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

May 12, 2022
Seiji Izumisawa, President & CEO

Mitsubishi Heavy Industries, Ltd.

Allow me to speak about the progress we have made in our 2021 Medium-Term Business Plan (MTBP).
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Here is the Table of Contents.
First, I will provide an overview of the 2021 MTBP.
This page restates the goals of the 2021 MTBP.

We are working to achieve four target indicators with the goal of strengthening profitability and developing growth areas.
This page summarizes the FY2021 results.

In FY2021, we were affected by semiconductor shortages and materials cost inflation, in addition to the impact of COVID-19, but we were able to achieve all of our targets through a variety of initiatives.

To summarize, recovery in Logistics, Thermal & Drive Systems and Aero Engines was largely in line with our expectations. However, recovery in the Aero Structures business has been somewhat delayed, and we plan to compensate for this by continuing the measures we have taken to date.

Although the impact from the Russia/Ukraine conflict on our businesses is currently limited, we will continue to closely monitor the situation and take steps to minimize any effects.
Next, I will discuss the strengthening of profitability.
This page shows changes in the market landscape since the 2021 MTBP was originally formulated and their impact on the Company.

First, world-wide climate change initiatives are advancing. Energy is an integral part of life, and needs are beginning to appear for optimal solutions taking into consideration characteristics of each region and local industry in addition to economic factors.

In order to respond to these needs, rather than a single, unified solution, realistic solutions tailored to the situation in each region are being explored, and a phased approach to make effective use of existing facilities is under discussion. Going forward, we believe that not only renewable energy but also utilization of hydrogen and CCUS will increase.

A supply/demand gap has emerged caused by regional differences in COVID-19 infection rates and countermeasures as well as increasing geopolitical risk stemming from the Russia/Ukraine conflict. This has led to instability in energy supplies and disruptions in supply chains, and uncertainty about the future is increasing.

These changes to the business environment have had two main effects on MHI Group:

The first is related to heightening awareness of security issues. There is growing momentum in many countries to strengthen national security. Furthermore, a re-appraisal of nuclear power from the perspective of energy security is underway. As a leading company in the areas of nuclear power and defense, we recognize that society expects us to respond in these areas.

The second is related to responding to global inflation. We are seeing impact on our
businesses from inflation in energy resources, materials, and logistics costs, as well as from semiconductor shortages. To respond to these challenges, we will further work to strengthen our competitiveness in areas such as supply chains and manufacturing capabilities. We will also work to increase sales prices.
This page summarizes our initiatives to achieve our FY2023 targets in light of the changing business environment.

In FY2022, we will steadily implement each of the initiatives outlined in the 2021 MTBP. We will also strengthen our organization while monitoring and responding to changes in the market. In this way, FY2022 is positioned as a year during which we will solidify our fundamentals in the leadup to FY2023 target achievement.

In FY2021, we made progress in strengthening our service bases and organizations. In FY2022, we will achieve concrete results in our services businesses.

We have to some extent completed consolidation of organizations and locations as well as divestments of businesses with issues. Going forward, the new Aero Engines plant in Nagasaki will strengthen in-house manufacturing capabilities and contribute to higher profits.

We will further expand our services businesses by strengthening our DX organization. We are also considering the next steps in business portfolio optimization.

In response to the changes in the business environment since the MTBP was originally formulated, we will develop business opportunities by making contributions to national security, strengthening our nuclear energy initiatives, and proposing an Energy Transition tailored to local needs.
Over the next several pages, I will discuss MHI Group initiatives toward realizing a sustainable society.
We recognize that achieving Carbon Neutrality is essential for realizing a sustainable society that is safe, secure, and comfortable.

MHI Group believes that it is important to promote both the decarbonization of energy supplies through the Energy Transition, and energy conservation, automation, and decarbonization of energy use with Smart Infrastructure.
## Changes in Society and Environment Accelerating Toward Achievement of Carbon Neutrality

<table>
<thead>
<tr>
<th>Energy Transition</th>
<th>Carbon Neutrality commitments, which began in Europe, spread to U.S., China, and rest of world</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In response to this, the consideration of specific measures for a variety of regions and industries is accelerating</td>
</tr>
<tr>
<td></td>
<td>• Awareness level of the importance of diverse paths to Carbon Neutrality is rising as a reflection of recent urgency of energy security concerns. Multiple paths should be developed with a view to S + 3Es(^1), without limiting to a renewables-only approach</td>
</tr>
<tr>
<td></td>
<td>• Interest took off in specific projects in the CCUS space, which will enable Carbon Neutrality in hard-to-abate industries(^2), such as steelmaking, cement, and chemicals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Smart Infrastructure (New Mobility &amp; Logistics)</th>
<th>Due to prolongation of COVID-19 pandemic, e-commerce experienced explosive growth driven by consumer demand during lockdowns. Labor shortages in the logistics industry are becoming more severe, and the trend toward automation in logistics and manufacturing is accelerating</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Demand for data centers is booming as the digitalization of society accelerates</td>
</tr>
<tr>
<td></td>
<td>Further demand for decarbonization and energy conservation of energy use</td>
</tr>
</tbody>
</table>

1 Safety + Energy Security, Economic Efficiency, and Environment, the basis of Japan’s energy policy since 2014
2 Industrial or energy sectors which are considered difficult to decarbonize

This page summarizes recent developments in the energy supply and use areas.

Carbon Neutrality commitments are spreading from Europe, which has been a leader in this area, to the U.S., China, and the rest of the world. In response, specific measures for a variety of regions and industries are now being considered at an accelerated pace by businesses.

Additionally, growing energy security awareness requires a variety of paths with a view to S + 3Es, without limiting to a renewables-only approach. CCUS inquiries are beginning to emerge in hard-to-abate industries such as the steelmaking, cement, and chemicals.

Next is energy supply. In response to increased demand from lockdowns during to the prolonged pandemic, rapid growth in e-commerce has further exacerbated labor shortages in the logistics sector. In this context, automation in logistics and manufacturing are accelerating. Demand for data centers is booming as the digitalization of society accelerates. Conventional systems consume large amounts of energy, so we believe there is a growing need for solutions to decarbonize and conserve energy in this area.
In the energy supply side area, we have been promoting the decarbonization of existing infrastructure and the realization of hydrogen and CO2 solutions ecosystems. Today I would like to focus on the CO2 solutions ecosystem.
Along with emissions reductions, CO2 capture is essential to achieve Carbon Neutrality.

Global CO2 emissions will be significantly reduced under the 1.5°C Scenario through expansion of renewable energy, utilization of nuclear power, electrification, fuel conversions, and other measures. However, the continued use of existing power generation facilities and the need to address hard-to-abate sectors require a certain amount of CO2 capture. Studies estimate that about one-quarter of current CO2 emissions will need to be captured.

For this reason, demand is expected to grow for compact CO2 capture systems for industrial plants, in addition to large scale capture systems targeting the energy and chemicals sectors. In order for CO2 capture technology to become established, storage and utilization of the captured CO2 is needed, and we anticipate increased activity in these areas.
This page depicts the CO2 solutions ecosystem that MHI Group hopes to realize.

We are escalating efforts in each of the areas shown. CO2 capture from not only conventional large-scale emissions sources but also a wide variety of facilities is now being considered. We are investing in the development of innovative technologies mainly through start-up companies in both the storage and utilization areas.

In addition, Proofs of Concept (PoC) have been initiated for a digital platform to help build this value chain.

Starting with the next page, I will discuss the progress in CO2-related businesses within the framework of the 2021 MTBP in the following three categories: 1. Trends in the CO2 capture market, 2. MHI Group’s response to these trends, and 3. Our efforts to build a CO2 value chain ecosystem.
The market for CO2 capture is growing in North America, Europe and Japan.

In recognition of our proven track record in CO2 capture, we booked orders for feasibility studies equivalent to approximately 27 million tons per year in FY2021. This is roughly equal to 18 times the amount collected by the world’s largest CO2 capture project (Petra Nova).

As shown in the figure to the lower right, inquiries in Europe cover a wide range of industries.

MHI Group will convert these inquiries into orders by leveraging our abundant experience, unique technologies, and ability to operate across sectors.
2. Develop and Validate a Variety of CO₂ Capture Products

- Expand product lineup by standardizing and modularizing CO₂ capture systems to address projected growth in compact capture systems for diverse industries (including hard-to-abate sectors). Finish validation testing with partners by end FY23.
- Proposing new service businesses, including automated and remote operation as well as CaaS* and working to build a CO₂ solutions ecosystem. Commercialize starting in FY24.

<table>
<thead>
<tr>
<th>CO₂ Emissions Sources</th>
<th>MHI Group Initiatives</th>
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<tbody>
<tr>
<td>Current</td>
<td>Expand product lineup</td>
</tr>
<tr>
<td>Large Scale</td>
<td></td>
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<tr>
<td>Energy &amp; Chemicals</td>
<td>Validation Partners</td>
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<tr>
<td>Gas-Fired Thermal Power</td>
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<td>Coal-Fired Thermal Power</td>
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<td>Chemical Plants</td>
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<tr>
<td>Compact</td>
<td></td>
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<tr>
<td>(Standardized/Modularized)</td>
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<tr>
<td>Diverse Industries</td>
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<tr>
<td>LNG Liquefaction</td>
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<tr>
<td>Cement</td>
<td></td>
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<td>Gas Engines</td>
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<tr>
<td>Waste-to-Energy</td>
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<tr>
<td>Bunkers Power</td>
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<table>
<thead>
<tr>
<th>Type</th>
<th>Standard CO₂ Capture Volume</th>
<th>Footprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.3 tons/day</td>
<td>7 m x 2 m</td>
</tr>
<tr>
<td>B</td>
<td>3 tons/day</td>
<td>12 m x 4 m</td>
</tr>
<tr>
<td>C</td>
<td>30 tons/day</td>
<td>15 m x 15 m</td>
</tr>
<tr>
<td>D</td>
<td>100 tons/day</td>
<td>25 m x 20 m</td>
</tr>
<tr>
<td>E</td>
<td>200 tons/day</td>
<td>35 m x 25 m</td>
</tr>
</tbody>
</table>

*Caas: CO₂ Capture as a Service

CO₂ capture needs are projected to grow not only for conventional large-scale capture facilities to be installed at conventional thermal power and chemical plants, but also for a variety of other industries. We are developing standardized, modular systems to address these needs.

We are planning to conduct validation testing of these systems in cooperation with various partners with completion scheduled for the end of FY2023. After completing validation, we will start to respond to business inquiries.

We will also develop new solutions, such as automated and remote operation services.
This page shows our efforts to build a CO2 value chain.

CO2 capture requires storage and utilization as well as capture technology. We will promote open innovation to explore and commercialize new technologies, especially in the utilization domain. As one example, we are collaborating with several companies on the development of carbon-recycled fuels and biotechnologies which utilize CO2.

We are also developing a digital platform called CO2NNEX, which aims to link emitters with transportation, storage, and utilization providers. We have high expectations for this as a new business. Additionally, we recently started a conceptual study in the transportation area.
Recently, there has been renewed interest in nuclear power from the perspective of decarbonization and energy security. Japan’s Strategic Energy Plan, issued last October, aims to increase the nation’s share of nuclear power to between 20% and 22% by 2030. MHI Group will continue to support the restart of existing plants and the completion of the fuel cycle while leveraging our many achievements in this sector.

Furthermore, design work is underway on a next-generation light water reactor with improved safety features aiming for realization in the 2030s.

In the future, we will make further contributions as a leading nuclear energy company, including with high temperature gas-cooled reactors which can produce hydrogen and cooperation with U.S. start-up TerraPower on the development of fast reactors.
This page shows some examples of our nuclear power initiatives, but allow me to omit a detailed explanation.
On the next few pages, I will explain our efforts in the energy use area.

We had previously positioned this area as New Mobility & Logistics, but we have reconceptualized it as Smart Infrastructure in the energy use space.

In the Smart Infrastructure area, we are working on intelligent logistics systems, energy-conserving data centers, and infrastructure to support autonomous mobility. Today I will speak about intelligent logistics systems and energy-conserving data centers.
Intelligent Logistics Systems

- Commercialized highly maneuverable Automated Guided Forklift (AGF) and natural refrigerant chiller to meet market needs for automation and decarbonization
- Developing intelligent logistics to achieve smooth coordination among humans and multiple logistics systems
- Achieve large-scale energy conservation and decarbonization by optimizing operation of logistics, power supply, and air-conditioning (AC) systems

Our Logistics, Thermal & Drive Systems segment has already commercialized highly maneuverable AGFs and natural refrigerant chillers that meet automation and decarbonization needs. As the next step, we are working on an automation platform which will link multiple systems together to intelligently transform logistics.

In the future, we will combine electric power supply and air-conditioning systems, linking them through the ΣSynX integrated platform. This is expected to significantly increase throughput and save energy.
Validation of Intelligent, Automated Warehouse Logistics

- Developing automated picking solutions, which will coordinate highly maneuverable AGF, Automated Guided Vehicles (AGV), and palletizers in beverage or refrigerated warehouses. Will begin validation at Yokohama Hard Hub (YHH) in FY22.
- Increase throughput by efficient swarm control of multiple systems and optimized picking plans using $\Sigma$SynX core technology

$\Sigma$SynX: MHI’s common platform designed to synchronize and coordinate between a variety of machinery components, transforming them into a single, intelligent system

This page shows an example of an intelligent and automated warehouse logistics solution, which is currently in the PoC phase. It is an automated picking system for beverage or refrigerated warehouses linking AGFs, AGVs, and palletizers.

We will validate this system at YOKOHAMA HARDTECH HUB (YHH) this fiscal year. During this process, $\Sigma$SynX will optimally control multiple systems to achieve a significant improvement in throughput. We believe this will also help solve the shortage of logistics operators. This system can provide flexible logistics solutions, and we are planning to introduce it to multi-tenant warehouses, which are currently the mainstream.
This page introduces initiatives regarding the decarbonization and energy conservation of data centers.

Demand for data centers is growing as digitalization progresses. However, reduction and decarbonization of power use is a challenge in this area. We have focused on cooling systems, which account for 30% of data centers’ electricity consumption.

MHI Group has accumulated advanced cooling techniques at our various plants in parallel with development of HVAC systems. Utilizing these technologies, we will provide high-efficiency air-conditioning and power generation systems for hyperscale data centers.

Furthermore, we are working on a PoC for a micro data center using next-generation cooling systems. We believe that by commercializing micro data centers, we can achieve significant space and energy savings.

In the future, we are aiming to create a decarbonized data center by combining the micro data center with our hydrogen power generation technologies.
This page shows an example of validation work we are doing for a container type micro data center.

During ongoing testing at YHH, we succeeded in reducing power consumption by 43% in FY2021. From this fiscal year, we will begin testing at KDDI's Oyama Technical Center, with the aim of commercializing the micro data center in FY2024.
Next, I will talk about the Digital Transformation (DX) we will use to advance our efforts in these growth areas.

MHI Group’s goal for DX is to connect, intelligently transform, and optimize systems in order to build value chains.

The following three technology categories will form the basis of our DX platform: 1) Modeling and simulation technologies based on many years of R&D and field validation, 2) Data collection and analytics technologies based on extensive operation and maintenance experience, and 3) AI technologies used in a wide variety of products.

By optimizing these technologies, we will maximize the potential of machinery systems. Furthermore, by combining with security technologies developed in Defense and other businesses, we aim to provide safe and reliable solutions. To this end, we are planning to launch a new organization by July in order to share this technology base and develop it within MHI Group.
IV. Key Takeaways
Here are the key takeaways from today’s presentation.

Although there was impact from the COVID-19 pandemic in FY2021, we were able to overcome them with a variety of successful countermeasures and achieved the plan. Although there is some uncertainty about the future, we will continue working in a flexible manner to further improve profitability.

We believe that achieving Carbon Neutrality is essential to realize a sustainable society. MHI Group will contribute to Carbon Neutrality with our diverse products and solutions.

With an eye to achieving Carbon Neutrality, we will pursue initiatives in both the energy supply and use areas. Through these initiatives, which will balance the three aspects of energy security, economic efficiency, and safety, we hope to contribute to the realization of a sustainable society.

This concludes my presentation. Thank you for listening.
V. Appendix
(Energy Supply)
Decarbonizing Existing Infrastructure: Thermal Power

- Progressing with validation testing with the goal of commercializing carbon-free power generation using hydrogen
- Achieved 50% mixed hydrogen firing during combustor test, an important step toward achieving commercialization in 2025

Achieved 50% mixed hydrogen firing during combustor test, an important step toward achieving commercialization in 2025

Hydrogen Gas Turbine

<table>
<thead>
<tr>
<th>Small &amp; Mid-Size GT (40 MW Class)</th>
<th>Large-Size GT (450 MW class)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% H₂ Firing Validation</td>
<td>100% H₂ Firing Validation</td>
</tr>
<tr>
<td>30% Mixed H₂ Firing Commercialization</td>
<td>30% Mixed H₂ Firing Commercialization</td>
</tr>
<tr>
<td>(100% H₂ Firing)</td>
<td>(100% H₂ Firing)</td>
</tr>
</tbody>
</table>

EU Taxonomy

- CO₂ (g/kWh)
  - SMGT (natural gas)
  - LGT (30% mixed H₂ firing)
  - (50% mixed H₂ firing)
  - (100% H₂ firing)

2025
2030
2035

- 100% H₂ Firing
- 100% H₂ Firing Commercialization
- 30% Mixed H₂ Firing Commercialization
- 100% H₂ Firing Commercialization

Achieved 50% mixed hydrogen firing during combustor test, an important step toward achieving commercialization in 2025

Part of this presentation includes development results from the National Laboratory New Energy and Industrial Technology Development Organization (NEDO) programs.
Building a Hydrogen Solutions Ecosystem: Projects under Development in U.S.

- Marked progress in the Advanced Clean Energy Storage Project in Utah, U.S.
- Progress in order intake and development through strategic partnerships

Puget Sound Energy (Apr 2021)
- Executed MOU for joint development of strategy and project to achieve PG&E's 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)
- Executed MOU for building of hydrogen hub in North Dakota for production, storage, transport, and use of hydrogen

Advanced Clean Energy Storage Project (Apr 2022)
- U.S. Department of Energy committed conditional loan of 500 m USD for green hydrogen production and storage project

Harrison (Jan 2020)
- Executed MOU for building of hydrogen hub utilizing salt domes selected by customer

DT Midstream (Nov 2021)
- Signed MOU for joint development of hydrogen production project for industrial uses incl. power generation, transport, steelmaking, oil refining, and fertilizer manufacture

El Paso Electric (Oct 2021)
- Executed MOU for joint development of strategy and projects to achieve El Paso Electric's goal of 100% carbon-free energy mix

Entergy (Sep 2020)
- Executed MOU for joint development of project to achieve Entergy's goal to halve CO2 emissions (vs. 2000 levels) by 2030

Puget Sound Energy (Apr 2021)
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V. Appendix  
(Energy Use)
Support the development of autonomous mobility with environmental control and digital twin technologies

Support autonomous mobility with road infrastructure featuring monitoring and communications technologies

Convert mechanical parking garage technology to operation and maintenance infrastructure able to support Mobility as a Service (MaaS)

Infrastructure to Support Autonomous Mobility (1/2)

- Development Support
  - Integrated Environment Testing System
  - Safety Monitoring Service
  - Autonomous Valet Parking
  - Electrification of mechanical parking garages

- Operation Support
  - Support & monitoring
  - Commercialization
  - Expansion services

- Operation & Maintenance
  - Post Unit Begins Operation
  - Autonomous Driving Support Infrastructure
  - Smart Stockyard
  - Convert to MaaS support center infrastructure

Revenue Targets:
- ¥30 bn
- ¥90 bn

Help realize MaaS Society

2021
2024
2027
2030
2040
Infrastructure to Support Autonomous Mobility (2/2)

- Support efficient development and validation of autonomous mobility using high-level environmental control and digital twin technologies
- Support autonomous mobility with road infrastructure featuring monitoring and communications technologies accumulated during the development of diverse transportation systems

(1) Integrated Environment Testing System

- Reliable testing
- Cause analysis of anomalies
- Support efficient development and validation of autonomous mobility using high-level environmental control and digital twin technologies

(2) Autonomous driving support infrastructure

- Support autonomous mobility with road infrastructure featuring monitoring and communications technologies accumulated during the development of diverse transportation systems

- Expand autonomous mobility’s range of awareness

- Safe, secure mobility
### MHI Group DX Platform

<table>
<thead>
<tr>
<th><strong>DIAVII</strong></th>
<th>Netmation 4S</th>
<th>Reliably operate</th>
<th>A control system used in various infrastructure products and industrial facilities. Complies with international functional safety standard IEC 61508: 2010 (SIL 3).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EX ROVRE</strong></td>
<td>A proxy for dangerous tasks</td>
<td>Performs inspections day or night under conditions which could create an explosive atmosphere, contributing to improved worker safety, operational efficiency, and facility utilization.</td>
<td></td>
</tr>
<tr>
<td><strong>TOMONI</strong></td>
<td>Intelligently operate</td>
<td>Provides services utilizing remote monitoring and high-precision analysis functions to monitor signs of trouble and propose necessary corrective measures at an early stage, improving plant reliability and profitability.</td>
<td></td>
</tr>
<tr>
<td><strong>CoEn</strong></td>
<td>Evaluate with diverse criteria</td>
<td>Supports sustainable growth in energy infrastructure with quantitative evaluation from the perspectives of societal impact, economics, and the environment.</td>
<td></td>
</tr>
<tr>
<td><strong>SynX</strong></td>
<td>Coordinate humans and machines</td>
<td>A solutions concept aiming to automate and intelligently transform all MHI Group products, SynX will become a standard platform that integrates our digital technologies by synchronizing and coordinating among diverse machinery systems. We believe strongly in developing human-centric technologies to enable collaboration between operators and machines. This is based on the assumption that, even in our modern world, where the pace of automation and intelligent transformation of technology with AI and machine learning is accelerating, humans must remain at the center of society.</td>
<td></td>
</tr>
<tr>
<td><strong>InteRoSoPT</strong></td>
<td>Safely connect</td>
<td>Cybersecurity technology for critical infrastructure (social infrastructure) control systems. Enables real-time error detection and response to unknown cyber-attacks.</td>
<td></td>
</tr>
<tr>
<td><strong>SynX-Vehicle</strong></td>
<td>Coordinate humans and machines</td>
<td>Automated logistics equipment featuring action planning technology for swarm control and non-verbal human interface technology for human-machine coordination.</td>
<td></td>
</tr>
<tr>
<td><strong>Co:NNEX</strong></td>
<td>Efficiently supply energy</td>
<td>Forecasts energy demand with high accuracy and ascertains facility conditions to support improvements in energy procurement and power generation efficiency using data measurement and analysis from facility operation monitoring.</td>
<td></td>
</tr>
<tr>
<td><strong>CO:NNEX</strong></td>
<td>Build a new economy in cyberspace</td>
<td>A digital platform to visualize the distribution of CO₂ within the value chain and enable a new kind of society that utilizes this CO₂ as a valuable resource. Its ultimate goal is to realize Carbon Neutrality.</td>
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V. Appendix
(FY2021 Highlights by Segment)
FY2021 Highlights

**Energy Systems**

**GTCC Business Grew with Strong Orders**
- Orders increased for new installations of large gas turbines incl. latest model J-class as well as small and mid-sized turbines incl. H-25 and aero-derivative gas turbines
- Won orders for upgrades and after-sales services for existing GTCC facilities in Japan and around the world

**Mihama Unit 3 Restart**
- 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 (Jun 21)

**TOMONI Intelligent Solutions Network Growth**
- The fifth TOMONI Hub began operation in Düsseldorf, Germany. Other operating hubs: Takasago, Nagasaki, U.S., and Philippines
- TOMONI supports EAM of diverse energy systems, from thermal power plants to distributed power sources

**Established Takasago Hydrogen Park**
- Established Takasago Hydrogen Park within Takasago Machinery Works. It will be the first facility in the world where the integrated validation of hydrogen power from hydrogen production to power generation can be achieved.
- Established a joint venture, MHI-NT, with Nippon Gas Chemical Co., Ltd. (July 21)

**MHIAEL Nagasaki Plant for Manufacture of Aero Engine Combustors to be Expanded**
- Announced plans to build new Building 2 to expand current plant due to projected increase in demand for aero engine parts for short- and medium-haul commercial aircraft
- While strengthening internal manufacturing capabilities and cost competitiveness, we will meet the needs of the aviation industry, which is expected to resume growth in the post-COVID period

**Ikata Unit 3 SSF Completed**
- Construction of a Specialized Security Facility for Shikoku Electric Power Company’s Ikata Nuclear Power Plant Unit 3 completed (Oct 21)

**Mihama Unit 3 Restart**
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**Ikata Unit 3 SSF Completed**
- Construction of a Specialized Security Facility for Shikoku Electric Power Company’s Ikata Nuclear Power Plant Unit 3 completed (Oct 21)
**Strengthened Transportation Systems After-Sales Business**
- Booked order to enhance capacity of Singapore’s Sengkang-Punggol Light Rapid Transit (LRT) system
- Began providing high added-value services meeting the needs of customers in Asia through the MHI-AP Technical Service Center

**Expanded CO₂ Capture Sources**
- Received order for compact CO₂ capture system for biomass power plant in Hiroshima, Japan
- Contributing to the realization of a Carbon Neutral society by meeting CO₂ emissions reduction needs in a wide variety of industries

**LCO₂ Carrier**
- Executed agreement for construction of the world’s first validation test ship for LCO₂ transportation
- Rallied all liquid gas handling technologies in anticipation of future long-distance, high-volume transportation needs

**Contributed to Decreasing CO₂ Emissions from Steelmaking**
- Environmentally conscious miniaturized steel mill combining a new electric arc furnace (EAF) Quantum and Arvedi ESP began operation in China
- CO₂ emissions are 85% of those of traditional manufacturing methods

**Bagan Sale of New Model of Antiseptic Beverage Filling Machine**
- Began sale of a new model of antiseptic filling machine for beverages (preform sterilization), which excels in the areas of running costs, production efficiency, and footprint
- Promoting both within Japan and internationally together with new market entry by serious beverage manufacturers

**Received Order to Refurbish Municipal Solid Waste Incineration Plant**
- Received order from Sendai City (Miyagi Pref., Japan) to refurbish its Matsumori Waste-to-Energy Plant, an incineration plant for municipal solid waste
- Will reduce CO₂ emissions by 8%/year by extending the plant’s life and enhancing its energy efficiency
FY2021 Highlights

**Logistics, Thermal & Drive Systems**

**Began Sale of New Engine-Powered Forklift ERSIS**

- Began sale of the first new integrated model fork lift since the battery powered ALESIS was introduced in Nov 2019 after the founding of Mitsubishi Logisnext
- This marked the completion of the integration of all domestic Japanese models. Going forward, there will be a phased integration with the model in international markets as well.

**Aquifer Thermal Energy Storage System**

- Awarded the Ministry of Environment Green Card in FY2020
- Featured in “Trends in Aquifer Thermal Energy Storage Technology”
- Focused on unutilized geothermal energy, the system cycles heat throughout the year for effective energy utilization.
- Reduces atmospheric heat emissions and achieves underground heat balance of zero for the full year period, which helps to protect the global environment.

**Heat Pump Chiller Q-ton Circulation Won 2021 Minister of the Environment Award for Climate Action**

- By utilizing a low-GWP refrigerant, the product contributes to reduction of environmental impact, energy usage, and CO2 emissions arising from hot water supply.
- Received a series of awards recognizing the product, including the Technology Award from the Japan Society of Refrigerating and Air Conditioning Engineers in 2019 as well as the Japan Association of Refrigerating and Air Conditioning Contractors’ Excellent Energy Saving Equipment Award and a Grand Prize at the Nikkan Kogyo Shimbun’s Protect the Ozone Layer, Prevent Global Warming Awards, both in 2021.

**Triple Hybrid Stand-Alone Power System EBLOX Demo Plant to be Constructed in Turkey**

- Promoting mainly in the Middle East and Africa, where electric grids are still developing.
- Able to optimize use of renewables in accordance with power demand within a region.

**Jointly Developed High-Efficiency Gas Cogeneration System**

- Jointly developed a gas cogeneration system with output of 850 kW which achieves a world top-class efficiency of 41.9%.
- Increased both output and efficiency from the existing 815 kW model while maintaining BCP functionality and footprint.

**Intelligent, Automated Warehouse Project Enabled by ΣSynX Kicked Off**

- Will contribute to solving logistics operator shortages by installing in multi-tenant warehouses.
FY2021 Highlights

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

Mitsubishi Heavy Industries Maritime Systems
Began Full-Scale Operations
- Mitsubishi Heavy Industries Maritime Systems, which continues the former Mitsui E&S Holding naval & governmental ships businesses, began full-scale operations on Oct 1, 2021
- Handover of multi-purpose training ship “Kaijinmaru” to Kobe University at the university’s Fukae Campus

H-IIA Launch Vehicle
- Successfully launched with H-IIA Launch Vehicle No. 45, which carried the first satellite in Inmarsat’s (UK) Inmarsat-6 series

Handover of First Taigei-Class Submarine
- Held handover ceremony for the first Taigei-class submarine on contract from the Japan Ministry of Defense at MHI Kobe Shipyard

Announced Collaboration with Regional Jet Hydrogen Propulsion Technology Start-Up
- CRJ business announced collaboration with ZeroAvia, a start-up developing a propulsion system for regional jets using hydrogen fuel cells