environments and eliminate chronic labor shortages

Heat pump chiller awarded Protect the Ozone Layer, Prevent Global Warming Grand Prize

- An air-source circulation heat pump jointly developed with Chubu Electric Power Co., Inc., Q-ton Circulation received Grand Prize at the 24th Protect the Ozone Layer, Prevent Global Warming Awards sponsored by Nikkan Kogyo Shimbun Ltd. The product was praised for its environmentally friendly, energy conserving technology.

Developed electric compressor for fuel cell vehicles

- Developed products for electric vehicles which will also contribute to decarbonization
- Started testing compressors for fuel cell vehicles

Developed forklifts

- Fuel cell forklift
- Tire-type gantry crane

Contributing to realization of the carbon neutral port

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Developed electric compressor for fuel cell vehicles

- Developed products for electric vehicles which will also contribute to decarbonization
- Started testing compressors for fuel cell vehicles
1H FY2021 Highlights (4/4): Aircraft, Defense & Space

Launched frigate “Noshiro”
- Launched new 3,900-ton-class frigate at Nagasaki Shipyard on contract from Japan Ministry of Defense

H-IIA launch vehicle
- Successfully launched new replacement quasi-zenith satellite with H-IIA Launch Vehicle No. 44
- Launch of H-IIA Launch Vehicle No. 45 planned in 2H FY2021

Delivered two prototypes of multirole naval helicopter (upgraded variant)
- Cutting-edge naval helicopter with performance upgrades to on-board systems and flight capabilities
- Delivered two prototypes to Japan Ministry of Defense

Next-generation fighter jet
- Executed contract with Japan Ministry of Defense in 2020
- Developing with other leading Japanese companies

New naval & governmental ships subsidiary starts business
- Mitsubishi Heavy Industries Maritime Systems, which continues the former Mitsui E&S Holding naval & governmental ships businesses, officially started business on Oct 1

Expanded CRJ after-sales service business
- Expanding West Virginia Service Center (contract signed in June)
- Executed CRJ after-sales service partnership agreement with Regional One (U.S.) (contract signed in Sep)
• Scope 1 represents CO₂ emissions arising directly from MHI Group’s operations (fuel combustion and industrial processes). Scope 2 represents indirect CO₂ emissions, mainly from electricity consumption.
• Calculations are based on the GHG Protocol. However, emissions from our combined cycle demonstration plant (Takasago Machinery Works) and Nakoso and Hirono IGCC plants are included in Scope 3
• Main assumptions include reduction in electricity emissions in accordance with Japan’s CO₂ emissions reduction targets and some degree of hydrogen and CO₂ solutions ecosystems development

• Scope 3 represents indirect CO₂ emissions arising from other companies across our value chain excluding that covered by Scope 1 & 2. This Scope includes 15 categories, approximately 99% of which comprise CO₂ emissions arising from the use of MHI Group products, which are targets for reduction efforts.
• Calculations are based on the GHG Protocol. However, we also account for reductions achieved by CCUS as an MHI original index.
• Based on the GHG Protocol, total CO₂ emissions expected over a product’s lifetime are recorded during the year in which it was sold
• Main assumptions include the active adoption of carbon-free products by each company in accordance with each country’s CO₂ reduction goals as well as some degree of hydrogen and CO₂ solutions ecosystems development
Strengthening Our Sustainability Management Organization

- Established the Materiality Council whose mission is to address five core issues through MHI Group’s business activities
- Transformed the former CSR Committee into the Sustainability Committee and further strengthen our ESG efforts
- The Sustainability Relations Department was established to oversee administration of these efforts as we seek to achieve a sustainable world while increasing corporate value in the medium to long term

Materiality Council

Promote business activities to realize materiality targets
Council Chairman: Mr. Izumisawa (CEO)

Established 5 subcommittees to address these core issues:

- Provide energy solutions to enable a carbon neutral world
- Transform society through AI and digitalization
- Build a safer and more secure world
- Promote diversity and increase employee engagement
- Enhance Corporate Governance

Sustainability Committee

- Further strengthen ESG activities (TCFD, Human Rights Due Diligence)
- Promote social responsibility
Committee Chairman: Dr. Kaguchi (CSO)
MOVE THE WORLD FORWARD