

# IR Day

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December 12, 2024

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## 1. Progress of the FY2031 Strategy (Overview)

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## Medium-term Management Strategy FY2031 (the FY2031 Strategy)

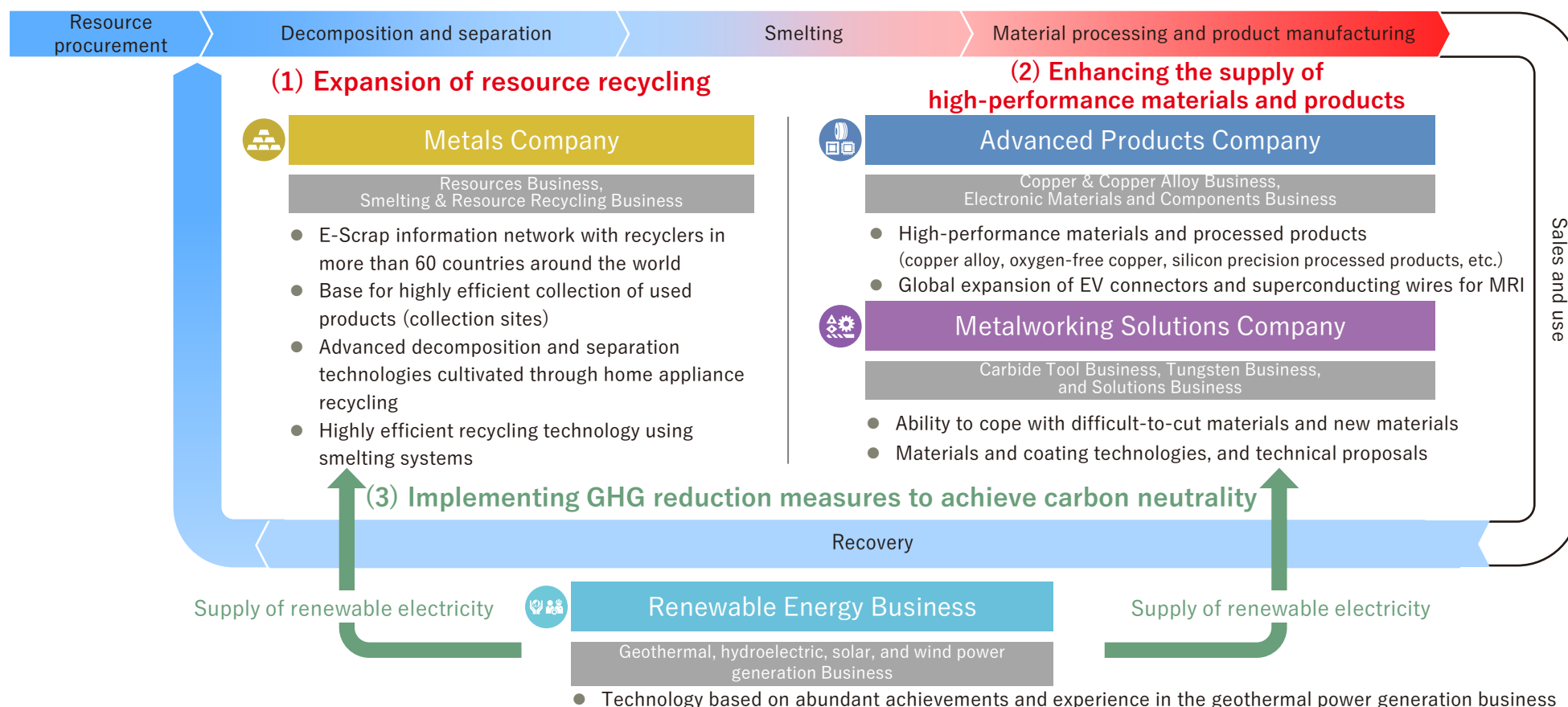
For people, society and the earth, circulating resources for a sustainable future

Prosperous  
society

Recycling-  
oriented society

Decarbonized  
society

Build a recycling system of metal resources based on our strengths and realize growth throughout the value chain by expanding the scope, regions, and scale of our operations



# 1. Progress of the FY2031 Strategy (Overview)

## Overview of the FY2031 Strategy for Each Business Segment

\*Explanation of initiatives related to business-specific strategies in blue

### 1) Expansion of resource recycling

- Promotion of technological development to recover rare metal resources contained in copper deposits
- **Acquisition of copper mining interests and securing copper concentrates through continuous investment in mines**
- Expansion of electrolytic copper supply through SX-EW operations at copper mines

- **Strengthening and expanding the networks to promote resource recycling**
- **Expansion of electrolytic copper production capacity**
- **Increasing the recycling rate by expanding the treatment of recycled products containing metal resources**
- Creation of rare earths and rare metals recycling businesses
- Accelerating business developments in Japan and overseas (E-Scrap, home appliances, automobile recycling)

- Improve the recycling rate of wrought copper products and establish a scrap platform base

### 2) Enhancing the supply of high-performance materials and products

\*We revised its plan to increase its E-Scrap processing capacity while limiting the increase in copper concentrate processing capacity

- **Overseas (Luvata): Rapid entry into growing markets (xEV, healthcare, environment)**
- Expand sales and strengthen services to overseas customers by establishing a new overseas plant which carries out a downstream process, with the domestic plants as mother ones

- Highly capital-efficient management through continual restructuring of the business portfolio
- **Strategic investment in focal products in growth areas**
- Developing and securing human resources for the creation of new businesses and the promotion of business alliances
- Enhancing manufacturing capabilities and DX to enhance production sophistication and profitability
- Providing business and social value (SDGs) for carbon neutrality

#### Tungsten Business

- Expansion of business scale for rechargeable batteries in addition to carbide tools, etc.
- Strengthening environmental responsiveness

#### Cemented Carbide Tools Business

- Stable supply of the world's top quality, high-efficiency products utilizing the strength of materials and coating technology

#### Solutions Business

- Commercialization of solution sales to manufacturing sites

### 3) Supply of renewable electricity

- **New development at one location every three years to expand business**
- **New entrants into wind power generation where power generation costs are expected to decline in the future**

## Expansion of resource recycling

- In light of trends and legal regulations in each country and region, we will expand the scope of resource recycling and expand the scale by regional expansion.

### Expansion of scope

- E-Scrap recycling (Increased processing capacity)
- LIB recycling (Pilot plant under construction, aiming to commercialize in the fiscal year ending March 2029)
- In-process recycling within Copper & Copper Alloy business (Cost reduction, load reduction at copper smelter → E-Scrap increase)
- Cobalt recovery at copper mine (Pilot plant in test operation at the Mantverde Mine)
- Tungsten recycling (Acquired H.C. Starck to become global leader)
- Establishment of a resource circulation loop
  - Home appliances: Scale expansion in Japan and overseas
  - Automobile recycling: Scale expansion targeting EV vehicles
  - Creation of a recycling system that extracts important mineral resources from various products and supplies them as raw materials for products

### Regional expansion

Economic blockage,  
critical mineral resources

Enclosure

Japan: Economic

Security US: IRA Law

EU: Regulations



**Towards regional  
circulation**

- Establishment of MMEU
  - Development and rapid implementation of a resource recycling strategy for the European region (E-Scrap/Copper scrap/LIB/Tungsten)
- Enhancement of E-Scrap recycling by domestic smelters
  - Enhancement of E-Scrap processing capacity by improving smelting and pretreatment capacity
  - Expansion of European collection sites
  - Mining investment to secure low-impurity copper concentrates
  - MEX\* enhancements \*Online E-Scrap trading system
- Investment in Exurban
  - Participation in the construction and operation of a recycling plant in Indiana, USA
  - Expansion beyond the US

## 2. Outlook for the Fiscal Year Ending March 2025

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## Trends in the External Environment

Copper	Demand	<ul style="list-style-type: none"> <li>Growth is slowing due to a generally sluggish global economy and delayed economic recovery in China; however, in the medium- to long-term, demand for copper will remain strong due to demand for EVs and renewable energy, as well as demand for data centers as the digitalization society progresses.</li> </ul>
	Copper Price	<ul style="list-style-type: none"> <li>Since April 2024, copper prices have been on an upward trend, once exceeding 450 ¢/lb. Since then, copper prices have been falling and rising, and are now at around 400 ¢/lb.</li> <li>In the long term, copper prices are expected to remain firm as demand is expected to grow.</li> </ul>
	TC/RC	<ul style="list-style-type: none"> <li>Supply concerns have led to strong buying by Chinese smelting operations and traders, and spot TC/RCs are extremely low; as smelting capabilities continue to grow in Indonesia and India, there are concerns that TC/RCs will remain low.</li> </ul>
Automobile Industry		<ul style="list-style-type: none"> <li>Automobile production has been sluggish recently, mainly in Europe and the United States, and is expected to recover moderately from the second half of the fiscal year ending March 2025.</li> <li>Demand for copper and carbide tools in our company has recovered slower than expected. The second half of the fiscal year ending March 2025 is also sluggish and is expected to recover moderately.</li> </ul>
Semiconductor Industry		<ul style="list-style-type: none"> <li>The demand for semiconductors has generally bottomed out and continues to remain flat at a low level, but it is expected to expand in the medium- to long-term.</li> <li>Demand for semiconductor-related products in our company is also expected to recover more slowly than expected.</li> </ul>



## 2. Outlook for the Fiscal Year Ending March 2025

### Forecast for the FYE March 2025 (Announced on November 8, 2024)

- Demand recovery in the automobile and semiconductor markets in the second half of the fiscal year is expected to be slower than initially anticipated, and our company's copper and cemented carbide products are expected to remain sluggish in the second half.
- Exchange rates are expected to remain at current levels, although there is strong uncertainty about the future.
- In addition to these factors, there are no changes to the full-year consolidated earnings forecast and dividend forecast, taking into account improvements in the metal recoveries in the Metals business.

		FYE March 2023 Result	FYE March 2024 Result	FYE March 2025 Forecast	FYE March 2026 Plan	FYE March 2031 Target
Net sales (Net sales excluding metal charges)	Billions of yen	1,625.9 (608.0)	1,540.6 (548.1)	1,950.0 (588.0)	1,940.0 (690.0)	2,000.0 (850.0)
Operating profit	Billions of yen	50.0	23.2	41.0	70.0	130.0
Ordinary profit	Billions of yen	25.3	54.1	63.0	87.0	180.0
ROIC	%	1.4%	3.8%	4.2%	5.5%	9.0%
ROE	%	3.5%	4.8%	6.9%	10.0%	13.6%
EBITDA	Billions of yen	75.7	105.0	112.9	150.0	260.0
Net D/E ratio	Times	0.7	0.7	0.8	0.7	0.5 or less
Net interest-bearing debt / EBITDA ratio	Times	5.2	4.5	4.5	3.5	2.0 or less
Dividend per annum	Yen	50	94	100		

## 2. Outlook for the Fiscal Year Ending March 2025

### Metals Company

- **Resources business:** Although dividend income from copper mines is expected to decline in the fiscal year ending March 2025 compared to the fiscal year ended March 2024, improvement in equity-method investment profits related to Copper Mountain Mine and Mantoverde Mine is expected.
- **Smelting & Resource Recycling business:** Profit increased in the fiscal year ending March 2025 due to the resolution of transient factors such as troubles at Onahama Smelter & Refinery in the fiscal year ended March 2024 and reduction in raw material supply, as well as improvement in metal recoveries.

(Billions of yen)		FYE March 2023 Result	FYE March 2024 Result	FYE March 2025 Forecast	FY2031 Strategy Plan	FY2031 Strategy Measures	Progress	Direction for Achieving the FY2031 Strategy Plan
Resources Business WACC:9.7%	Ordinary profit	2.4	20.1	18.5	11.4	<ul style="list-style-type: none"> <li>Promotion of technological development to recover rare metal resources contained in copper deposits</li> <li>Acquisition of copper mining interests and securing copper concentrates through continuous investment in mines</li> <li>Expansion of electrolytic copper supply through SX-EW operations at copper mines</li> </ul>	<ul style="list-style-type: none"> <li>Mining investment is proceeding as anticipated.</li> <li>Full-scale copper concentrate production started at Mantoverde Copper Mine in November 2024.</li> </ul>	<ul style="list-style-type: none"> <li>Expansion of operations at Los Pelambres Copper Mine is also going well, and dividends are as planned</li> <li>In FYE March 2026, the ROIC is temporarily expected to decrease, and EP will be negative due to the execution of investment in mines.</li> </ul>
	EBITDA	2.5	19.0	17.1	11.1			
	ROIC	1.1%	11.7%	11.1%	9.0%			
	ROIC spread	-8.6pt	+2.0pt	+1.4pt	-0.7pt			
	EP		2.1	1.5				
Smelting & Resource Recycling Business WACC:5.4%	Ordinary profit	25.9	11.6	29.2	27.0	<ul style="list-style-type: none"> <li>Strengthening and expanding the networks to promote resource recycling</li> <li>Expansion of electrolytic copper production capacity</li> <li>Increasing the recycling rate by expanding the treatment of recycled products containing metal resources</li> <li>Creation of rare earths and rare metals recycling businesses</li> <li>Accelerating business developments in Japan and overseas (E-Scrap, home appliances, automobile recycling)</li> </ul>	<ul style="list-style-type: none"> <li>Construction has begun on a pilot plant for LIB recycling.</li> <li>We will consider adjustments to investment allocation with respect to strengthening E-scrap capacity.</li> </ul>	<ul style="list-style-type: none"> <li>Increased profit due to review of metal prices and reduction of hedging costs in response to increased electricity costs</li> <li>ROIC is improving due to increased profit</li> <li>Regarding E-Scrap, we will strengthen the collection system in Europe based on the forecast of supply and demand</li> </ul>
	EBITDA	42.6	28.8	43.7	39.6			
	ROIC	8.3%	2.9%	8.1%	7.1%			
	ROIC spread	+2.9pt	-2.5pt	+2.7pt	+1.7pt			
	EP		-7.4	7.5				

\*EBITDA= Ordinary profit + Interest expense + Depreciation + Goodwill depreciation

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## 2. Outlook for the Fiscal Year Ending March 2025

### Advanced Products Company

- **Copper & Copper Alloy business:** Profit fell in the fiscal year ending March 2025 due to slower recovery in demand for automobiles and semiconductors than expected and the effect of the suspension of hedging, despite cost reductions.
- **Electronic Materials & Components business:** Profit rose in the fiscal year ending March 2025 due to inventory valuation gains and losses and cost reductions, despite slower recovery in demand for automobiles and semiconductors than expected due to the still weak semiconductor market.

(Billions of yen)		FYE March 2023 Result	FYE March 2024 Result	FYE March 2025 Forecast	FY2031 Strategy Plan	FY2031 Strategy Measures	Progress	Direction for achieving the FY2031 Strategy Plan
Copper & Copper Alloy Business WACC:2.7%	Ordinary profit	-0.0	-0.5	-2.4	12.4	<ul style="list-style-type: none"> <li>Improve the recycling rate of wrought copper products and establish a scrap platform base</li> <li>Overseas (Luvata): Rapid entry into growing markets (xEV, healthcare, environment)</li> <li>Expand sales and strengthen services to overseas customers by establishing a new overseas plant which carries out a downstream process, with the domestic plants as mother ones</li> </ul>	<ul style="list-style-type: none"> <li>Investment to strengthen production capacity for copper sheets and copper strips is proceeding as anticipated, and substantial operations to begin in the latter half of FYE March 2025</li> </ul>	<ul style="list-style-type: none"> <li>Lowering the break-even point by improving yield and productivity</li> <li>Reducing raw material costs by improving recycling rates</li> <li>Promoting sales expansion to domestic key accounts and expanding into overseas sales channels</li> <li>Accelerating sales shift to high-profit products</li> </ul>
	EBITDA	9.3	10.6	10.0	24.6			
	ROIC	0.6%	0.6%	0.3%	4.0%			
	ROIC spread	-2.1pt	-2.1pt	-2.4pt	+1.3pt			
	EP		-4.5	-5.3				
Electronic Materials & Components Business WACC:7.4%	Ordinary profit	7.7	2.8	3.7	8.6	<ul style="list-style-type: none"> <li>Highly capital-efficient management through continual restructuring of the business portfolio</li> <li>Strategic investment in focal products in growth areas</li> <li>Developing and securing human resources for the creation of new businesses and the promotion of business alliances</li> <li>Enhancing manufacturing capabilities and DX to enhance production sophistication and profitability</li> <li>Providing business and social value (SDGs) for carbon neutrality</li> </ul>	<ul style="list-style-type: none"> <li>The business environment for precision silicon products is worsening. We will reevaluate investments in increased production and shift toward other growth areas.</li> </ul>	<ul style="list-style-type: none"> <li>Semiconductor market, effects of increased production due to recovery in demand and growth of automobiles (mainly electric vehicles), additional sales expansion measures (Silicon processed products, device products)</li> <li>Improvement of ROIC by implementing a growth investment plan based on semiconductor market conditions</li> </ul>
	EBITDA	11.5	6.9	8.1	16.0			
	ROIC	8.7%	3.3%	4.3%	7.8%			
	ROIC spread	+1.3pt	-4.1pt	-3.1pt	+0.4pt			
	EP		-2.7	-2.1				

\*EBITDA= Ordinary profit + Interest expense + Depreciation + Goodwill depreciation

## 2. Outlook for the Fiscal Year Ending March 2025

### Metalworking Solutions Company

- Metalworking Solutions business: Demand for automobiles is sluggish in the fiscal year ending March 2025, and the recovery is expected to be slower than initially anticipated. Profit is expected to decline despite price hikes and cost reductions.

(Billions of yen)		FYE March 2023 Result	FYE March 2024 Result	FYE March 2025 Forecast	FY2031 Strategy Plan	FY2031 Strategy Measures	Progress	Direction for achieving the FY2031 Strategy Plan
Metalworking Solutions Business WACC:6.5%	Ordinary profit	14.5	12.2	10.8	25.0	<u>Carbide tools business</u> <ul style="list-style-type: none"> <li>Stable supply of the world's top quality, high-efficiency products utilizing the strength of materials and coating technology</li> </ul> <u>Tungsten business</u> <ul style="list-style-type: none"> <li>Expansion of business scale for rechargeable batteries in addition to carbide tools, etc.</li> <li>Strengthening environmental responsiveness</li> </ul> <u>Solution business</u> <ul style="list-style-type: none"> <li>Commercialization of solution sales to manufacturing sites</li> </ul>	<ul style="list-style-type: none"> <li>Creation of high added-value products in various fields including automobile, aerospace, and medical are as planned.</li> <li>The Company has entered into an agreement for the acquisition of H.C. Starck and is proceeding with various procedures for the closing.</li> </ul>	<ul style="list-style-type: none"> <li>Enhancement of tungsten business (Recycling, production and sales of high-performance powders and alloys) through acquisition of H.C. Starck, Germany</li> <li>Improvement of sales efficiency and productivity using DX</li> <li>Improvement of capital efficiency by reducing inventories</li> </ul>
	EBITDA	27.4	24.5	24.1	39.9			
	ROIC	6.9%	5.2%	3.8%	8.6%			
	ROIC spread	+0.4pt	-1.3pt	-2.7pt	+2.1pt			
	EP		-2.1	-5.4				

\*EBITDA= Ordinary profit + Interest expense + Depreciation + Goodwill depreciation

## Renewable Energy Business

- **Renewable Energy business: Appi Geothermal Power Plant, which started operations in March 2024, is in stable operation. Earnings are expected to increase.**

(Billions of yen)		FYE March 2023 Result	FYE March 2024 Result	FYE March 2025 Forecast	FY2031 Strategy Plan	FY2031 Strategy Measures	Progress	Direction for achieving the FY2031 Strategy Plan
Renewable Energy Business WACC:1.6%	Ordinary profit	0.9	0.8	2.6	2.3	<ul style="list-style-type: none"> <li>• New development at one location every three years to expand business</li> <li>• New entrants into wind power generation where power generation costs are expected to decline in the future</li> <li>• Further development of new biogas plants</li> </ul>	<ul style="list-style-type: none"> <li>• Appi Geothermal Power Plant started operation in March 2024 (1 month ahead of schedule)</li> </ul>	<ul style="list-style-type: none"> <li>• Profit contribution from stable operation of Appi Geothermal Power Plant</li> <li>• Promotion of geothermal and wind power generation projects under investigation and consideration</li> <li>• Search for new potential geothermal power generation sites</li> <li>• Study of wind power generation using our own company-owned forests</li> </ul>
	EBITDA	1.9	2.2	5.3	4.6			
	ROIC	3.8%	3.4%	5.0%	3.7%			
	ROIC spread	+2.2pt	+1,8pt	+3.4pt	+2.1pt			
	EP		0.5	1.6				

\*EBITDA= Ordinary profit + Interest expense + Depreciation + Goodwill depreciation

## Strengthening Cost Competitiveness

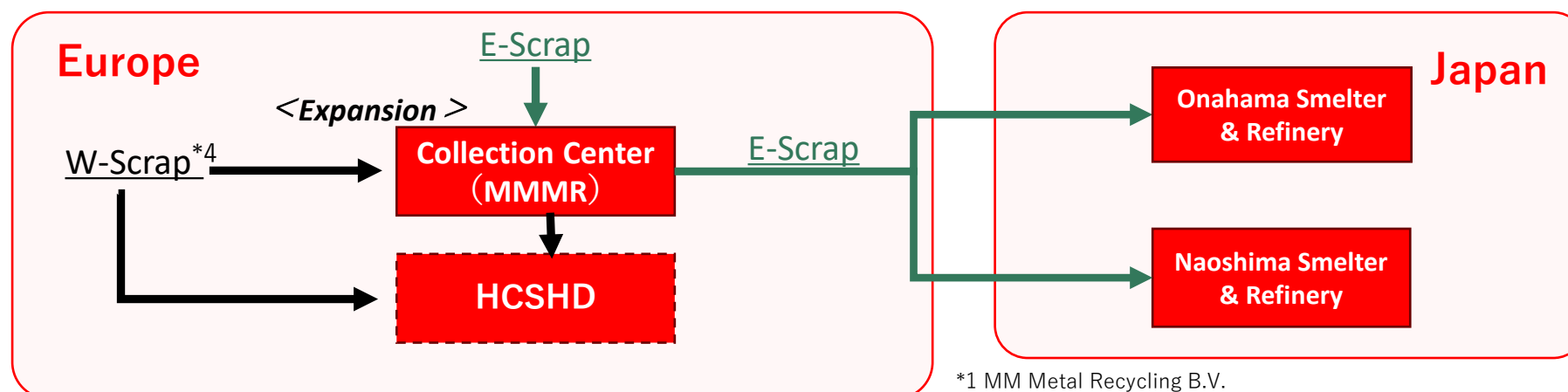
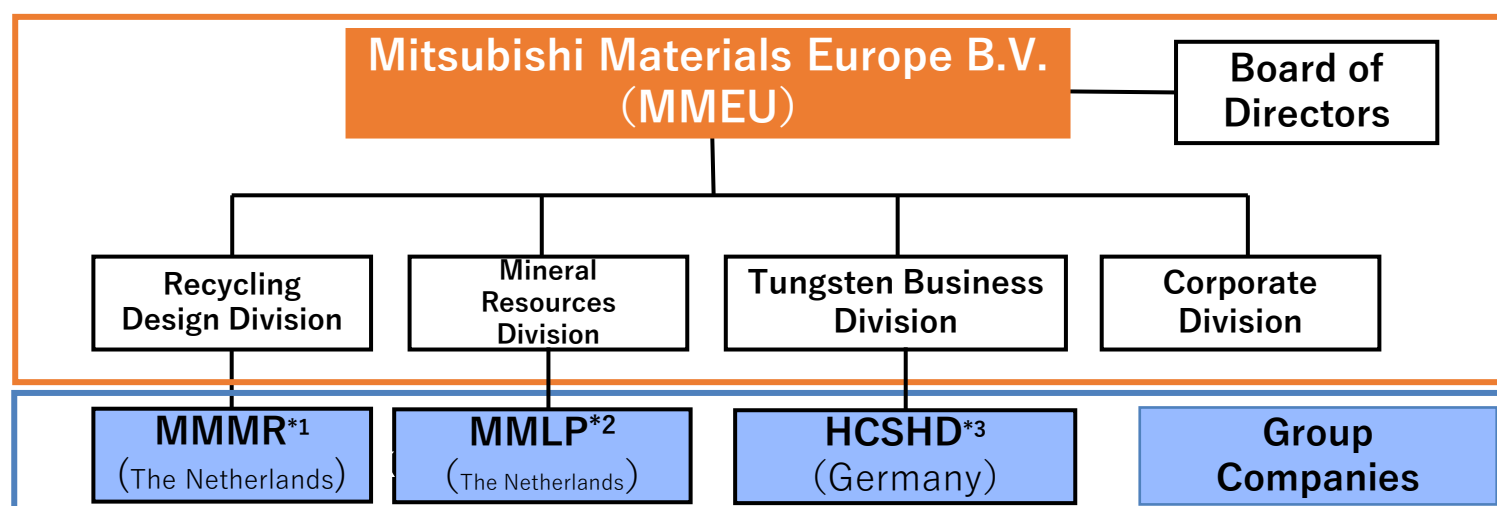
- The FY2031 Strategy plans to implement aggregate cost cuts of about ¥9.0 billion by the fiscal year ending March 2026 and about ¥24.0 billion by the fiscal year ending March 2031.
- Regarding cost reduction in each business in the fiscal year ending March 2024, additional cost reduction measures progressed in Metals business and Metalworking Solutions business, and moved largely as planned in Advanced Products business. In the fiscal year ending March 2025, we will also promote cost reduction measures in each segment.

(Billions of yen)

Cost Reduction Plan		FYE March 2024		FYE March 2025		Total		FYE March 2026
		FY2031 Strategy Plan	Result	FY2031 Strategy Plan	Forecast	FY2031 Strategy Plan	Forecast	FY2031 Strategy Plan
<b>Metals</b>	• Reduction of hedging costs, slag costs, and energy costs	0.0	4.7	0.01	6.3	0.01	11.0	2.6
<b>Advanced Products</b>	Copper & Copper Alloy • Yield rate improvement, fixed cost reduction (labor, outsourcing, etc.) Electronic Materials & Components • Fixed cost reduction (labor, etc.), productivity improvement	1.7	1.6	0.8	1.8	2.4	3.3	3.2
<b>Metalworking Solutions</b>	• Reduction of manufacturing costs • Cost reduction at subsidiaries	0.9	2.1	1.0	1.6	1.9	3.7	3.0
<b>Renewable Energy</b>	• Reduction of operating expenses of power plants • Improvement of operational efficiency through automatic operation of power plants, etc.	0.0	0.2	0.02	0.0	0.02	0.03	0.02
<b>Total Business</b>		<b>2.6</b>	<b>8.4</b>	<b>1.8</b>	<b>9.7</b>	<b>4.4</b>	<b>18.1</b>	<b>8.8</b>

### Status of Mitsubishi Materials Europe B.V.

- Mitsubishi Materials Europe B.V. (MMEU) was established on September 1, 2024 (MM Netherlands B.V. changed its name, expanded and reorganized its functions)
- We will further strengthen the competitiveness of our resource recycling business by establishing a base in Europe, which has a large market and is at the forefront of policies related to the environment and securing important mineral resources, and by formulating business strategies in the European region and developing them promptly and accurately.
- Currently, H.C. is proceeding smoothly with the acquisition of H.C. Starck.



\*1 MM Metal Recycling B.V.

\*2 MMLP Holding B.V.

\*3 H.C.Starck Holding (Germany) GmbH

\*4 Tungsten scrap from used cemented carbide tools, etc.

### 3. Metals business

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## Overview of the Metals Business

Business	Business Overview	Strengths	Revenue Structure	Market Opportunities and Prospects
Resource Business	<ul style="list-style-type: none"> <li>Investment in overseas copper mines for stable procurement of clean copper concentrates</li> </ul>	<ul style="list-style-type: none"> <li>Years of experience in operating mines</li> <li>Long-lasting friendly relations with giant resource corporations</li> </ul>	<p>¥19.4 billion</p> <p>FYE March 2024 Ordinary profit</p>	<p>&lt;Market opportunities&gt;</p> <ul style="list-style-type: none"> <li>Review strategies according to the willingness of giant resource corporations to develop copper mines and decarbonization</li> </ul> <p>&lt;Market prospects&gt;</p> <ul style="list-style-type: none"> <li>Increase in taxes, more stringent regulations, and opposition to development due to resource nationalism and raised environmental awareness</li> <li>New ore deposits that are deeper, located in isolated districts, deteriorated in quality, and contain more impurities</li> </ul>
Smelting & Resource Recycling Business	<ul style="list-style-type: none"> <li>Smelting of non-ferrous metals from copper concentrates, scrap metal and waste, etc.</li> <li>Sales of copper cathode, gold, silver, PGM(*), tin, lead and by-products (sulfuric acid/gypsum, etc.) (*) Platinum-group metals</li> <li>Home appliance recycling, automobile recycling</li> </ul>	<ul style="list-style-type: none"> <li>Utilizing Mitsubishi's continuous copper smelting process boasting high efficiency and low environmental impact</li> <li>World's No. 1 E-Scrap processing capacity</li> <li>Advanced recycling technology and business foundation</li> <li>Consistent manufacturing system from raw materials to products</li> <li>Diverse production bases (copper, lead, tin, precious metals, PGM)</li> <li>Technology to recover rare earth metals, etc.</li> <li>Possession of recycled metal brands</li> </ul>	<p>¥11.6 billion</p> <p>FYE March 2024 Ordinary profit</p>	<p>&lt;Market opportunities&gt;</p> <ul style="list-style-type: none"> <li>Enhance recovery and commercialization of trace constituents in production processes</li> <li>Transition to a recycling-oriented and decarbonized society</li> <li>Interest in economic security</li> <li>Expansion of E-Scrap market in line with growing environmental awareness</li> <li>Copper consumption that is on the rise in the medium to long term</li> <li>Depletion of mineral resources: Increase in demand for recycled resources</li> </ul> <p>&lt;Market prospects&gt;</p> <ul style="list-style-type: none"> <li>Intensifying competition for the collection of E-Scrap</li> <li>Legislation on E-Waste management in each country</li> <li>Deterioration of mining purchasing conditions due to strained supply and demand for copper concentrates</li> <li>Reorganization of manufacturers</li> <li>Municipal trends</li> </ul>



Business Environment - Environment Surrounding Copper Mining -

Item	Business Environment Outlook
1 Global copper demand	<p>● Demand is expected to be more than double in 2050 compared to 2020. (25 million tons → 57 million tons)</p> <div><div><p>Unit: million tons</p><p><u>Electric and electronic Sector</u></p><p>Increase by 9.3 million tons</p><p>9.8 → 19.1</p></div><div><p>Unit: million tons</p><p><u>Construction Sector</u></p><p>Increase by 4.5 million tons</p><p>6.2 → 10.7</p></div><div><p>Unit: million tons</p><p><u>Industrial Machinery Sector</u></p><p>Increase by 4.3 million tons</p><p>4.4 → 8.7</p></div></div> <p>Source: Copper-The Pathway to Net Zero (ICA March 2023)</p>
2 Global copper mine production outlook	<p>● Production of copper concentrate from mines is expected to decrease after peaking around 2025.</p> <p>● Production costs at mines are expected to rise.</p> <p>● The quality of copper concentrates is expected to decline (already declining)</p>
3 Environment surrounding copper mine development	<p>● The rise of resource nationalism</p> <ul style="list-style-type: none"><li>• Increase in royalties</li><li>• Nationalization of mines, mining contracts with the state</li></ul> <p>● Strengthening of environmental regulations and protracted acquisition of permits</p> <ul style="list-style-type: none"><li>• Glacier Protection Law</li><li>• Restricted Resources Protection Law</li></ul> <p>● Community backlash</p> <ul style="list-style-type: none"><li>• Increased difficulty in gaining community understanding</li></ul>



## Business Environment - Environment Surrounding the E-Scrap Business -

### External environment

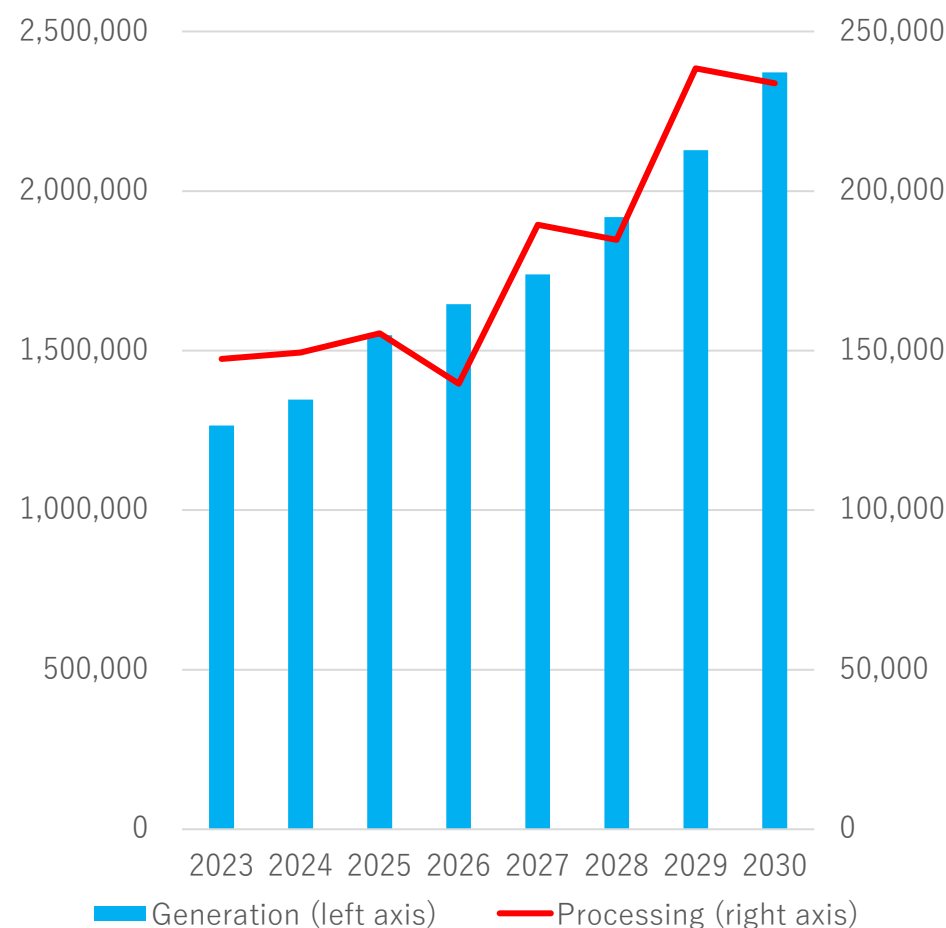
- Control of cross-border movement of E-Waste has become stricter due to the revision of the Annex to the Basel Convention and the revision of the European Waste Transport Regulation (WSR).
- Excessive competition in the procurement of copper concentrates as primary raw materials has continued, and the importance of recycled raw materials has increased relatively.
- Competitors are actively engaged in collection activities such as planning to operate recycling furnaces and sampling yards.

### Internal environment

- We have an E-Scrap information network with recyclers in more than 60 countries around the world.
- Appropriately complies with relevant laws and regulations by obtaining certification for OECD pre-certified facilities and Basel pre-consenting facilities.
- Capital investments have been made, including the opening of the second E-Scrap center in Naoshima Smelter & Refinery, the establishment of a receiving system in Onahama Smelter & Refinery, and the expansion of a E-Scrap center in the Netherlands, and plans to expand the network in the future.
- A user-friendly system has been built by enhancing the functions of MEX (Mitsubishi Materials E-Scrap EXchange), an online platform, to ensure transparency of transactions.

**Our Company's E-Scrap processing volume maintains world's top class**  
Our processing capacity: 160,000 tons (2023) → 240,000 tons (2028)

Forecast of E-Scrap generation and our company processing results



Source: Our company's estimates



## Resources Business

### Target for FYE March 2031 / Leader in Resource Recycling of Nonferrous Metals

- Amount of copper concentrate secured from mines held in interest: 500,000 tons or more
- Establishment of a supply system for copper cathode (including SX-EW \* 1)

#### Business Environment

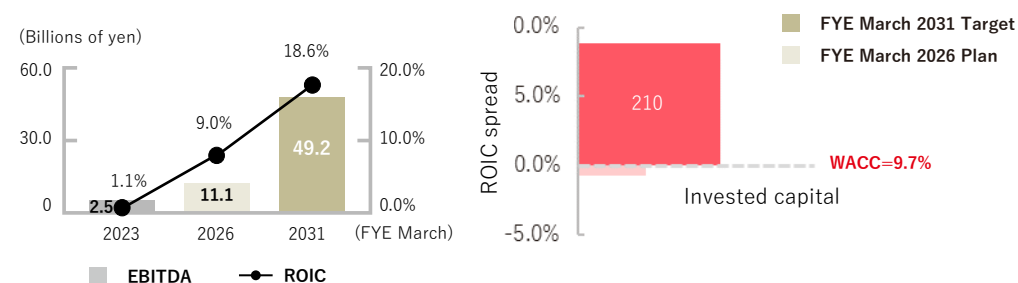
- Demand for copper will continue to increase, but supply will not keep pace with the increase in demand after FYE March 2026, resulting in a shortage of 5.5 million tons in FYE March 2031
- Amount of copper concentrate secured from mines held in interest in our company remains at 180,000 tons
- Production costs at mines will rise even further
- Demand for rare metals such as cobalt will expand, but supply will be short

#### Business Strategy

#### FYE March 2024 to FYE March 2031

- Promotion of technological development to secure and recover rare resources contained in copper deposits
- Acquiring interests through continuous mining investment and securing stable copper concentrates
- Expansion of copper supply by SX-EW at copper mines

#### EBITDA, ROIC, EP



#### Important Measures

#### FYE March 2024 to FYE March 2031

- Promotion of the Mantoverde sulfide ore project (including development of new technologies such as cobalt recovery)
- New participation in medium-scale copper mines
- Participation in wet smelting at copper mines
- Amount of copper concentrate secured: Current 180,000 tons ⇒ 500,000 tons or more by FYE March 2031 (Naoshima and Onahama Smelter & Refinery's copper concentrate processing: Approx. 10% ⇒ Approx. 30%)

\*1 SX-EW: Solvent extraction and electrowinning - A hydrometallurgy process comprising solvent extraction and electrowinning



## Resources Business

### Promotion of Mantoverde Sulfide Ore Development Project

(See the next slide)

- Production of copper concentrate at the Mantoverde copper mine (30% stake in our Company) started in June 2024, and our Company started receiving copper concentrate in Naoshima Smelter & Refinery in October. It is a clean ore with few impurities, and we expect stable supply of copper resources for a long time until 2042.

### New Participation in Medium-sized Copper Mines

- Capital participation in Western Copper and Gold Corporation (30% share in our Company) in March 2023 and participation in Casino copper mine project.
- Production is scheduled to start in 2030 and the mine life is 27 years. It is expected to be a clean ore with few impurities, and stable supply of copper resources for a long period.

### Amount of Copper Concentrate Secured

- Our company plans to secure more than 500 thousand tons of copper concentrate in the fiscal year ending March 2031 from 150 thousand tons in the fiscal year ended March 2023.
- As a result of the start of copper concentrate production at the Mantverde copper mine, the amount of copper concentrate has increased to 180,000 tons and is progressing as planned.



## Commencement of Copper Concentrate Production at the Mantoverde Copper Mine in Chile

Major construction works, such as the concentrator in the deep sulfide ore development project were successfully completed, and the mine shifted to full-scale production as of November 2024. We began receiving copper concentrate in Naoshima in October 2024.

< Concentrator >



< Aerial overview >



### Objective

- This project is part of our strategy to “acquire interests through continuous mining investment and secure stable copper concentrates” in the FY2031 Strategy.
- We plan to develop technology for a process to separate and recover trace amounts of cobalt, and in the future, we plan to carry out recovery of valuable metals in other mines owned by our company.

### Mantoverde Copper Mine Project

- Location: Atacama Region, Northern Chile
- Interest: Capstone Copper 70%, Mitsubishi Materials 30%
- Mine life: 2042



## Smelting & Resource Recycling Business

### Target for FYE March 2031 / Leader in Resource Recycling of Nonferrous Metals

- Major and cutting-edge operator in resource recycling of nonferrous metals
- Expansion of recycled products including nonferrous metals, not limited to E-Scrap
- Becoming a core supplier in the resource recycling loop based on copper cathode's world-class supply capacity

#### Business Environment

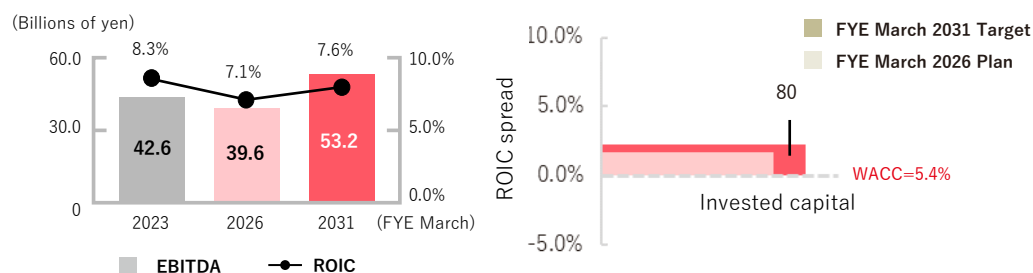
- Growing need for recycling rare resources (Rare Earths, Cobalt/Nickel, PGM \* 1, etc.) from an economic security perspective
- Increasing customer interest in a circular economy

#### Business Strategy

#### FYE March 2024 to FYE March 2031

- Strengthening and Expanding the Network for Promotion of resource circulation
- Expansion of copper cathode Production Capacity
- Increasing the Recycling Rate by Expanding the Treatment of E-Scrap
- Creation of Rare Earth and Rare Metal Recycling Business
- Accelerating Domestic and Overseas Expansion (E-Scrap, Home Appliances, Automobile Recycling)

#### EBITDA, ROIC, EP



#### Important Measures

#### FYE March 2024 to FYE March 2031

- Enhancement of E-Scrap processing capacity at Naoshima (up 32%)
- Enhancement of E-Scrap processing capacity by introducing pretreatment facilities at Onahama (up 120%)
- Enhancement of MEX \* 2 functions
- Commercialization and expansion of LIB recycling
- Construction and expansion of the foundation for recycling metal resources from EVs
- Expansion of scope and scale of rare metal recovery
- Establishment of domestic recycling centers \* 3
- Promotion of alliances and M & A for resource recycling business development in global markets

\*1 Platinum Group Metals Platinum group metals such as platinum, palladium, and rhodium

\*2 Mitsubishi Materials E-Scrap EXchange, E-Scrap business platform provided by our Company.

\*3 Base for collecting parts disassembled from home appliances and automobiles and processing them suitable for recycling



## Major Progress on Important Measures in the Smelting & Resource Recycling Business

Increased copper concentrate and E-Scrap processing capacity at Naoshima

(See the next slide)

- In light of the future depletion of natural resources and the increase in the amount of recycled raw materials generated, as well as the growing demand for metal resource recycling, we revised its plan to increase the processing capacity of E-Scrap while limiting the increase in copper concentrate processing capacity.

Enhancement of E-Scrap processing capacity by introduction of pretreatment facilities at Onahama

(See the next slide)

- Introduction of a pretreatment furnace as planned (scheduled to start operation in 2029) and conversion to a smelter superior in processing recycled raw materials.

Commercialization and expansion of LIB recycling

- A pilot plant is under construction in Iwaki, Fukushima Prefecture (scheduled to start operation in FYE March 2026).
- Aimed at commercialization in FYE March 2029.

Alliance for resource recycling business in the global market

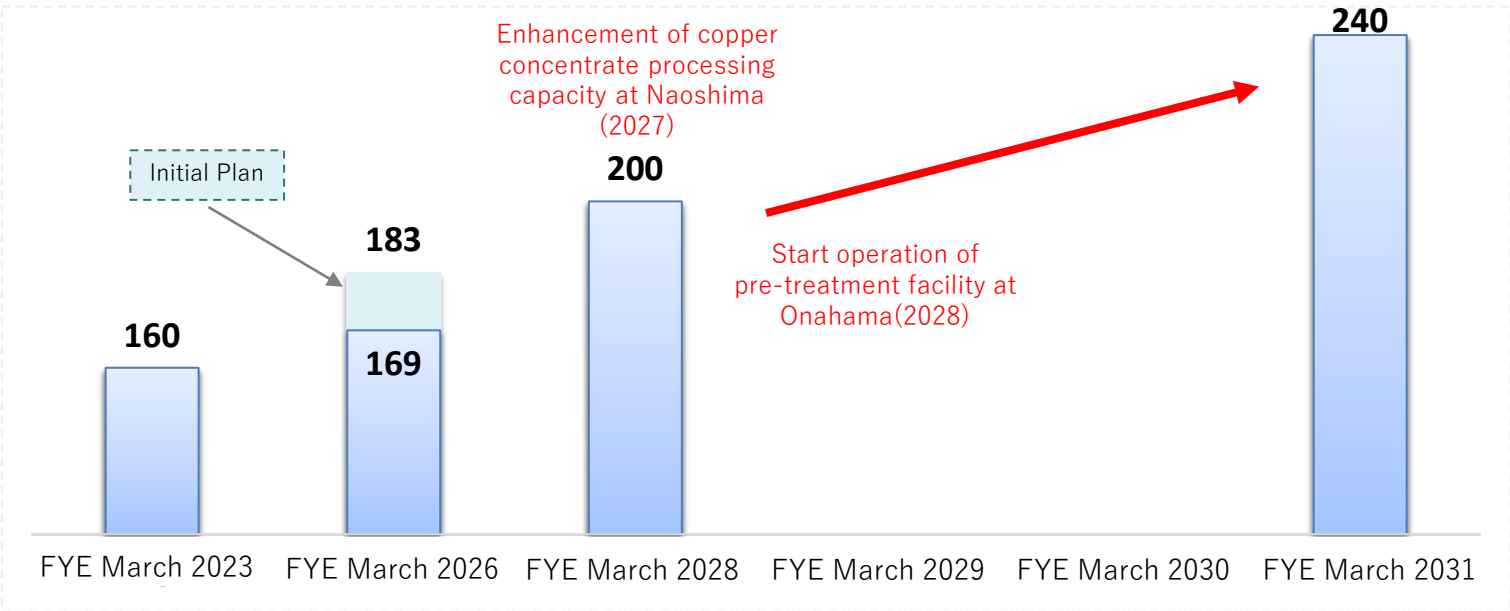
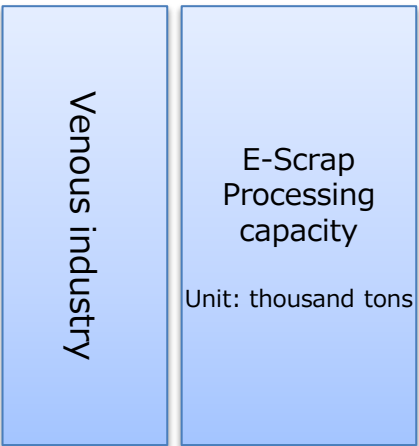
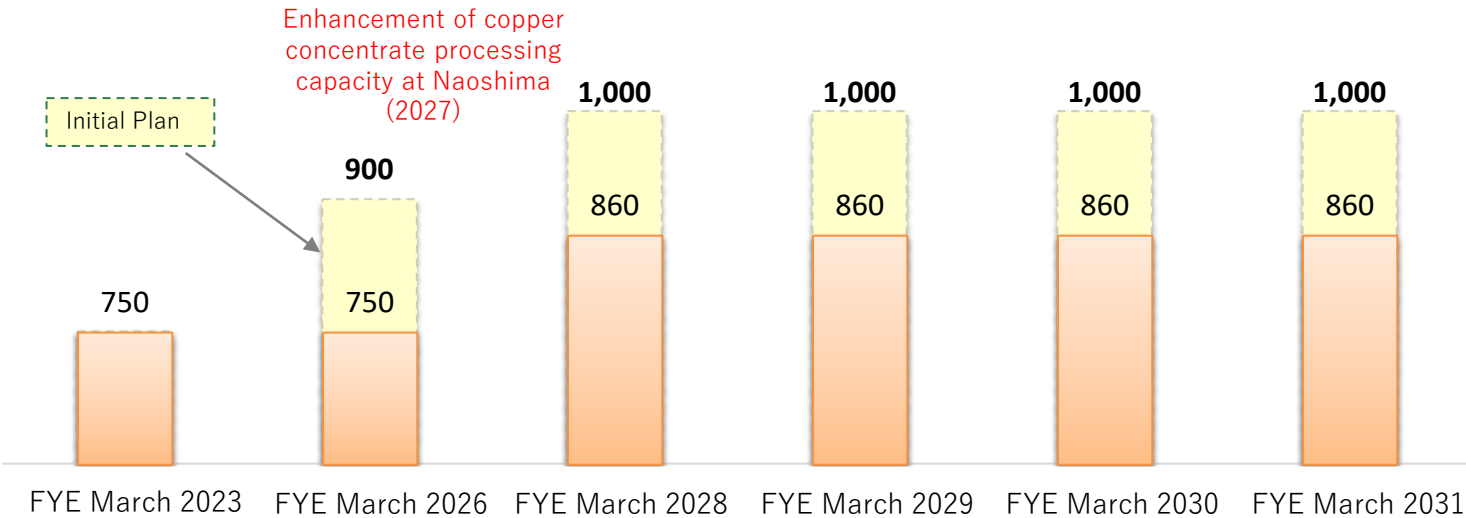
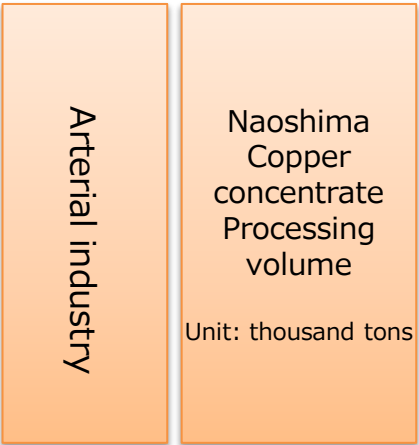
- We will promote the Exurban project aiming at smelting using only recycled raw materials.
- In July 2024, we entered into an MoU with JMI, a major recycler in Malaysia, to consider a joint venture to expand the home appliance recycling business in Malaysia.





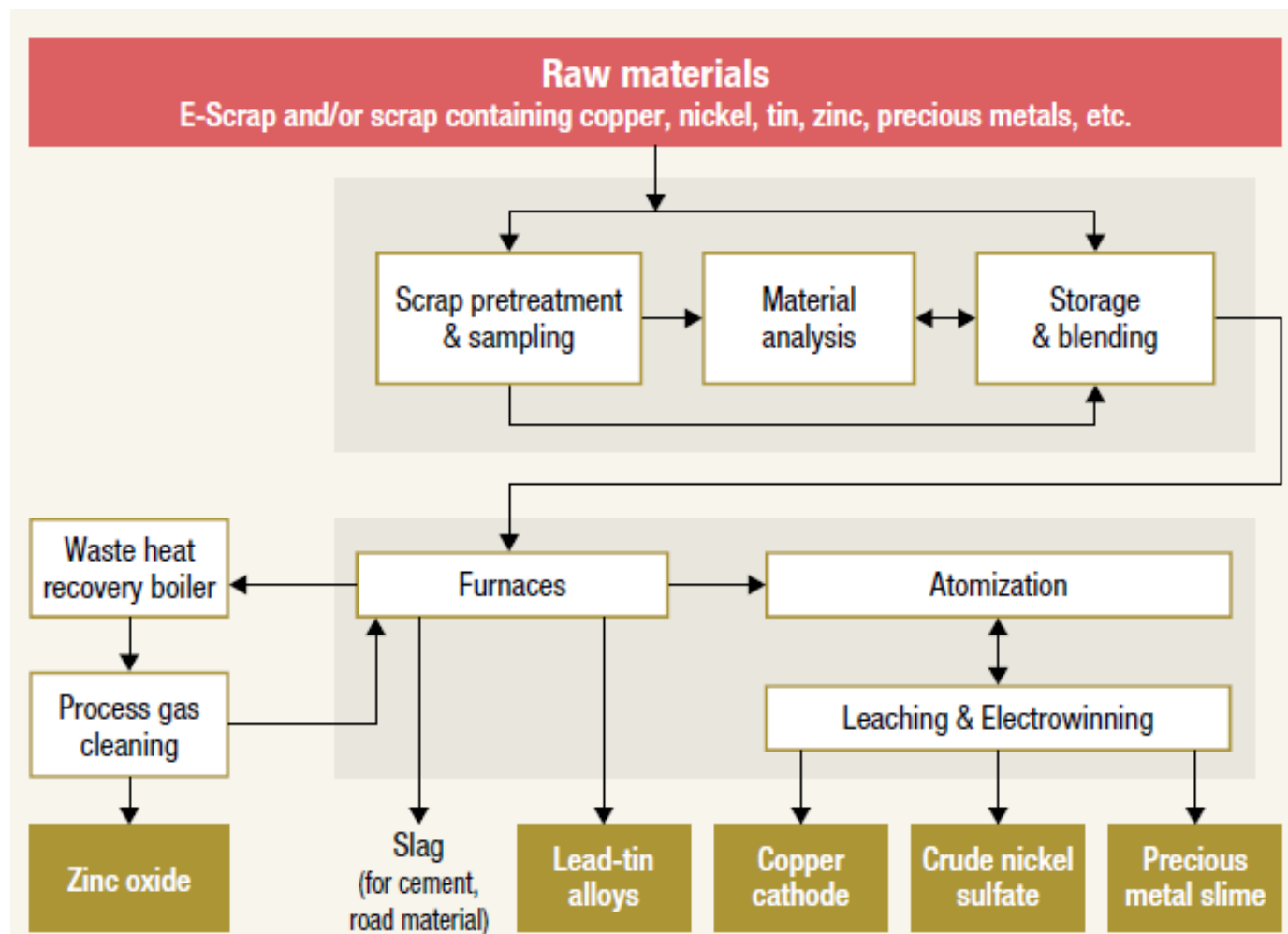
Expansion of Arterial and Venous Industries

Based on market conditions, we will increase the processing capacity of E-Scraps while reducing the processing capacity of copper concentrate





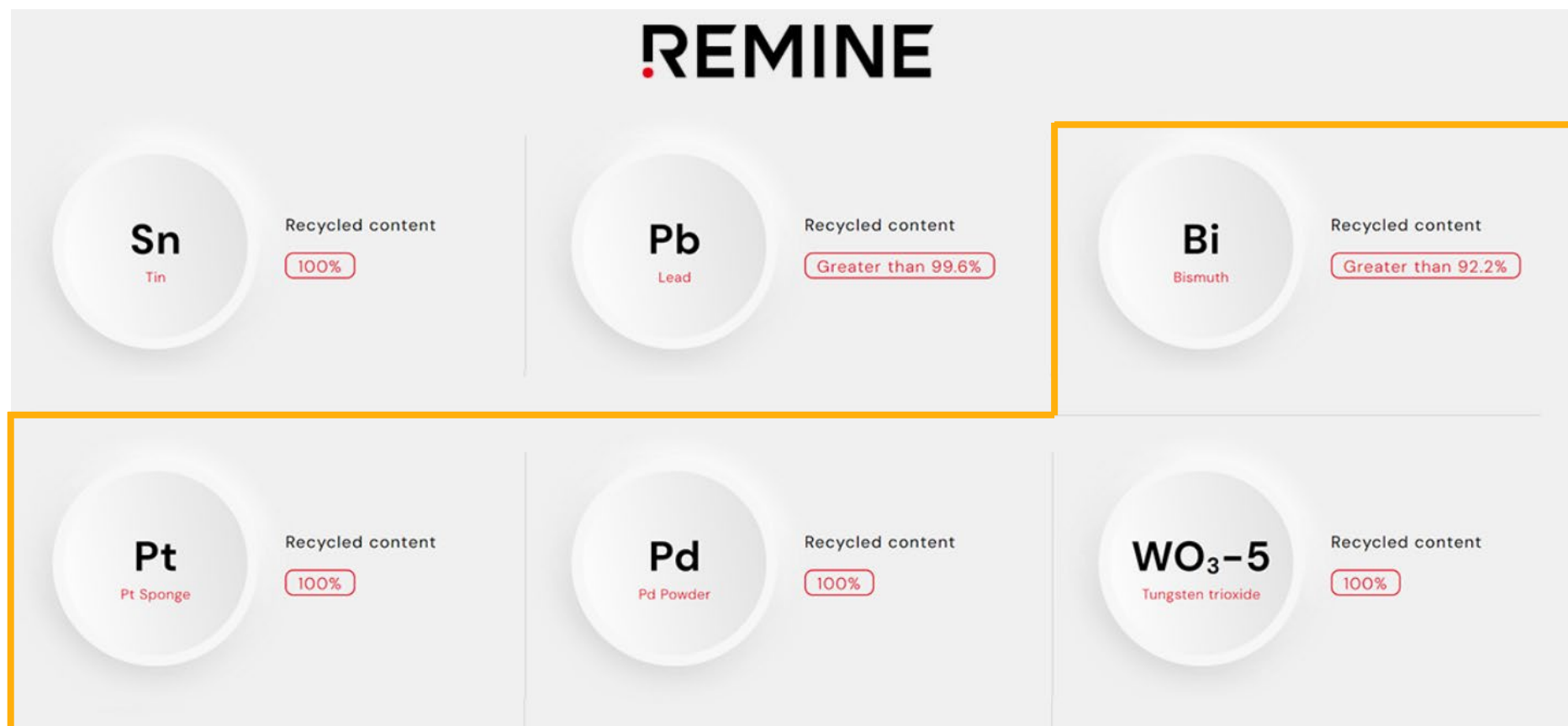
## Promotion of the Exurban Project




- The project aims to realize a recycling plant specializing in E-Scrap and other metal recycling materials.
- In addition to establishing a resource recycling base in North America, the project aims to acquire smelting technology using only scrap materials, including E-Scrap, through joint development with Exurban, and expand the technology beyond North America.
- We are in the process of accelerating the study process for the construction of a smelter in Indiana, U.S., while promoting joint development.



## Expansion of Recycled Metal Brand “REMINE”









 Added with this expansion

- Launched Japan's first recycled metal brand, “REMINE,” which clearly shows the content of recycled materials. In addition to the first tin and lead products, the second series of products, bismuth, platinum, palladium, and tungsten trioxide, went on sale on December 10, 2024.
- The recycled content was calculated in accordance with the international standard ISO14021 (JIS Q14021), and verified by a third-party organization (SGS Japan Inc.) to ensure higher reliability.
- Updated the dedicated website at the same time as the brand expansion.
- Tin and lead are highly rated by some customers in Japan and overseas.

## 4. Advanced Products Business

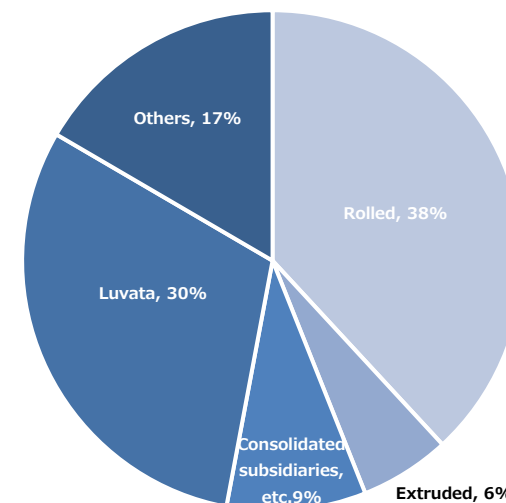
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## Business Overview (Copper & Copper Alloy Business)

Key Markets	Uses	Main Product Groups		Strengths
Automobiles Transport equipment	Terminals and connectors	In-vehicle terminals Copper strips for busbars		High-performance copper alloy casting/processing technologies
		Plating		Development capabilities
	Automotive parts	Lead-free brass		Development capabilities
Semiconductors Electronics	Semi conductors	Lead frames		High-performance copper alloy casting/processing technologies
	Electronics	Copper strips for heat sink		High-quality oxygen-free copper casting/processing technologies
Infrastructure Industrial equipment Medical equipment	Equipment parts	Copper rods Busbars		Oxygen-free copper/copper alloy casting and processing technologies
	MRI parts	Superconducting wires		Manufacturing/processing technologies

### Sales Structure, Market Outlook

**[2023 Results] Copper Processing \_  
Net sales Composition Ratio**



- The overall automotive market has been sluggish, with a moderate recovery in the second half of fiscal 2024.
- In the semiconductor market, only the advanced fields such as generative AI are performing well, and although the overall bottom has come out, the market has remained at a low level.
- Our company will work to optimize its value chain in response to the growing preference of major customers for local production for local consumption and the rising prices of transportation and energy.

Business Overview (Electronic Materials & Components)

Key Markets	Uses	Main Product Groups		Strengths	Sales and Market Outlook
Automobiles Transport equipment	Automotive glass interlayers	Heat-ray shielding paints		<ul style="list-style-type: none"> <li>Characteristic raw materials</li> <li>Dispersion technologies</li> </ul>	<div> <div>[2023 Results] Electronic Materials&amp; Components_Net sales Composition Ratio</div>  </div>
	Automotive parts	Thermistor sensors		<ul style="list-style-type: none"> <li>Device development capabilities</li> <li>Customization capabilities (Injection molding technologies)</li> </ul>	
Semiconductors Electronics	Semiconductor element bonding materials	Low alpha solders		<ul style="list-style-type: none"> <li>Characteristic raw materials</li> <li>Evaluation technologies</li> </ul>	
	Semiconductor manufacturing equipment parts	Silicon processed products		<ul style="list-style-type: none"> <li>Material technologies</li> <li>Production processes (microfabrication technologies)</li> </ul>	
		Sealing products		<ul style="list-style-type: none"> <li>Material compounding technologies</li> <li>Custom shape designs</li> <li>Analysis/analytical technologies</li> </ul>	<div> <ul style="list-style-type: none"> <li>➤ The next-generation automobile market is expected to continue to expand, and we will enter the market mainly in thermistor sensor.</li> <li>➤ The semiconductor materials market is expected to expand in the medium to long term, although it is currently at a standstill, so we will build a production increase system to prepare for future demand expansion and conduct product development and business development to win orders for new products.</li> </ul> </div>

## Priority Measures in the FY2031 Strategy's

Targets  
Global First Supplier

Growth Strategy  
in the FY2031  
Strategy

- Pursue Concept In to capture business opportunities.
- Refine and combine core competencies to create new products and businesses
- Continuously strengthen earning power through digitalization.
- Restructuring of supply chain with recycling process in mind

	Priority measures in the FY2031 Strategy	Results for FYE March 2024	Plans for FYE March 2025 and beyond
Copper & Copper Alloy	<ul style="list-style-type: none"> <li>➤ Planning to expand the scale of the rolling business in Japan and to expand overseas</li> <li>➤ Rationalization of extrusion production processes</li> <li>➤ Expansion of LUVATA individual businesses</li> <li>➤ Cost reduction through productivity improvement and organizational rationalization</li> </ul>	<ul style="list-style-type: none"> <li>➤ Formulating a plan for the installation of equipment to increase production</li> <li>➤ Rolling: <u>Promoting new investment of slitters and packing machines in Wakamatsu Plant and washing machines, slitters and packing machines in Sambo Plant</u></li> <li>➤ Sakai Plant's billets &amp; cakes <u>production expansion completed</u></li> <li>➤ Extrusion: Promotion of <u>process rationalization</u></li> </ul>	<ul style="list-style-type: none"> <li>➤ Rolling: <u>Production increase start-up completed, full-scale operation started</u></li> <li>➤ Extrusion: <u>Production increase of pure copper-based products and promotion of process rationalization</u></li> </ul>
Electronic Materials & Components	<ul style="list-style-type: none"> <li>➤ Expansion of precision silicon products, columnar, seal and thermistor sensor</li> <li>➤ Creating new businesses</li> <li>➤ Enhancing manufacturing capabilities</li> <li>➤ Strengthening cost competitiveness</li> <li>➤ Enhancing earning power through DX promotion</li> </ul>	<ul style="list-style-type: none"> <li>➤ Building partnerships with important customers</li> <li>➤ <u>Establishing a base for increasing seal production</u></li> <li>➤ <u>Developing xEV products</u> in thermistor sensor</li> <li>➤ Establishment of organizational structure for new business creation</li> <li>➤ <u>Introduction of automated equipment</u> in manufacturing processes</li> <li>➤ Full-scale use of sales management systems</li> </ul>	<ul style="list-style-type: none"> <li>➤ Expanding sales to important customers and obtaining orders for new products</li> <li>➤ <u>Increasing production of columnar crystals and seals Operation and improvement of production efficiency</u></li> <li>➤ Entering the xEV thermistor sensor <u>market and expanding sales</u></li> <li>➤ <u>Acceleration of new business creation activities</u> under new organizational structure</li> <li>➤ Manpower saving and quality stabilization through automation</li> <li>➤ enhancement of customer touch points through active use of sales management systems</li> </ul>

## Market Conditions and Responses in the Copper & Copper Alloy Business

### Domestic market for wrought copper products

- Domestic production of wrought copper products recovered to 772 thousand tons in 2021 from 656 thousand tons in 2020 due to the impact of COVID-19 pandemic.
- Thereafter, production of wrought copper products is expected to be 658 thousand tons in the fiscal year ending March 2025 due to supply chain disruptions caused by the Ukrainian war, delayed recovery of automobile production, and sluggish semiconductor applications (lead frame) mainly for consumer use.



#### (1) Sales measures

Expand sales to existing and new markets and customers by taking advantage of our company's strengths in function and quality, as well as the advantages of developed products (MSP5, MOFC series).

< Main target markets >

- xEV market
- Power semiconductor market
- Data center market

#### (2) Production measures

Thorough production efficiency and cost reduction.

< Key measures >

- Rationalization of production processes, including consolidation of low-efficiency production facilities
- Inventory reduction and lead time reduction
- Improvement of yield, automation and manpower saving, which we have been working on.



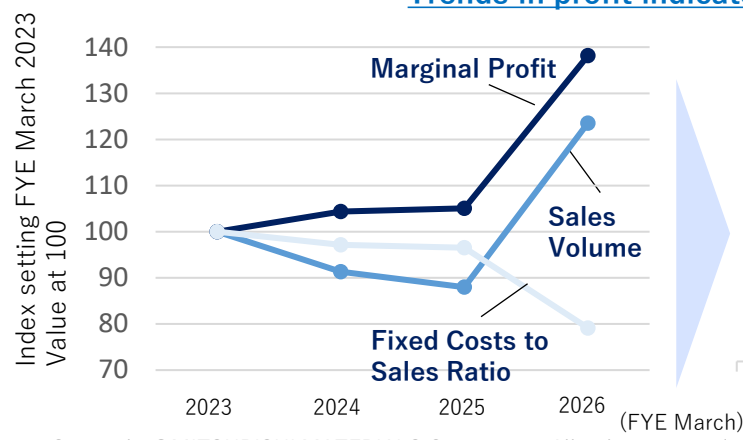
## Earnings Improvement Plan for the Copper & Copper Alloy Business (Rolling Products)

- In addition to price optimization, the profit structure of the rolling business has been strengthened by improving yield and reducing fixed costs through higher efficiency. However, the recovery in demand in the automobile and semiconductor markets will be slower than initially expected, and the increase in earnings in the FYE March 2025 full-year forecast is limited
- In addition to the above, profit for the Copper & Copper Alloy business as a whole will decrease due to differences in foreign exchange and price fluctuations caused by the suspension of copper hedging, and the Copper & Copper Alloy business ROIC for FYE March 2025 full-year forecast is forecast to be 0%, down from FYE March 2024
- In anticipation of a recovery in demand from the second half of FYE March 2025 onward, the Copper & Copper Alloy business will work to achieve the FYE March 2026 ROIC target of 4.0%, which was set in Phase1, by cutting back on the effects of increased production investment, reducing costs by reducing costs and improving productivity, and reducing interest-bearing debt.

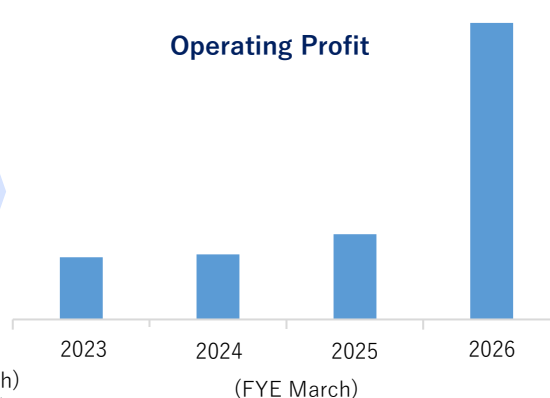
### Revenue improvement plan for rolled products

		Main ROIC improvement effects	Main improvements	Current progress
Variable Costs	Improving Yield Rates, etc.	+0.2 %	◆Improvement of production efficiency and stable production measures ◆Improvement and optimization of production processes, etc.	Generally as planned
	Product Composition, etc.			
	Increasing Sales & Production, etc.	+1.0 %	◆Replacement of variety composition, price optimization, etc.	Generally as planned
Fixed Costs		+1.4 %	◆Increased production of billets & cakes products ◆Increased production of rolled products ・Expansion of rolling facilities in Sambo Plant and Wakamatsu Plant ・Integrated sales and marketing of manufacturing, sales and development Establishment of a sales expansion system, etc.	Due to the delayed recovery of demand in the automobile and semiconductor markets, the situation is significantly lower than planned
	Cost Reductions, etc.			
		+0.1%	◆Review of some large-scale investments, etc.	Generally as planned

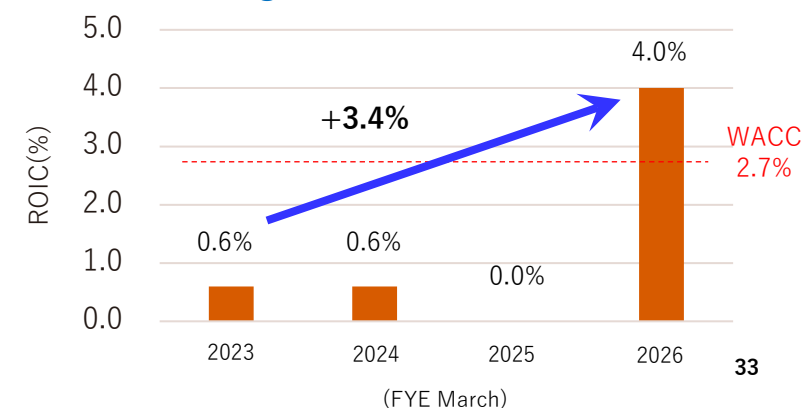
### Trends in profit indicators for rolled products



### Operating Profit



### Copper & Copper Alloy business Business Management Indicators (ROIC)



Copper & Copper Alloy Business - Capacity Expansion Investment in the Rolling Business -

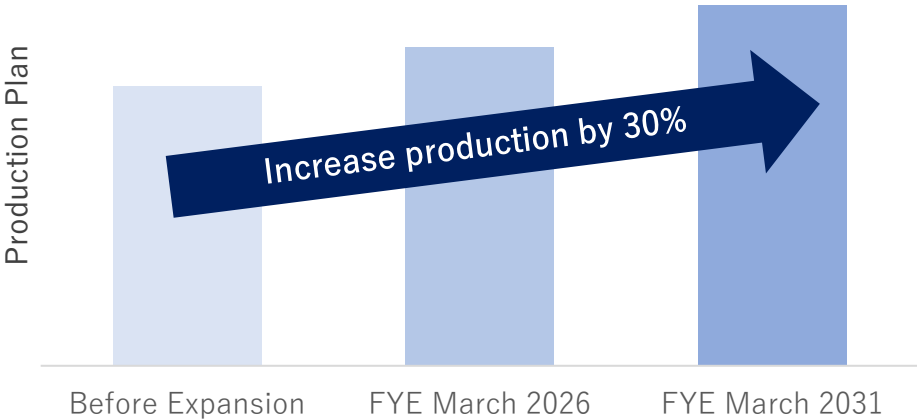
Strengthening Production Systems for Billets & Cakes (Cast) and Rolled Products



Increase production of copper sheets and strip products

- ◆ Strengthen and expand our core business (copper sheets and strip)
- ◆ Further increase our share in the domestic market
- ◆ Challenge the global market

Production capacity expansion plan for copper sheets and copper strips



		Sakai Plant	Sambo Plant	Wakamatsu Plant
Location		Sakai City, Osaka, Japan	Sakai City, Osaka, Japan	Aizuwakamatsu City, Fukushima, Japan
Products targeted for increase production		Copper cake	Copper sheet and strip	Copper strip
Plan	Increase in production	Increase production by approximately 30%		
	Investment	Enhancement of casting facilities	Installment of additional cleaning machine, slit, and packaging machine	Installment of additional slitters and packing machines and enhancement of reflow tin plating line
Commencement of operation		Completed	To be completed in December 2024	Completed

Earnings Improvement Plan for the Copper & Copper Alloy business (Growth Investment in the Luvata Group)

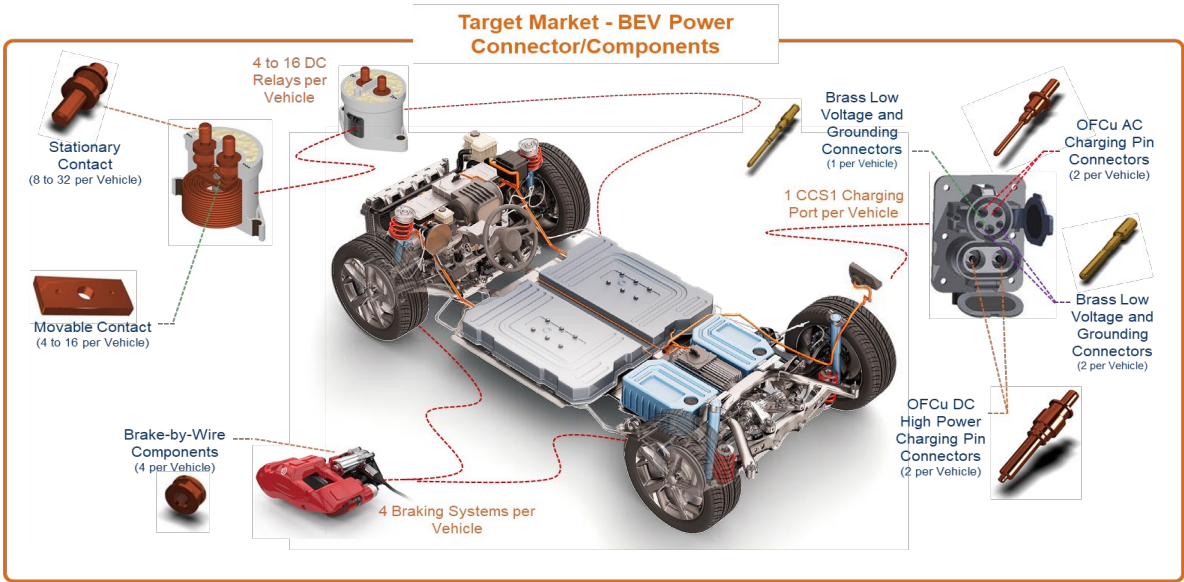
Earnings Improvement Plan for the Luvata Group (FYE March 2024 to FYE March 2026)

Major  
Improvements

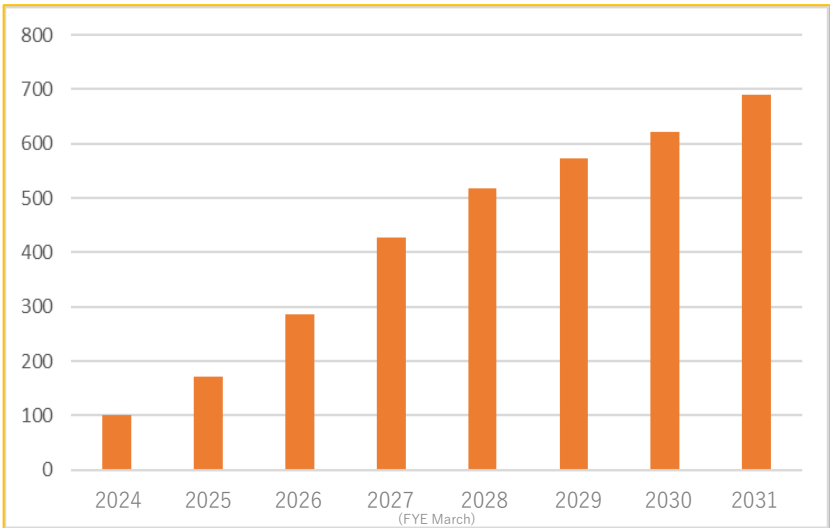
◆Production and Sales Enhancement  
In addition to business expansion and sales increase in existing businesses, we will increase production and sales in EV, superconducting wires, alloy wires, and other fields where market growth is expected in the future

Effect of  
Improving  
ROIC

+1.0 %



Luvata Group's EV Connector Sales Plan  
(FYE March 2024 = 100)

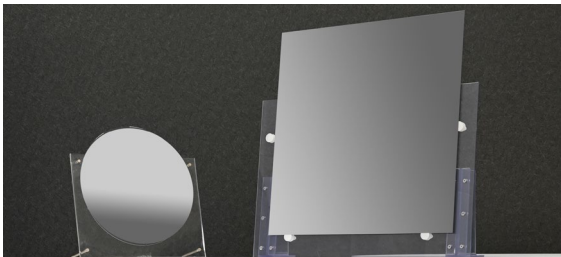


- ◆ The table above shows the number of EV connectors sold by the Luvata Group. FYE March 2024 = 100.
- The Luvata Group manufactures EV connectors at Ohio in the United States and Welshpool (formerly Dawson Shanahan) in the United Kingdom, which was acquired in May 2024.

New Product Development and Production Enhancement in the Electronic Materials & Components Business

Development of Square Silicon Substrate for Semiconductor Packages

Contributing to the improvement of productivity in the next-generation semiconductor field



(Left is  $\phi$  300 mm single crystal Si wafer (size comparison))

- ❑ World's Largest Rectangular 600 mm Square Silicon Substrate
- ❑ Applications for Next-Generation Semiconductor Packaging
- ❑ Developed by combining large silicon ingot casting technology cultivated by Group companies with our company's proprietary processing technology
- ❑ We have received many inquiries and sample requests from manufacturers of devices, equipment, and auxiliary materials

Enhancement of Seal Production System

Increased production of sealing materials for semiconductor manufacturing equipment



- ❑ Sealant for semiconductor manufacturing equipment (Plasma-resistant seal for dry etching equipment, etc.)
  - ❑ In addition to plasma resistance, PFOA \* -free
- \*Perfluorooctanoic acid.  
Its content is limited by REACH regulations.



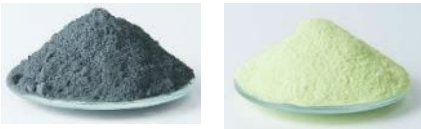
Sanda City, Hyogo, Japan	Location	Kumagaya City, Saitama, Japan
<div><p><u>Press release issued on August 21, 2024</u> (More than 40 companies. Overseas ratio 60%) Received many responses in Japan and overseas Sample shipment started in October 2024</p></div>	Progress	<div><p><u>Mass production started in August 2023</u></p></div>

## 5. Metalworking Solutions Business

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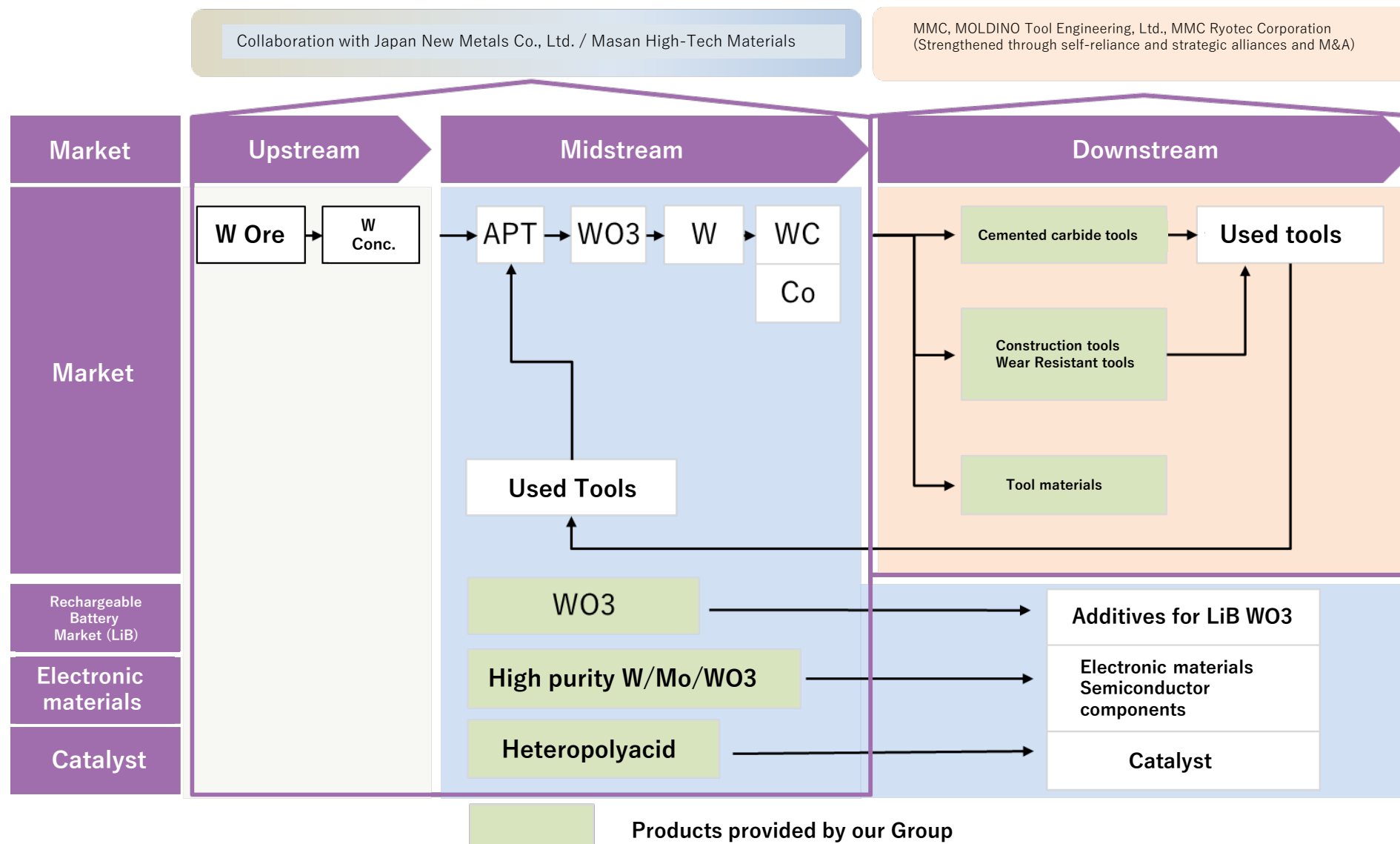


## Overview of the Metalworking Solutions Business

Major Industries	Major Products		Company	Strengths	Sales Component	Market Outlook
Automobiles Transport equipment	Cutting tools		Mitsubishi Materials Corporation · MOLDINO Tool Engineering, Ltd.  *Mitsubishi Materials holds a 100% stake	<ul style="list-style-type: none"> <li>Cemented carbide material manufacturing technologies</li> <li>Coating technologies (CVD/PVD)</li> <li>Extensive lineup (indexable tools to solid tools)</li> </ul>	80%	<ul style="list-style-type: none"> <li>A moderate recovery trend continues as the automotive and aerospace industries recover</li> </ul>
Aerospace						
Medical						
Die & Mold						
Mine excavation Secondary batteries Steel	Rock tools Wear-resistant tools		MMC Ryotec Corporation  *Mitsubishi Materials holds a 100% stake	<ul style="list-style-type: none"> <li>Cemented carbide material manufacturing technologies</li> <li>Design capabilities as strength in wear-resistant and rock tools</li> </ul>	11%	<ul style="list-style-type: none"> <li>Continued recovery in mining, construction, and secondary battery markets</li> </ul>
Cemented carbide Semiconductors Secondary batteries	Tungsten powder  Advanced metal powder		Japan New Metals Co., Ltd.  *Mitsubishi Materials Corporation 88.75%, Mitsubishi Materials Trading Corporation 11.25%	<ul style="list-style-type: none"> <li>Integrated production, from tungsten recycling to smelting</li> </ul>	9%	<ul style="list-style-type: none"> <li>Increasing demand for high-melting materials with the growth of electronic components</li> </ul>

## Overview of the Metalworking Solutions Business

- We are expanding our business from upstream to downstream areas, focusing on the downstream sector. Moving forward, we will also strengthen the midstream sector through the acquisition of H.C. Starck.



W/WC: Tungsten/Tungsten Carbide






Progress of Priority Measures for the FY2031 Strategy

Target  
A Leading Company in Tungsten Products Recognized by Customers Globally

Growth  
Strategy in the  
FY2031  
Strategy

- Cemented Carbide Tools business: Stable provision of high-efficiency products utilizing strengths in materials and coating technology
- Tungsten business: Expanding business scale for rechargeable batteries in addition to cemented carbide tools and strengthening environmental capabilities
- Solutions business: Commercialization of “solutions” sales to manufacturing sites

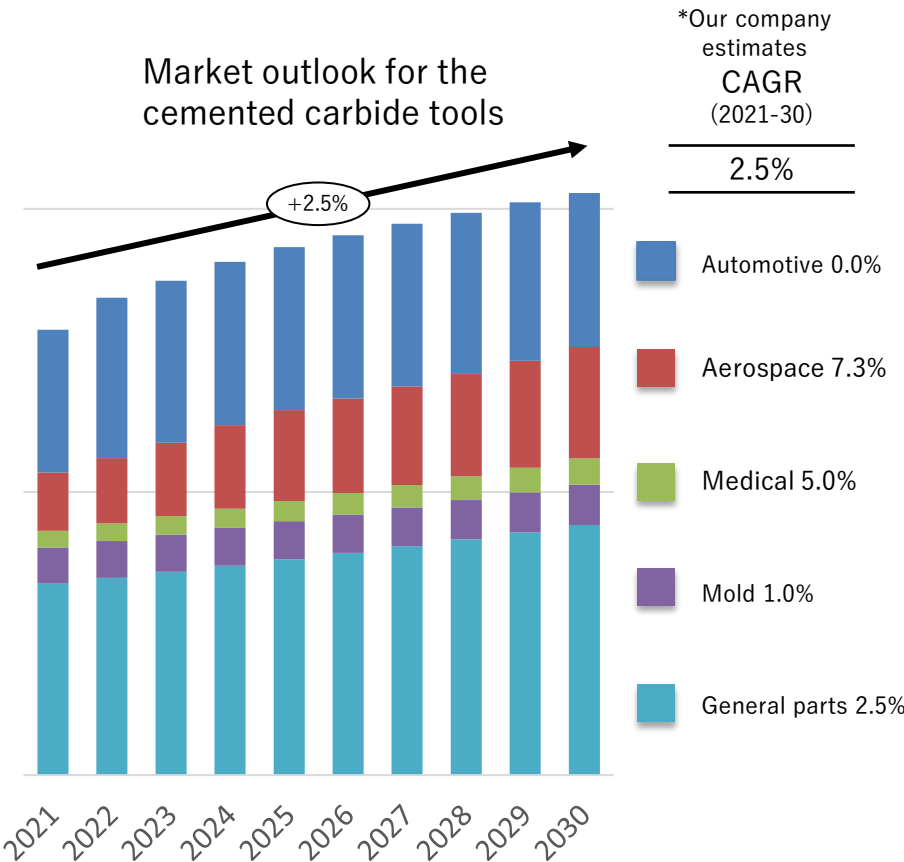
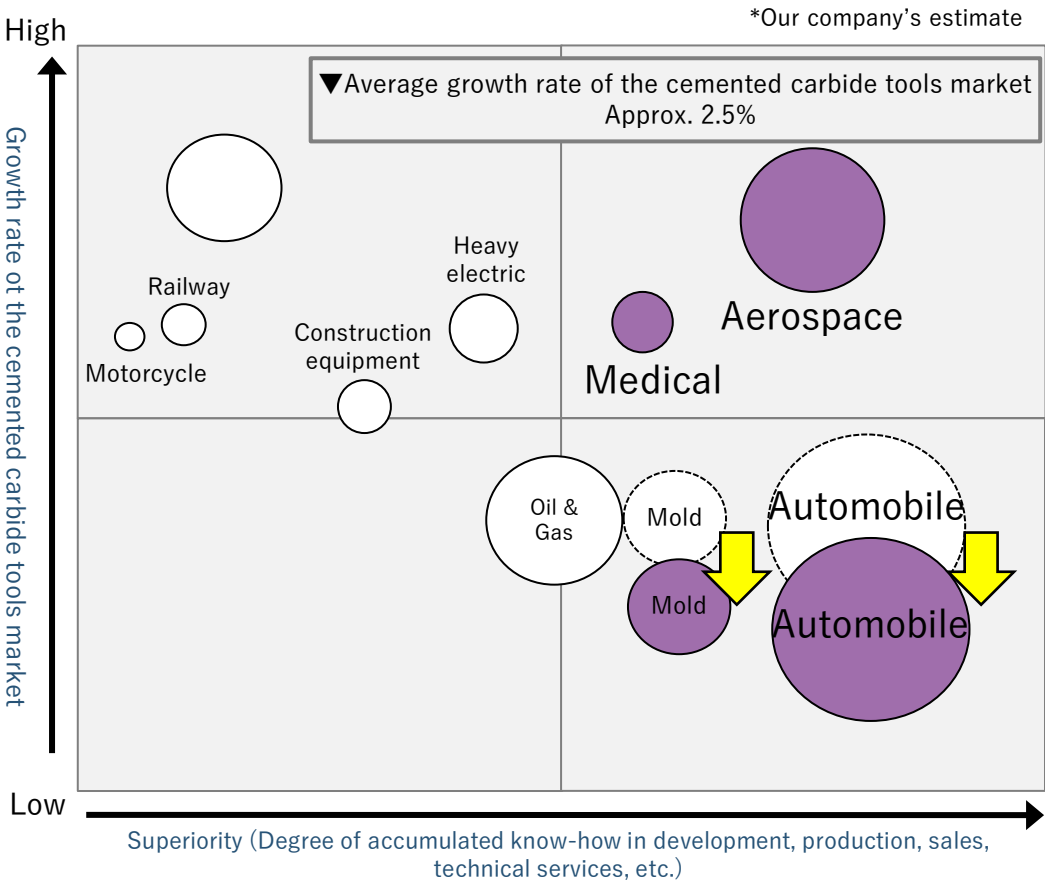
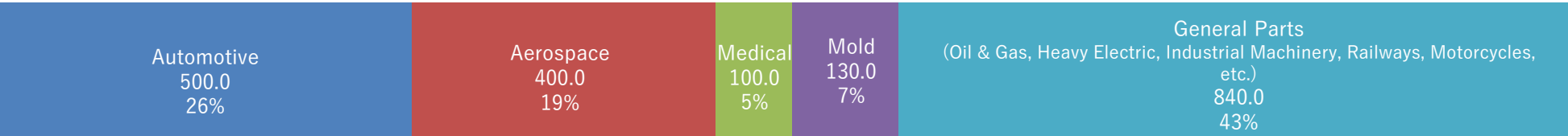
Priority Measures in the FY2031 Strategy		FYE March 2024 – 2025 Results	Plans for FYE March 2025 and beyond
Cemented Carbide Tools business	<ul style="list-style-type: none"><li>➢ Provision of high-efficiency products that enhance production and environmental efficiency</li><li>➢ Realization of high-efficiency, high-quality manufacturing by conversion to a smart factory</li><li>➢ Reduction of environmental impact and GHG emissions through clean manufacturing</li><li>➢ Strengthening local market response and supply chain resilience</li></ul>	<ul style="list-style-type: none"><li>➢ <u>Continuous release of new high-efficiency products</u> for steel and cast iron processing and high-precision processing of small goods</li><li>➢ Promoting <u>automation and saving of inspection processes and automation of production facilities</u> as conversion to a smart factory's initiatives</li><li>➢ Metalworking Solutions business achieved <u>28% renewable energy conversion in FYE March 2024</u>. The FYE March 2025 plan is 33%.</li><li>➢ Reorganization of global production system, including expansion of overseas plants</li></ul>	<ul style="list-style-type: none"><li>➢ Stable provision of high-efficiency products utilizing strengths in material development and coating technology</li><li>➢ Expansion of cemented carbide tools business through external procurement and M &amp; A</li><li>➢ Enhancement of cost competitiveness and stabilization of quality by automating inspection processes and continuing automation of production facilities</li><li>➢ Continuation of capital investment and switching to renewable energy to reduce GHG emissions</li><li>➢ <u>Construction of a new construction tool plant in Thailand</u> to increase manufacturing capacity (scheduled to commence operation in October 2025)</li><li>➢ Strengthening supply chain through <u>S &amp; OP upgrading</u></li></ul>
Tungsten business	<ul style="list-style-type: none"><li>➢ Strengthening global tungsten supply and recycling capacity</li></ul>	<ul style="list-style-type: none"><li>➢ Signed a basic agreement to <u>acquire all shares of H.C. Starck</u>, one of the world's leading manufacturers of tungsten products</li></ul>	<ul style="list-style-type: none"><li>➢ Accelerated efforts to collect used cemented carbide tools and secure recycling capabilities by utilizing our company and Starck's recycling technologies, capabilities, and global bases</li></ul>
Solutions business	<ul style="list-style-type: none"><li>➢ Provision of solution services utilizing DX</li></ul>	<ul style="list-style-type: none"><li>➢ Release of <u>Tool Assistant, an online tool selection service</u> (October 2024)</li></ul> <div></div>	<ul style="list-style-type: none"><li>➢ Deepening machining solutions utilizing DX</li></ul>





Cemented Carbide Tools Business - Outlook for the Cemented Carbide Cutting Tool Market -

- We had estimated the size of cemented carbide tool’s market at ¥2.06 trillion in 2030. However, as a result of reexamination based on drastic changes in the market environment of the automobile industry, we have estimated the size of the market at ¥1.97 trillion in 2030.



\*Growth in the automotive and metal mold industry is expected to slow and the market size is anticipated to shrink after 2025.



## Cemented Carbide Tools Business - Additional Measures to Achieve the FY2031 Strategy -

1. Securing sales by developing and challenging new markets, customers, and areas that are not bound by conventional wisdom
2. Thorough cost reduction including reassignment of personnel, optimization of scale, and optimization of procurement, and acceleration of labor saving in case of business turmoil
3. Strengthening development capabilities to enhance market competitiveness and acceleration of portfolio development including speedup and external procurement

Strategy and Marketing	<ul style="list-style-type: none"> <li>✓ Leveraging synergies with MOLDINO</li> <li>✓ Streamlining marketing functions</li> <li>✓ Brand management</li> </ul>
Development	<ul style="list-style-type: none"> <li>✓ Development of market-competitive new products utilizing materials development capabilities (Introducing the latest materials for stainless steel, steel, cast iron, etc.)</li> <li>✓ Introduction of new products in a portfolio that takes into account the balance between automotive and industrial fields (introduction of products in the aerospace and medical industries)</li> <li>✓ Strengthening of bearing tools (drill and end mill)</li> </ul>
Manufacturing, Production Technology, and Quality Assurance	<ul style="list-style-type: none"> <li>✓ Redesign of global production system</li> <li>✓ Promotion of smart factories (Automatic/labor-saving inspection processes, automation of production facilities)</li> <li>✓ Enhancement of sales support (enhancement of design services)</li> <li>✓ New raw materials and materials plant project</li> <li>✓ Optimization of quality control level (Optimum tool quality and quality control level unified at all sites)</li> </ul>
Sales and Logistics	<ul style="list-style-type: none"> <li>✓ Capture untapped areas in Central Asia, the Middle East, Africa, etc.</li> <li>✓ Expansion of sales channels in South America by Mexican MMEX</li> <li>✓ Expansion of new sales to Eastern Europe (opening of a branch in the Czech Republic)</li> <li>✓ Organizational involvement with integrators in Europe and the United States</li> <li>✓ Strategic approach to National Distributors in North America</li> <li>✓ Expansion of new distributors in low-share areas in China</li> </ul>



### Cemented Carbide Tools Business - Construction of a New Mining and Civil Engineering Tool Plant in Thailand -

- MMC Ryotec Corporation (a 100% subsidiary of the Company) has started construction of a new plant at OTEC Co., Ltd., a manufacturing base of mining and civil engineering tools in Thailand, in response to increasing demand for these tools.
- The new plant is expected to start initial operation from October 2025. It will introduce machining and heat treatment facilities, and will increase the rod manufacturing capacity to two times in the future.



Projected completion of the new plant  
(image)



Construction tools for mining and  
civil engineering

[Company profile (as of April 1, 2024)]

Company name	: OTEC (Thailand) Co., Ltd.
Established	: March 1997
Investor	: MMC RYOTEC 100%
Representative	: Katsu Yamamoto
Head Office location	: Bang Pa-in District, Phra Nakhon Si Ayutthaya Province, Kingdom of Thailand
Number of employees	: 198
Business details	: Manufacture of mining and civil engineering tools
Main products	: Bits and rods



Projected completion of the site  
(image)



Current progress (Nov. 5, 2024 )

[Overview of the new plant]

Location	: Wang Noi District, Phra Nakhon Si Ayutthaya Province, Kingdom of Thailand
Products manufactured	: Rods, a type of tool for mining and civil engineering
Area	: Site area (54,400 m <sup>2</sup> ), total floor area (11,900 m <sup>2</sup> )

Under construction to start operations in  
October 2025

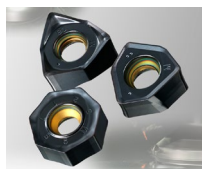


## Cemented Carbide Tools Business - Providing Value through Solution Proposals -

- Providing products and solutions that solve customer problems, improve productivity, and reduce environmental impact

### Provision of environmentally friendly products

The Japan Cutting & Wearresistant  
Tool Association  
2024 Technical Achievement Award



Development of general-purpose  
milling grade "MV1030"

The Japan Cutting & Wearresistant  
Tool Association  
Received the Environment Grand  
Prize for three consecutive years



Providing environmentally  
friendly products that enhance  
both production and the  
environment

Helping customers reduce their  
environmental impact by  
reducing electricity consumption



Highly efficient aluminum  
alloy and cast iron finishing  
face milling cutter FMAX small  
blade count type



For steel turning  
CVD coating grades  
MC6115



For cast iron turning CVD  
coated carbide grades  
MC5100 series



Coated carbide grades for  
rolling milling MV1030



Solid carbide drills for  
boring, internally  
lubricated DFAS



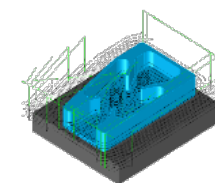
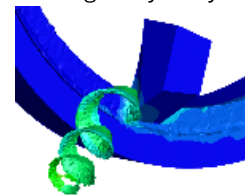
For turning high hardness steel  
coated CBN grades  
BC8210

### Propose Solutions Utilizing the Technical Center

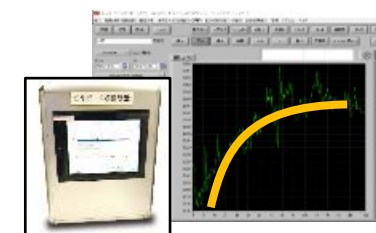
- Propose to customers around the world from our global technical center
- Optimal recommended conditions including machining paths
- Proposal supported by CAE, etc.
- Joint development with customers  
(Joint proposal with machine/arbor manufacturers, etc.)

- Analysis and evaluation such as cutting test and CAE analysis
- Tool life prediction by cutting monitoring
- Technical training sessions for various levels

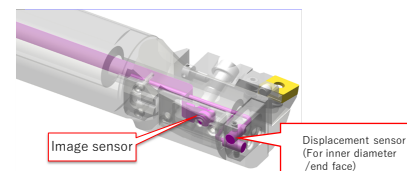
Cutting analysis by CAE



Machining path by CAM  
Simulation

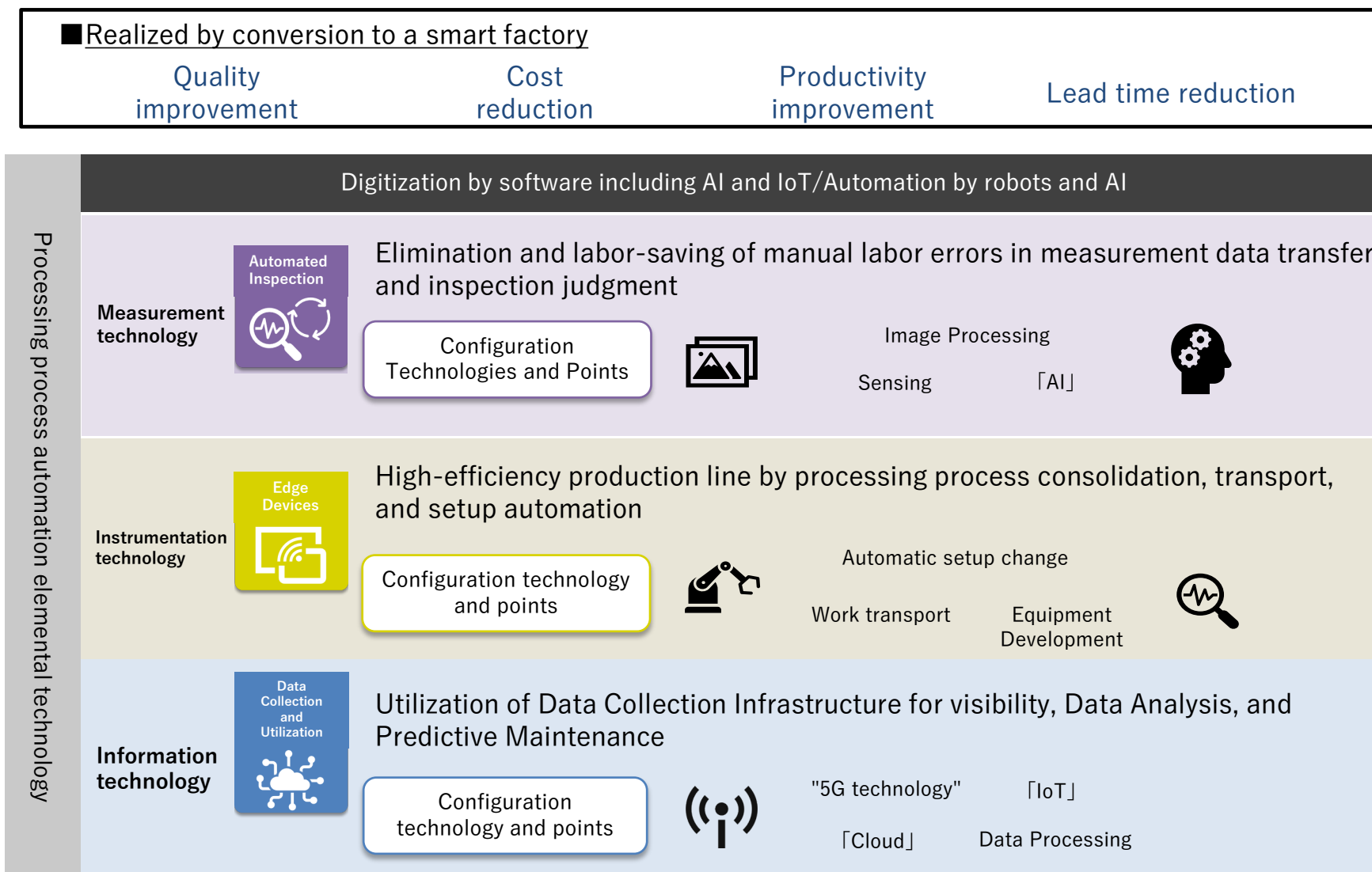


Cutting monitoring system  
\*Estimate tool life by observing  
changes in the main shaft load of the  
machine



Sensor tool  
\*Equipped with dimension measurement  
and machining surface imaging functions  
for cutting tools

- Utilizing digital technology to promote efficient and high-quality smart factories with high productivity







## Tungsten Business - Acquisition of Shares of H.C. Starck Holding -

- Signed an agreement to acquire all of H.C. Starck, one of the world's leading manufacturers of tungsten products
- The closing process is well underway.

### Global Business Development of Tungsten Recycling



Accelerate efforts to collect used cemented carbide tools and secure recycling capacity by utilizing both companies' recycling technologies, capabilities, and global bases



Strengthen R&D capabilities through collaboration between Japan New Metals Co., Ltd. Corporation (a 100% subsidiary of our company) and H.C. Starck



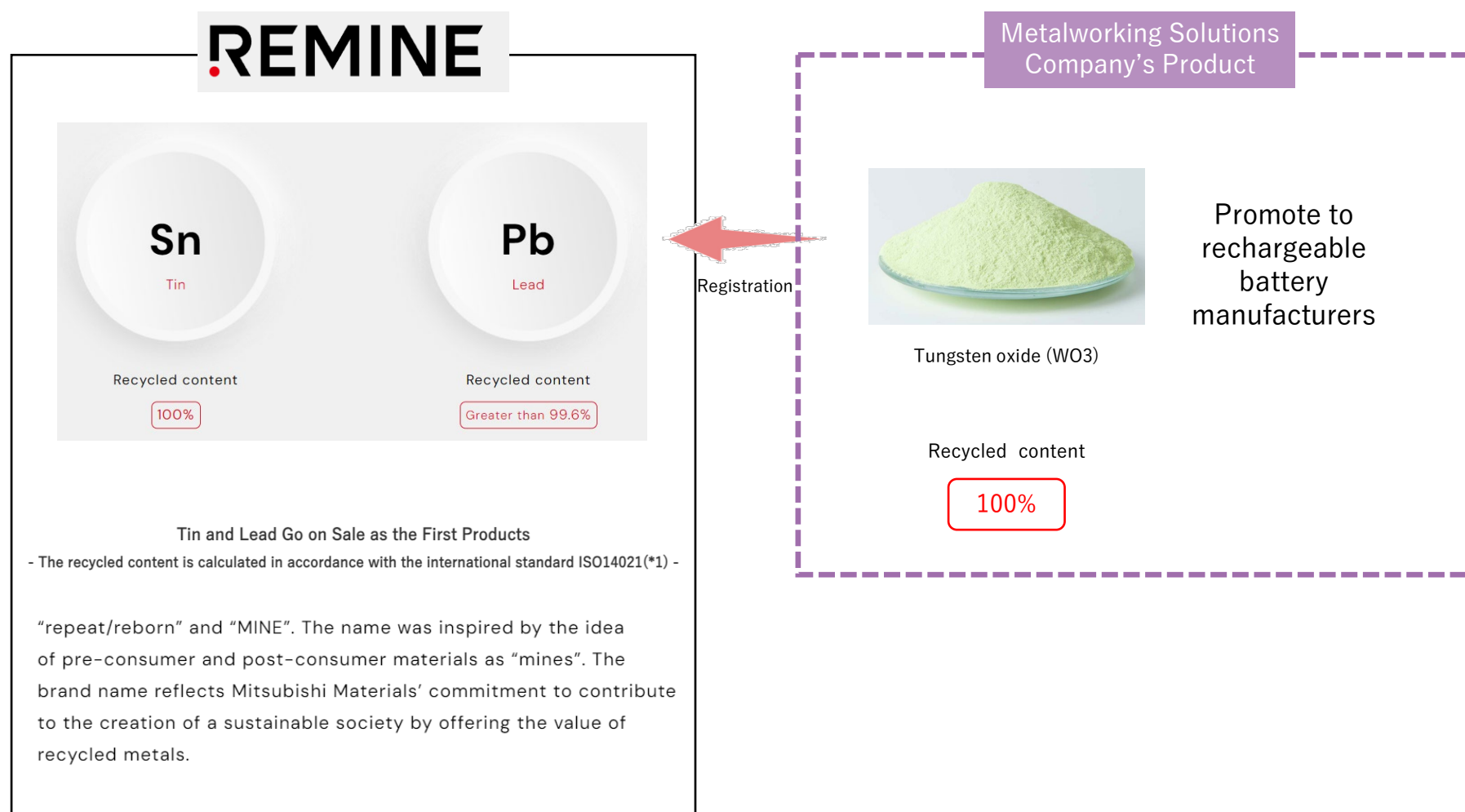
Create synergies and enhance corporate value by promoting cross-selling between the two companies





## Tungsten Business - REMINE Registration -

- In recent years, there has been an increase in environmental awareness in various manufacturing industries and an acceleration in the movement to remove China due to the U.S.-China friction.
- WO3-5 tungsten oxide was registered as Japan's first recycled metal brand "REMINÉ" in order to promote products that contribute to reducing environmental impact, improve the brand image, and expand sales.

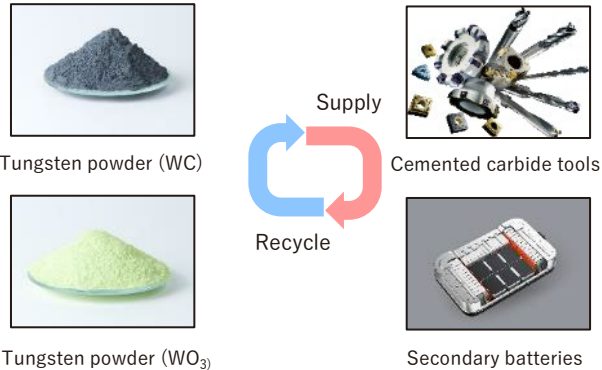




Sustainability Management in the Metalworking Solutions Business

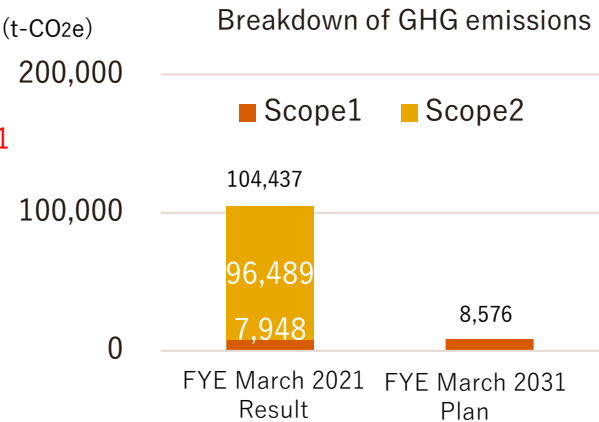
Recycling of Carbide Products Contributing to a Recycling-Oriented Society

- Target ratio of recycled raw materials: 80% or more by FYE March 2031  
Our company and H.C. Starck’s recycling technologies, capabilities, and global bases to secure recovery and recycling capabilities for used cemented carbide tools
- Achieved target of 52% in FYE March 2024
- Target of 56% or more in FYE March 2025



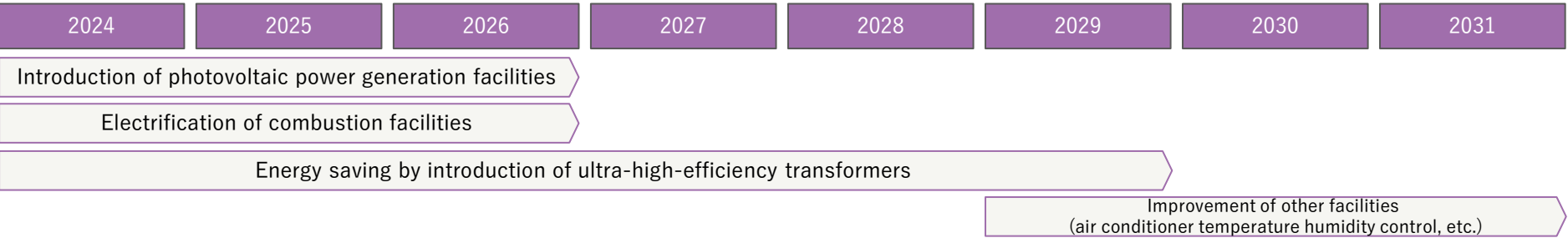
Targets and Initiatives to Reduce GHG Emissions

- Reduced GHG emissions in FYE March 2031: Approximately 96,000 t-CO<sub>2</sub>e/year (compared to FYE March 2021)
- Plan to make 100% of the electricity used in manufacturing virtually CO<sub>2</sub>-free by FYE March 2031  
In Japan, 11% of renewable energy will be switched to renewable energy every year from FYE March 2023
- In FYE March 2024, 28% of renewable energy was switched to renewable energy (Domestic operations including Group companies)
- In FYE March 2025, 33% of renewable energy was switched to renewable energy



Investment plan

- ✓ Cumulative investment in FYE March 2024 -2031: ¥3.59 billion (Scope1: ¥0.09 billion, Scope2: ¥3.5 billion)





## 6. Renewable Energy Business

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## Overview of Renewable Energy Business

Business Overview	Business	Strengths	Revenue	Market Opportunities and Prospects
Renewable Energy business	Geothermal Power Generation	Since the Onuma Geothermal Power Plant opened in 1974, we have developed a power generation business based on our extensive experience in geothermal development and operation, including the supply of steam to the Sumikawa Geothermal Power Plant.	¥0.8 billion FYE March 2024 Ordinary profit	<ul style="list-style-type: none"> <li>●Opportunity               <ul style="list-style-type: none"> <li>Economy: Increased environmental value due to increased demand for renewable energy</li> <li>Policy: Policy support for the introduction of renewable energy</li> <li>Society: Increasing social demand for companies to introduce renewable energy and reduce CO2 emissions</li> </ul> </li> <li>●Risk               <ul style="list-style-type: none"> <li>Technology: Aging of geothermal power plant facilities</li> <li>Environment: Reduced power generation due to weather changes associated with long-term climate change</li> <li>Investment: Increased investment costs due to increased construction costs</li> </ul> </li> </ul>
	Hydropower	We also possess many years of experience in the operation of hydropower generation since its introduction in Japan.		
	Solar power generation	More than 10 years of operational experience utilizing idle land in our Group.		
	Wind power generation, etc.	We utilize idle land, including approximately 14,000ha of company-owned forests in Japan, as a new site in Electric Power Development Co., Ltd.	—	

### Renewable Energy Business

**FYE March 2031 target: Expansion of renewable energy generation toward 100% self-sufficiency in renewable energy**

- Further expansion of geothermal power generation business
- Expansion of business domains (Wind power generation and power generation related businesses)

#### Business Environment

- As measures against climate change, the use of renewable energy, further increasing the importance of reducing environmental impact in manufacturing
- Toward making renewable energy the main power source  
Setting high national targets and various support systems

#### Business Strategy

#### FYE March 2024 to FYE March 2031

Promoting business expansion from a long-term perspective with the Renewable Energy business as a company-wide initiative

##### Geothermal energy

- New development at a rate of once every three years to expand business

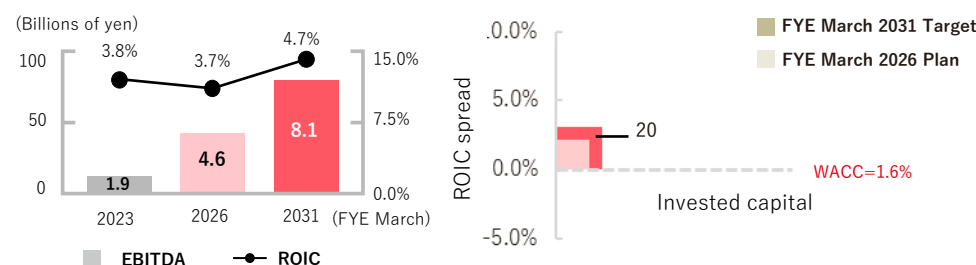
##### Wind power

- New entry into wind power generation, which is expected to reduce power generation costs in the future

##### Review of business strategy

- Withdrawal from biogasification business
- Expansion into retail power business and expansion of power sales scheme

#### EBITDA, ROIC, EP



#### Important Measures

#### FYE March 2024 to FYE March 2031

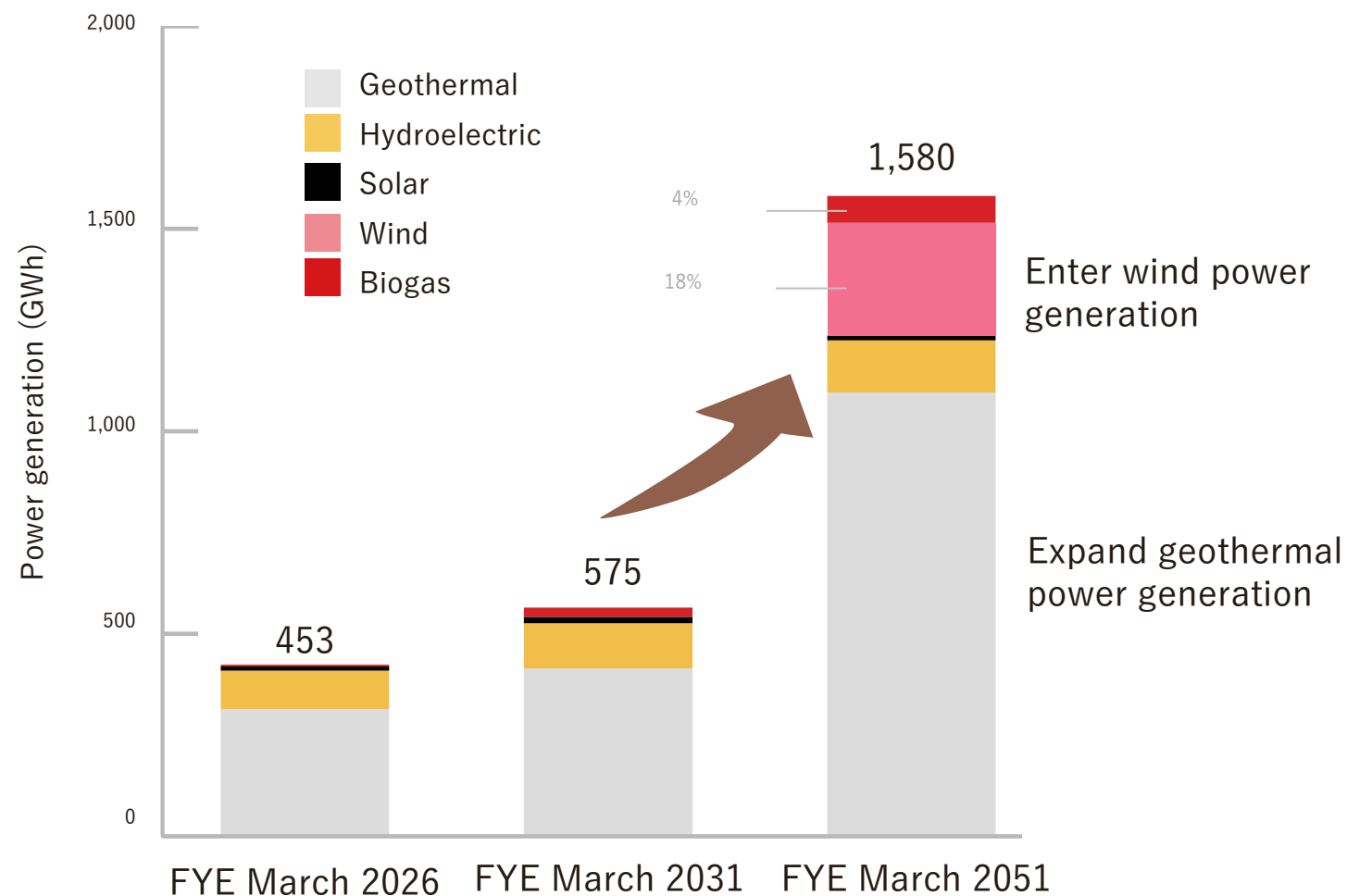
- Expansion of business utilizing proven geothermal technology
- Expansion of geothermal power generation business beyond existing business areas
- Implementation of overseas surveys utilizing geothermal resource survey technology
- Survey of wind power generation business in collaboration with other companies

#### FYE March 2026 to FYE March 2031

- Continued expansion of geothermal power generation business
- Launch of onshore wind power generation business utilizing company-owned land
- Expansion of business domains into power generation related businesses such as grid storage batteries

## Renewable Energy Generation Target

- Aiming to generate power equivalent to our company's electricity consumption in the fiscal year ending March 2051, our company will accelerate the development of a geothermal power generation system and business expansion, as well as the development of new renewable energy power generation centered on wind power

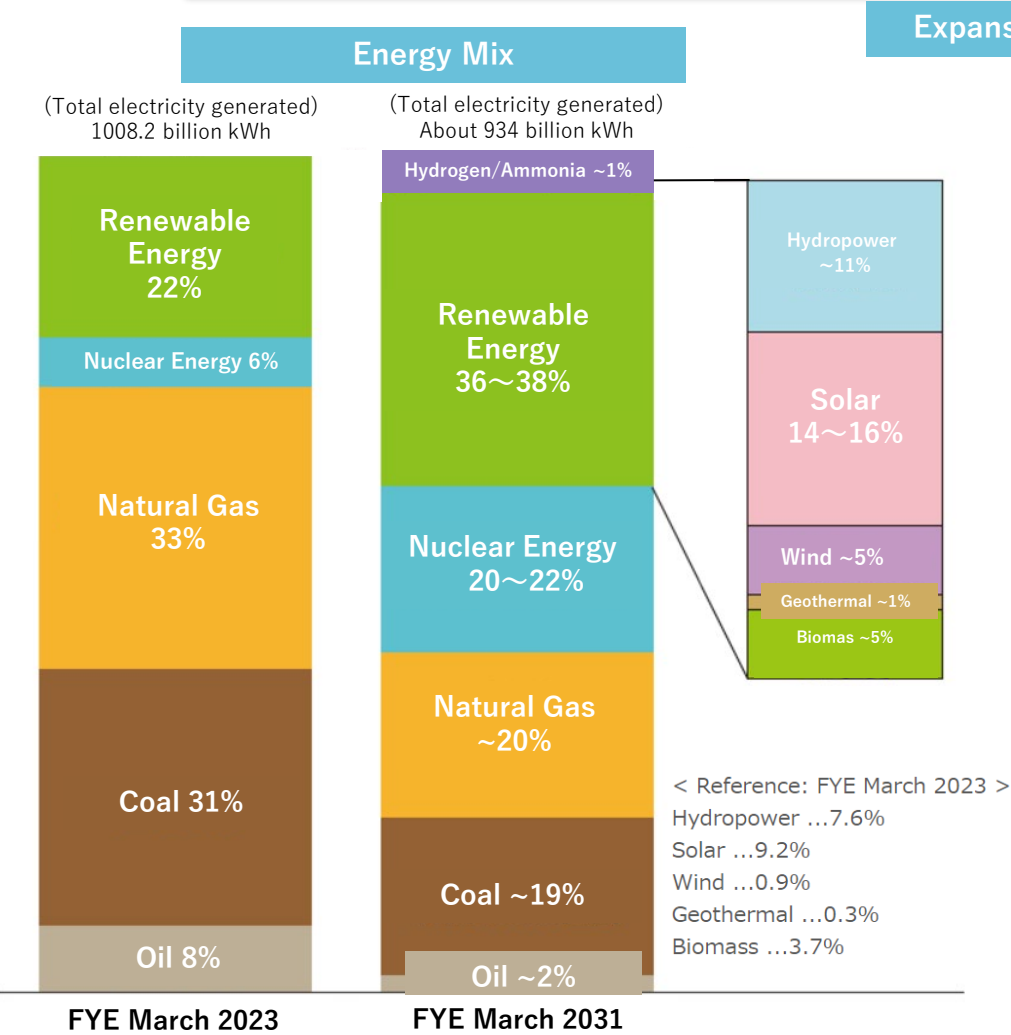


Increase equity-owned renewable energy sources to the same level as the company's own electricity consumption, mainly in its strong geothermal business

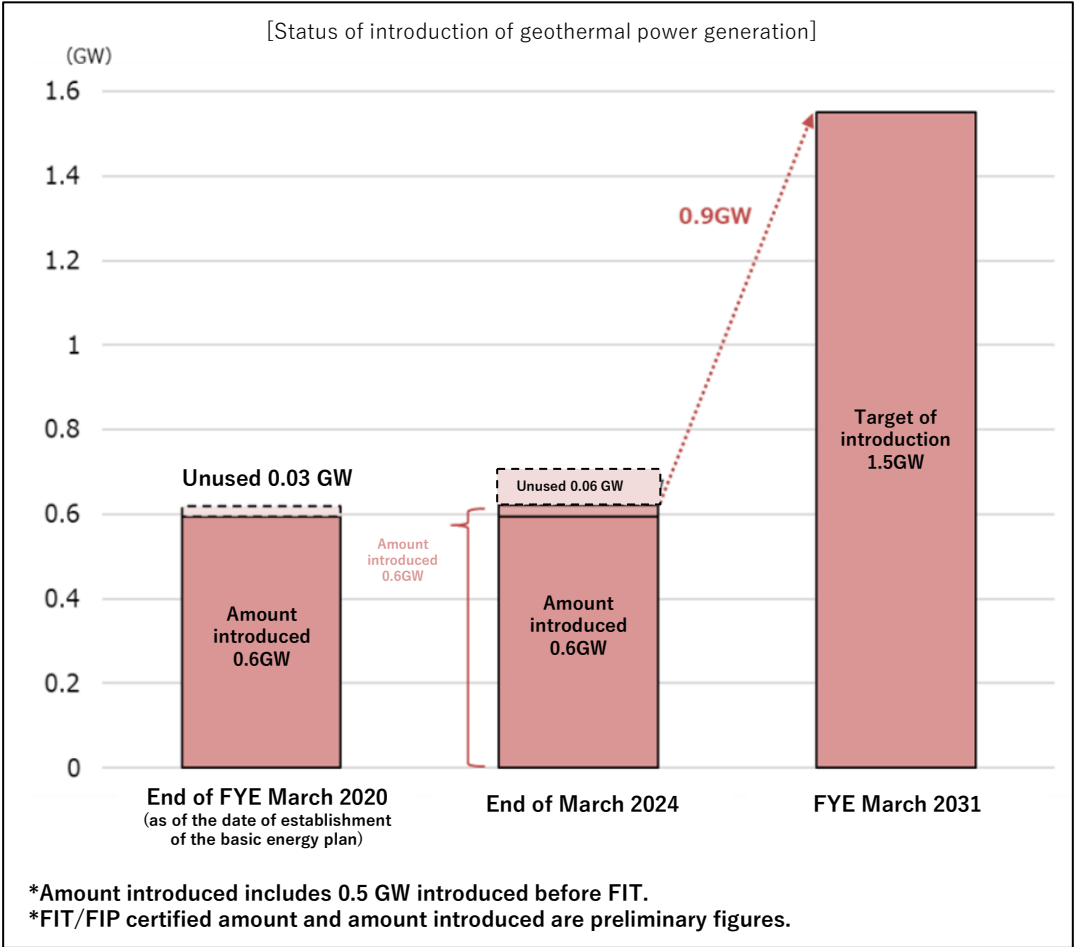
Current Business Environment and Medium- to Long-term Outlook

Overview

- The 7th Basic Energy Plan (Best Mix) is being formulated. The expansion of renewable energy is the same as the 6th with the “The S+3E Principle” as the pillar.
- At the GX Executive Committee (Oct. 31, 2024) to discuss the decarbonization strategy, the new administration of Ishiba Shigeru expresses his intention to revitalize local areas by investing in renewable energy such as geothermal energy.
- Domestic electricity demand is expected to increase for the first time in about 20 years due to the establishment of new semiconductor factories and demand for data centers.
- 2030 mix target: 36~38% (3,360 -353 billion kWh) for renewable energy, and 21.7% (218.9 billion kWh) for the fiscal year ended March 2023.
- The number of RE100 companies is increasing in Japan and overseas. In addition to procurement of non-fossil certificates, PPA, which directly procures electricity from power plants, is also on the rise.



Expansion of Renewable Energy such as Geothermal Energy



## Progress in the FY2031 Strategy

Key Measures in the FY2031 Strategy (FY 2023 to FY 2025)	Progress (as of November 2024)	Future Plans
Business expansion utilizing proven geothermal technology (Three investigations and one operation)	<ul style="list-style-type: none"> <li>• Appi Geothermal Power Plant in Hachimantai City, Iwate Prefecture, started operation in March 2024, 1 month earlier than planned. Stable operation is underway.</li> <li>• Exploration holes KO -1 (depth approx. 2,200 m) and KO -1 ST (depth approx. 2,000 m) were drilled in Komonomori area, Kazuno City, Akita Prefecture, from April to November 2024.</li> <li>• Geothermal research is also underway in Hokkaido, Iwate, and Fukushima Prefectures.</li> </ul>	<ul style="list-style-type: none"> <li>• In Appi Geothermal Power Plant, drilling of supplemental wells is planned to further stabilize operations</li> <li>• In Komonomori, investigations such as drilling of research holes will be continued to evaluate geothermal reservoirs</li> <li>• Expansion of geothermal survey areas</li> </ul>
Expansion of geothermal power generation business outside existing business areas (such as Hokkaido and Enzan)	<ul style="list-style-type: none"> <li>• Selection of potential geothermal survey sites in areas that have not been surveyed by our company, literature survey and contact with local governments</li> </ul>	<ul style="list-style-type: none"> <li>• Geological survey and physical exploration will be conducted from areas where local consent has been obtained</li> </ul>
Implementation of overseas surveys utilizing geothermal resource survey technology	<ul style="list-style-type: none"> <li>• Acquisition of information on geothermal projects from geothermal developers in Indonesia and start dialogue</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to collect information on overseas geothermal projects</li> </ul>
Investigation of wind power projects in collaboration with other companies	<ul style="list-style-type: none"> <li>• Continued wind survey with RENOVA, Inc. Corporation in the Hokkaido-Imakane region</li> </ul>	<ul style="list-style-type: none"> <li>• Based on the wind survey results, economic evaluation and commercialization decisions were made.</li> </ul>

Start Operation of Appi Geothermal Power Plant

[Appi Geothermal Power Plant Operation]

- On March 1, 2024, Appi Geothermal Power Plant began operation one month ahead of schedule. More than nine months have passed since the start of operation, but stable operation is ongoing without major problems.
- A one-week inspection took place in October. The release inspection of the turbine, condenser, etc. was conducted, and it was confirmed that there was no abnormality.

Overview of Appi Geothermal Power Plant		
Name	Appi Geothermal Power Plant	
Location	Hachimantai National Forest, Hachimantai-city, Iwate	
Type of motive power	Steam power (geothermal)	
Output capacity	14,900kW	
Power generation method	Single flash system	
Construction started	August 2019	
Ownership	Mitsubishi Materials Corporation	51%
	Mitsubishi Gas Chemical Co., Inc.	34%
	Electric Power Development Co., Ltd.	15%



Aerial view of Appi Geothermal Power Plant



Location of Appi Geothermal Power Plant



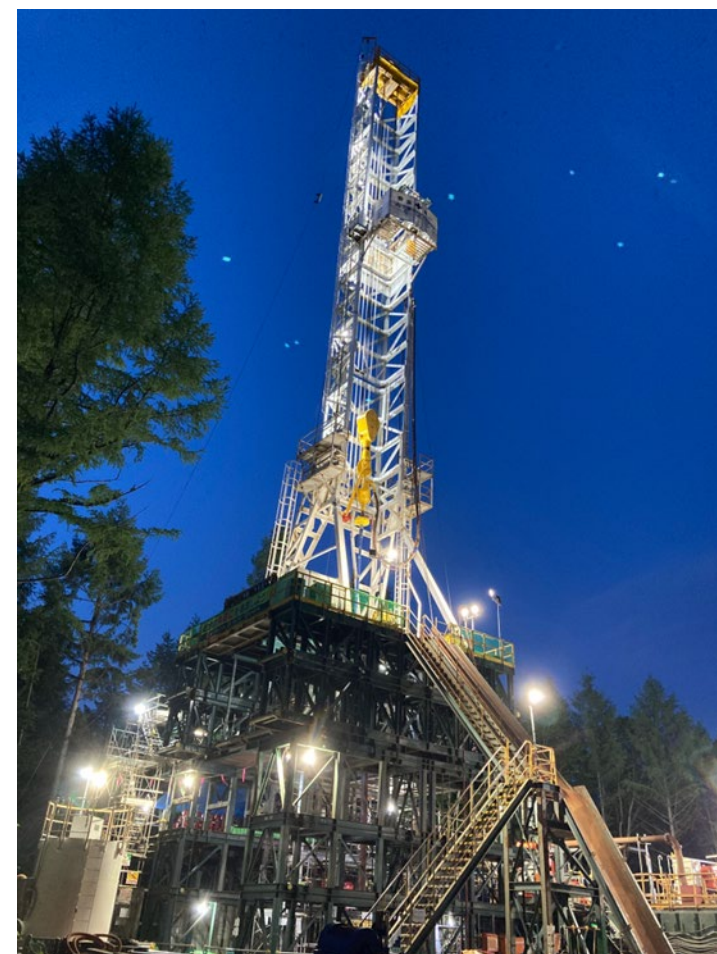
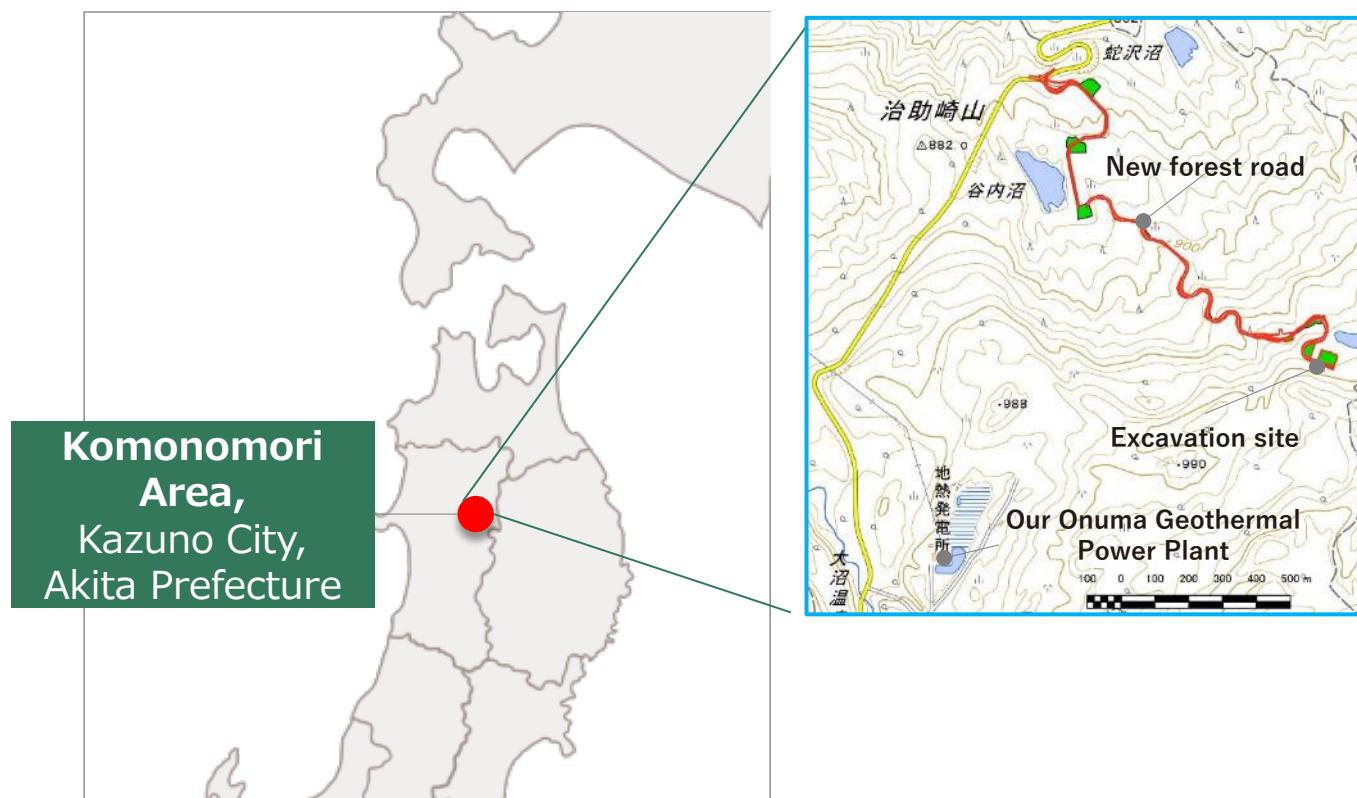
Turbine release inspection (October)



### Initiatives for In-house Geothermal Development

#### [Status of Geothermal Resources Survey in Komonomori Region]

- Construction of a new forest road and excavation site was carried out in the fiscal year ended March 2024. In the fiscal year ending March 2025, drillings of exploration wells KO-1 (depth about 2,200 m) and KO-1ST (depth 2,000 m) were carried out. Information on geology, rock properties, temperature, etc. of both holes were obtained, and the strata temperature of KO-1 was confirmed to be over 300°C.
- In order to communicate with the local community (Kazuno City, hot spring operators, etc.), our continuous hot spring monitoring facility is in operation.



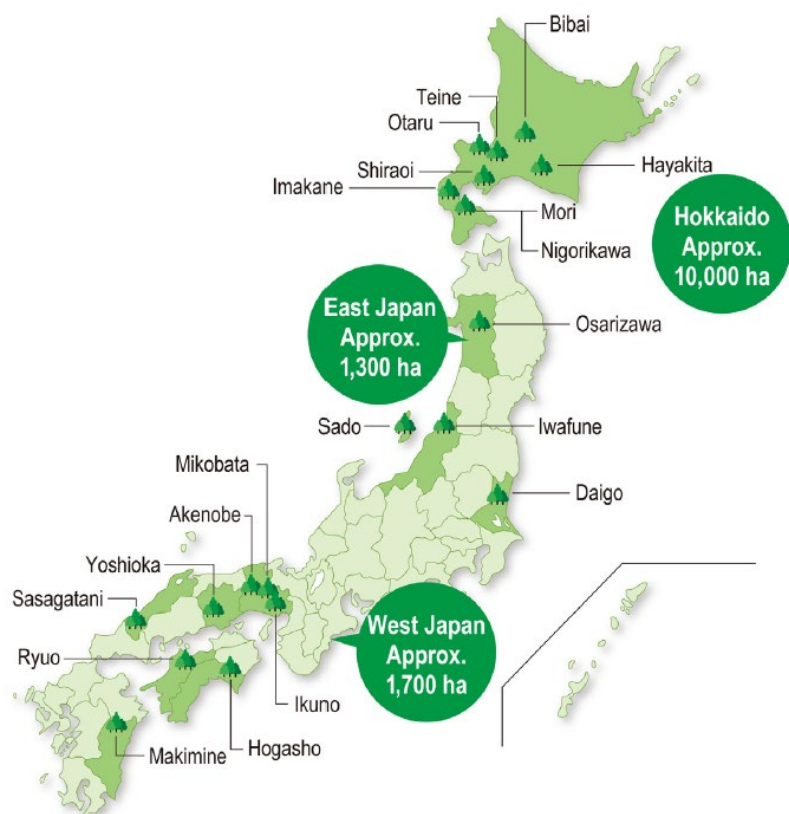
Exploration well KO-1



### Initiatives in the Wind Power Generation Business

#### [Status of Imakane Wind Power Survey]

- Candidate sites suitable for wind power generation were selected from company-owned forests in Japan. Local explanations were provided, and field surveys are being carried out.
- Wind observation towers and doppler lidars have been installed in the Imakane forest, located in Imakane Town, Hokkaido. Wind speed and direction in the sky are being observed. Environmental impact assessment reports are also being made publicly available.



Location and area of company-owned forests



Location of Imakane town



Planned location of wind turbines



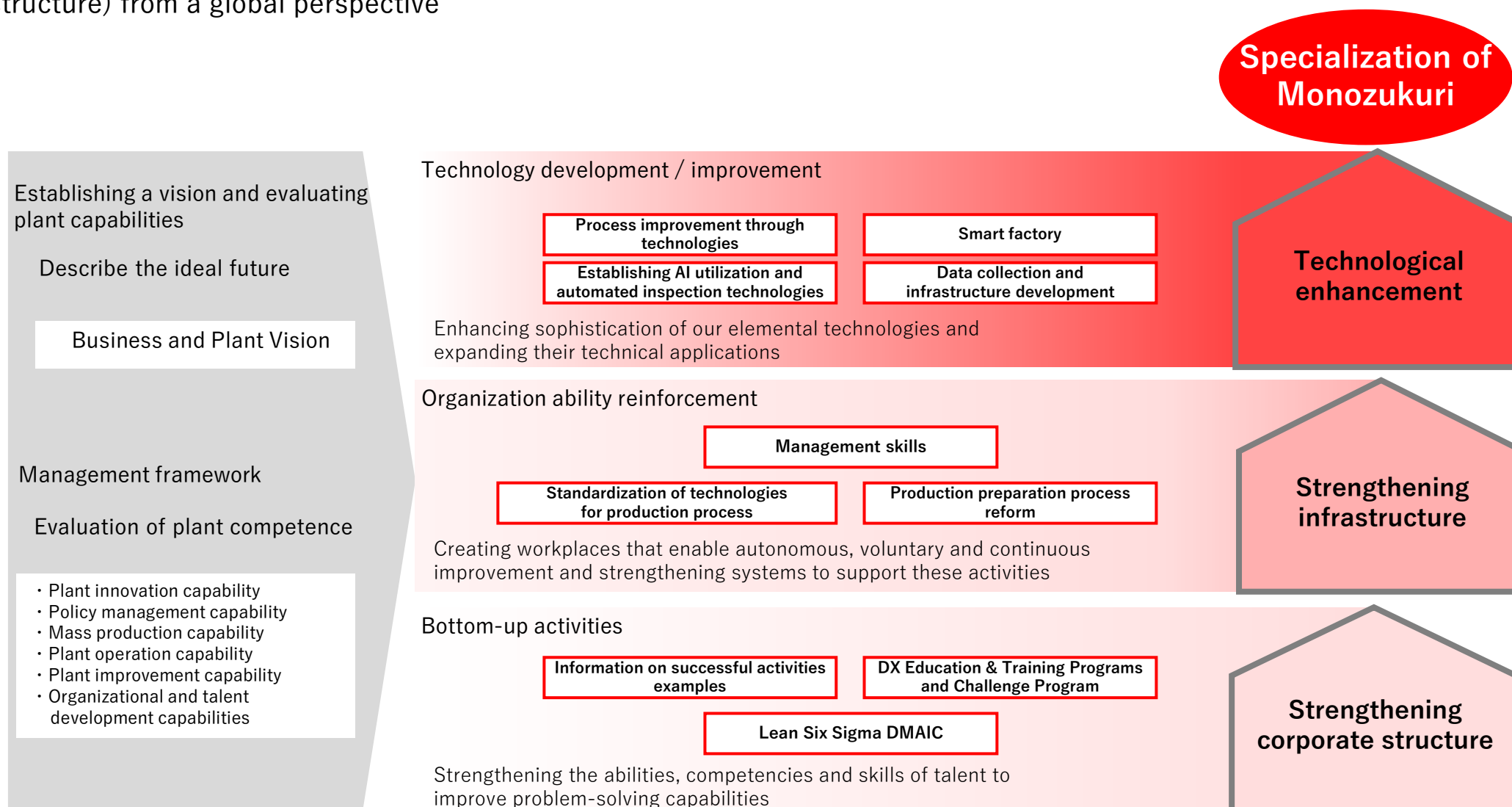
Wind condition observation devices 57

## 7. Monozukuri and R&D, DX, IT

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## Manufacturing Excellence Strategy

- Aiming to achieve differentiation of manufacturing capabilities by contributing to the realization of the Medium-term Management Strategy FY2031 and sustainable enhancement of corporate value through the advancement and innovation of manufacturing capabilities (technology, infrastructure, and corporate structure) from a global perspective



## Manufacturing Excellence Strategy

- Strengthening of technology and infrastructure  
Visualize the business and plant vision using the manufacturing issues overview map\*<sup>1</sup> of manufacturing issues, and capture the issues from a bird's-eye view without any overlap.
- Strengthening management framework  
Enhance the level of the plant by using a factory self-inspection sheet that narrows down plant performance evaluation to questions that include important viewpoints
- Strengthening corporate structure  
Strengthening human resources by providing opportunities to learn and practice DX/IT, which is essential to the business

Main Measures	Initial Plan	Progress (progress as planned)
<b>Technology and infrastructure enhancement:</b> Utilization of manufacturing issues overview map <ul style="list-style-type: none"> <li>• Business and plant vision</li> <li>• Issues</li> <li>• Challenge themes</li> </ul>	<ul style="list-style-type: none"> <li>● Clarification of emerging issues and identification and realization of latent issues in overall manufacturing</li> <li>● Proposal for Innovation Center cooperation theme</li> </ul>	<ul style="list-style-type: none"> <li>● Organizing and sharing a manufacturing issues overview map Development of all 24 sites and identification of emerging issues completed</li> <li>● Extraction of latent issues and deepening progress</li> <li>● Continuing to set collaborative themes through year-round issue review</li> </ul>
<b>Management Framework:</b> Performance quantification based on factory performance evaluation <ul style="list-style-type: none"> <li>• Factory self-inspection sheet</li> </ul>	<ul style="list-style-type: none"> <li>● Operation and development of the "new plant self-inspection sheet" narrowed down to questions that enhance viewpoints that lead to business specialization (improvement of business competitiveness)</li> </ul>	<ul style="list-style-type: none"> <li>● Explanation of the purpose and utilization of the new inspection sheet was completed to the main sites</li> <li>● Planning to review the inspection results and reflect them in the bird's-eye map</li> </ul>
<b>Strengthening structure:</b> Promoting DX/IT strategy <ul style="list-style-type: none"> <li>• Digital training: Human resource development for learning</li> <li>• DX Challenge: Human resource development for practical use</li> </ul>	<ul style="list-style-type: none"> <li>● Expansion of the target of digital training from production engineering to manufacturing departments</li> <li>● Integration of DX Challenge classroom and practice for on-site DX utilization classroom and practice Provision of an opportunity to acquire one-shot integrated learning</li> </ul>	<ul style="list-style-type: none"> <li>● Creation of new curriculum for expanding target audience completed</li> <li>● Preparation of training recruitment format and development plan for next fiscal year and beyond</li> <li>● 2 in-house DX case sharing events completed</li> <li>● 7 DX challenges implemented</li> <li>● Development of learning packs specialized in data visualization and analysis</li> </ul>

\*<sup>1</sup> Manufacturing issues overview map

A map that expresses the issues in a tree shape at the top of the business and plant vision, and reveals the issues from a broad perspective without any overlap.

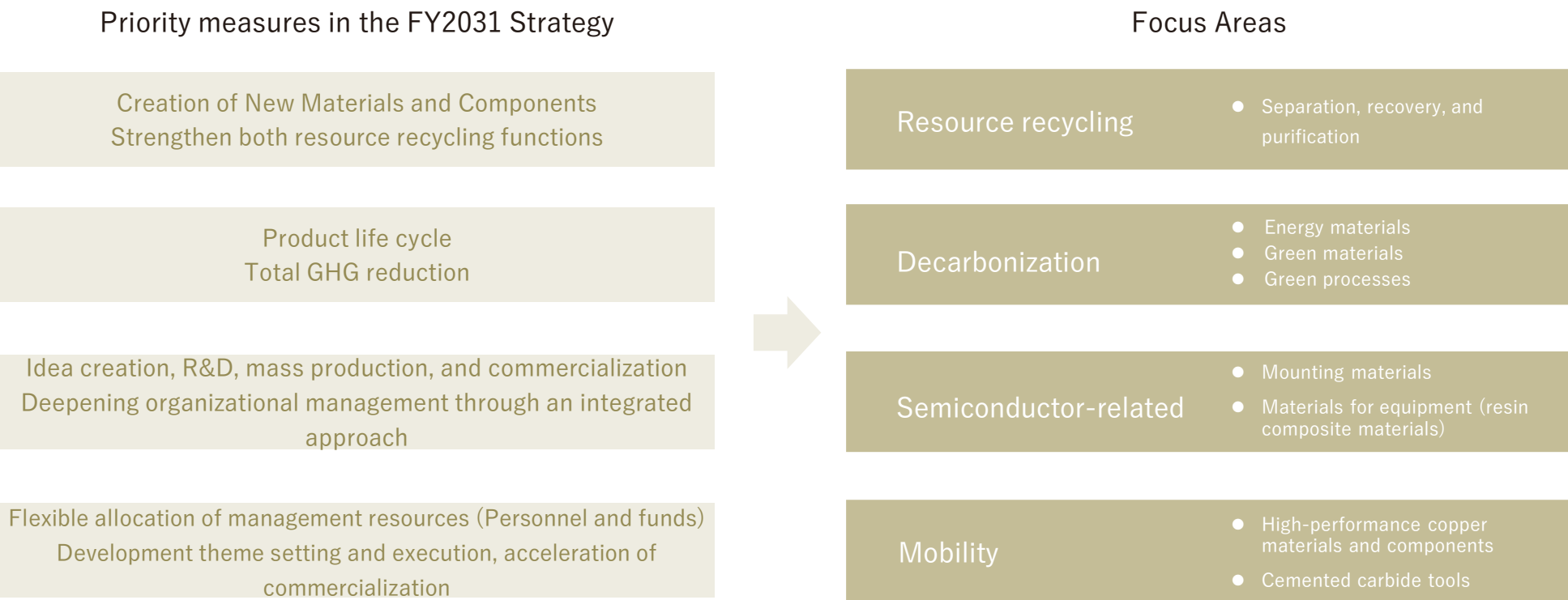
R&D Strategy

- Achieving sustainable corporate value through the creation of new products, technologies, and businesses

Basic Research and Development Policy

- Materials and materials development for the future
- Creating new products and technologies to strengthen business competitiveness through the integration of corporate and division labs
- Early realization through industry-government-academia collaboration (including CVC)

Providing material for circulating resources for a sustainable future



## R&D Strategy

- Strengthening both the creation of new materials and parts and resource recycling functions
  - Reducing GHG throughout the product life cycle
  - Deepening organizational management through the creation of ideas, R & D, mass production, and commercialization
  - Setting and executing development themes and accelerating commercialization through flexible allocation of management resources (Personnel and funds)
- Promotion of resource recycling and GHG reduction
- Promotion of external cooperation  
Establishment and operation of commercialization mechanism

Key measures	Initial plan	Progress (progress as planned)
Promotion of resource recycling and GHG reduction	<ul style="list-style-type: none"> <li>● Expanding R &amp; D themes</li> <li>● Achieving themes for commercialization</li> </ul>	<ul style="list-style-type: none"> <li>● Continued development and commercialization of new technologies for CO<sub>2</sub> recycling</li> <li>● Continued development for commercialization of LIB recycling Pilot plant under construction</li> </ul>
Promotion of external cooperation	<ul style="list-style-type: none"> <li>● Early realization of development results through startup search, collaboration and investment</li> <li>● Achieving development themes related to areas of focus through industry-academia joint solicitation</li> </ul>	<ul style="list-style-type: none"> <li>● Investing in Visban, which is working on next-generation millimeter-wave networks</li> <li>● Call for applications from August to September, and are scrutinizing matching with our Company for joint research</li> </ul>
Establishment and operation of commercialization mechanisms	<ul style="list-style-type: none"> <li>● Implementation of acceleration programs</li> <li>● Implementation of SU project (Internal Posting for new businesses)</li> </ul>	<ul style="list-style-type: none"> <li>● Acceleration program moves two development themes into commercialization preparation</li> <li>● SU project moves two development themes into commercialization preparation</li> </ul>

Introduction of topics described in red in progress status



## Promotion of External Cooperation

### Investment in Visban, a Developer for Next-generation Millimeter Wave Networks

Visban devices receive, amplify, and retransmit millimeter-wave signals

1. High-quality signal (RF-on-Glass technology): Minimizes interference and loss, provides superior signal quality, and improves the efficiency and reliability of millimeter-wave communications
  2. Low-cost production: Reduce production costs by utilizing screen manufacturing processes for TVs and mobile phones
- ⇒ Expect to enter new markets by utilizing our company's materials technology to further improve performance

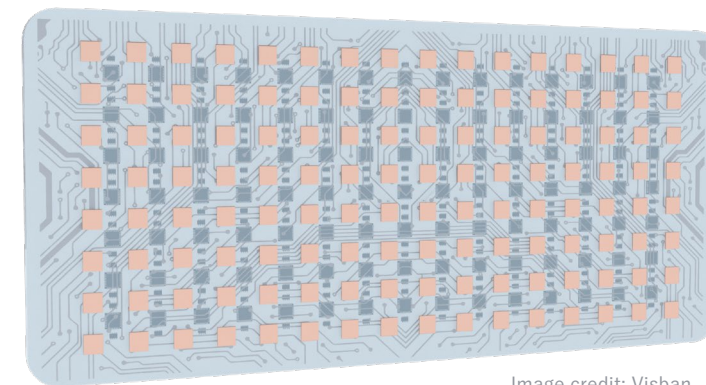


Image credit: Visban

RF-on-Glass devices that make up V-Mesh



Image credit: Visban

3. Integration with V-Mesh<sup>TM</sup> technology: Expand coverage between base stations and user devices by forming a backbone \*
  4. Self-optimization: Automatically reconfigure the network to ensure maximum performance and connectivity
  5. AI-driven management: Intelligent signal management using AI to optimize network performance and avoid obstacles and congestion
- ⇒ We will take advantage of Visban's telecom connections to gain business opportunities

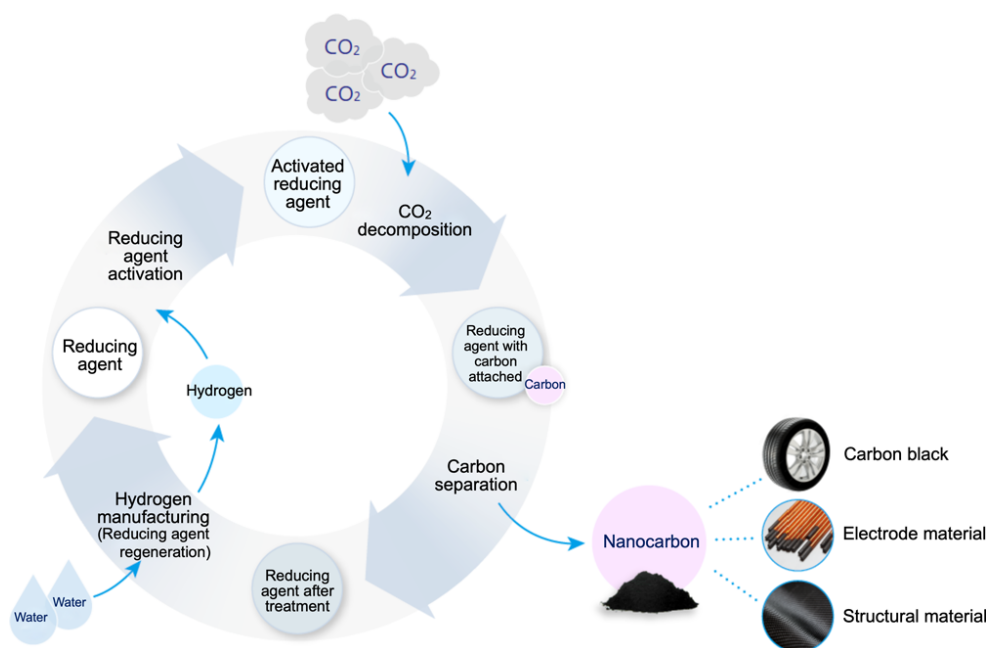
## Promotion of Resource Recycling and GHG Reduction

### Accelerating Development and Application of New CO<sub>2</sub> Reuse Technologies

The carbon recycling process we have developed is ongoing as one of the partner projects for “Development of Technologies for Carbon Recycling and Next-Generation Thermal Power Generation / Development of Technologies for CO<sub>2</sub> Reduction and Utilization” by Japan’s New Energy and Industrial Technology Development Organization (NEDO), with the title “Development of Carbon Material Manufacturing Technology by Chemical Decomposition of Carbon Dioxide.”

#### [Features of this technology]

- Using an inexpensive and resource-rich reducing agent, CO<sub>2</sub> is decomposed at a relatively low temperature and converted into high-value-added carbon nanoparticles.
- Since it is an exothermic reaction, theoretically, no external energy is required and the reaction proceeds spontaneously.
- No expensive catalyst is required for the reaction.



#### [Development history]

- In 2017, research and development of technology to decompose CO<sub>2</sub> and recycle it as carbon material started
- In 2018, in a beaker scale test, CO<sub>2</sub> was decomposed and fine particles of carbon nanomaterial were successfully recovered.

#### [Development Progress]

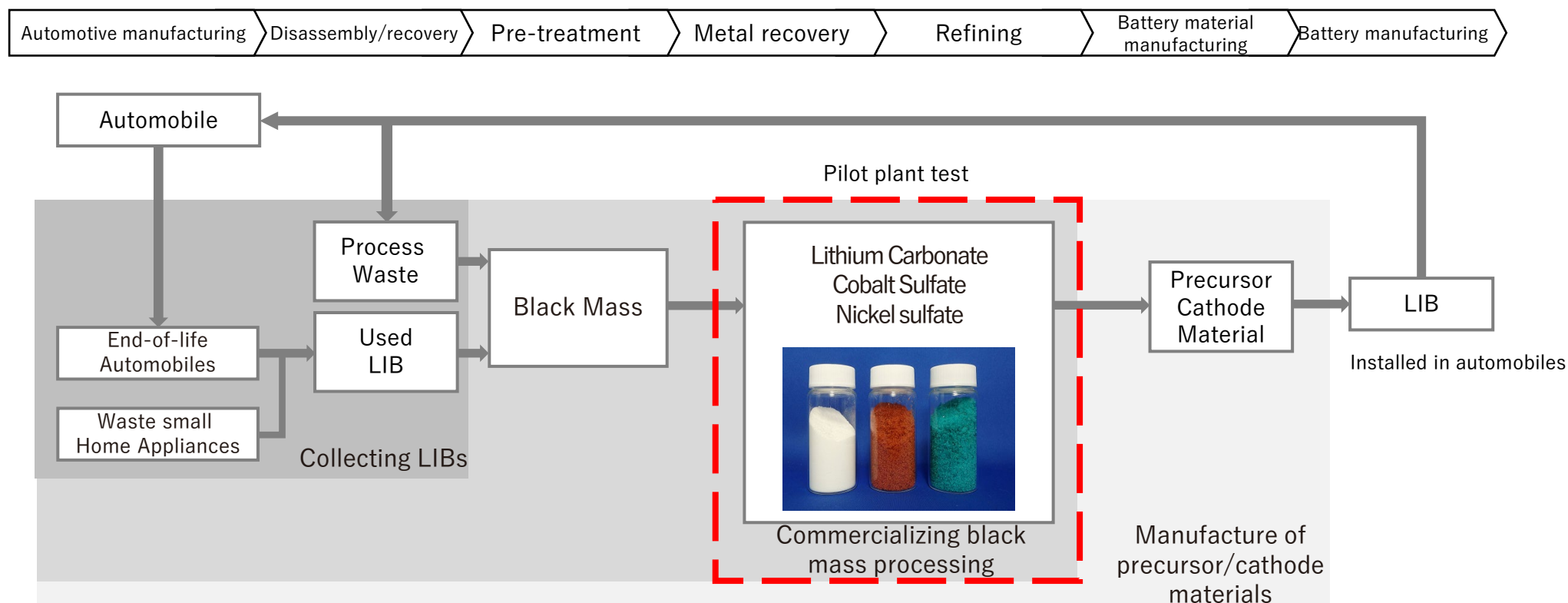
- Confirming the scale up using bench-scale test equipment, and optimizing the process of each process.
- Developing elemental technologies for practical application for pilot plant implementation in the fiscal year ending March 2027 and later.
- Application development and performance evaluation of the produced nanocarbon sample



## Promotion of Resource Recycling and GHG Reduction

### - Resource recycling initiatives/LiB recycling -

- We aim to develop a LiB recycling business that will contribute to the realization of a consistent recycling loop from LiB to battery materials.
- We are developing a highly efficient recovery of battery-grade lithium, cobalt, and nickel from Black Mass \*.
- We are constructing a pilot plant in Onahama Smelting and Refining Co., Ltd.'s Onahama Smelter & Refinery (Iwaki City, Fukushima Prefecture) to recover and refine metals from Black Mass.  
We are constructing a pilot plant (Scheduled to commence operation in July 2025, almost in line with the initial plan).  
The technological development was supported by a grant of approximately ¥1.1 billion from the Ministry of Economy, Trade and Industry's project to ensure stable supply of important minerals.
- The commercialization of LiB recycling is being studied concurrently. We plan to commercialize LiB recycling after determining the appropriate scale and timing based on the state of the LiB recycling market and technological advancements.



### Establishment and Operation of the Commercialization Mechanism

Held a “Demo Day” under the Acceleration Program Aimed at Creating New Businesses in a Short Period  
- Started commercialization preparations for two themes -

#### Press release on September 24, 2024

In November 2023, Mitsubishi Materials Corporation ("MMC") launched the MMC Acceleration Program "Wild Wind" to speed up the commercialization of projects that would be difficult for MMC to achieve on its own by collaborating with startups and other external partners. As part of the program, a "Demo Day" was held to evaluate the promotion to the commercialization preparation stage, and **it was decided to start commercialization preparations for the following two themes in collaboration with partner companies.**

- ① Theme: Snowmelt sensors and IoT devices for disaster prevention technology for cold regions

**Partner Company:** Sarubobo Alarm Corporation

(Representative Director: Takanori Hoshiya, URL: <https://sarubobo.net/>)

Business Overview: Development, manufacturing, sales, installation, and operation of IoT devices

- ② Theme: Contract molding service for sintered metal 3D printers

**Partner Company:** 3D Printing Corporation

(Representative: Devore Alexander, Devore Aiko, URL: <https://www.3dpc.co.jp/>)

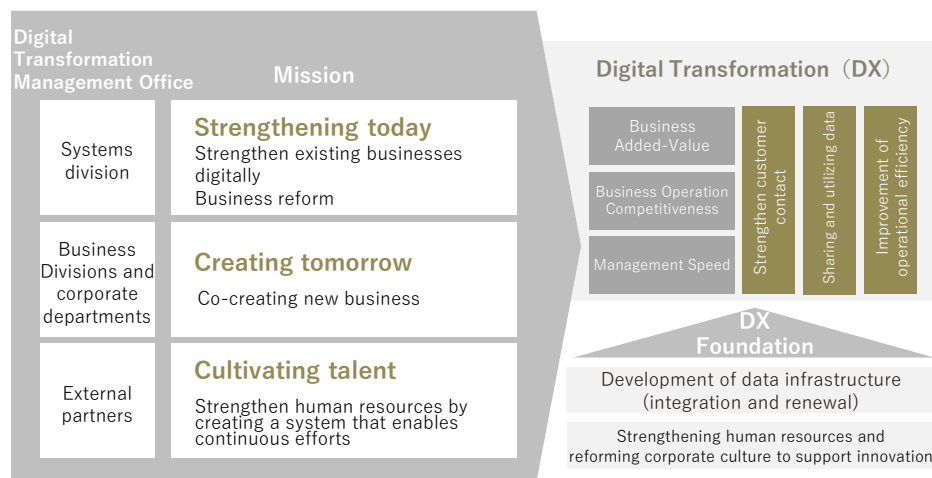
Business Overview: Design and engineering services, contract manufacturing, equipment sales, materials development)



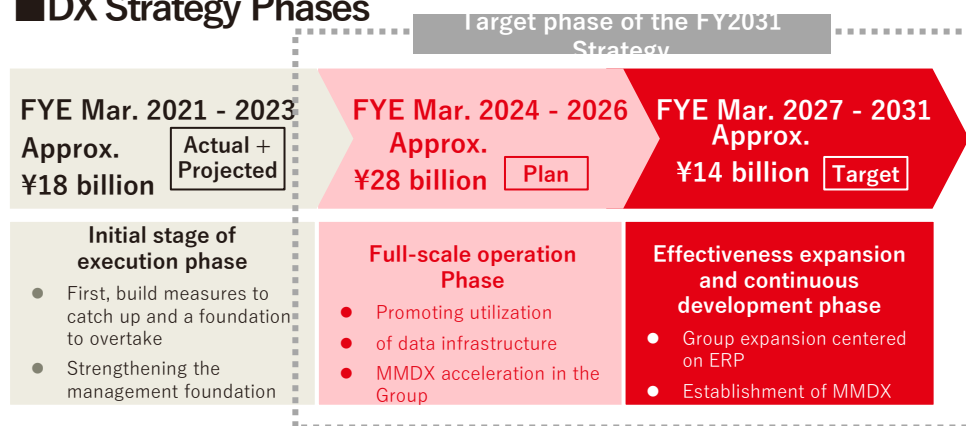
## DX Strategy (MDMX \* 1)

### DX Strategy

We are using data and digital technology to strengthen our three business pillars: **added value, operational competitiveness, and management speed.**



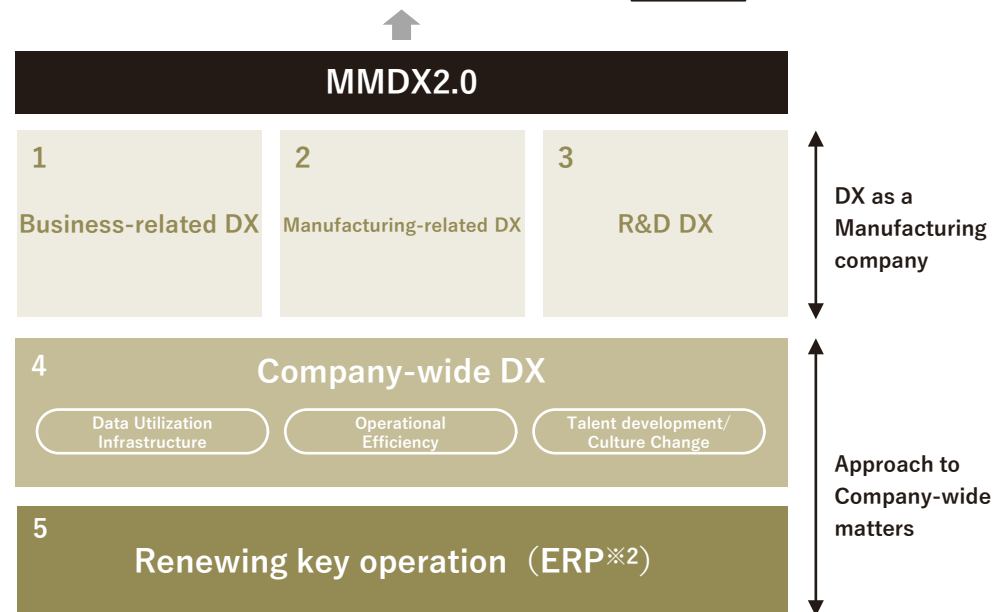
### DX Strategy Phases



### Efforts in MMDX 2.0

As over two years have passed since MMDX was launched, we needed to strengthen manufacturing and effectively implement existing themes, so we reorganized our DX themes and enhanced our system to move into a **new phase with MMDX 2.0.**

**Evolving into a competitive corporate Group** Ultimate Goal



### Goals of MMDX 2.0



\* 1 MMDX Mitsubishi Materials Digital Business Transformation ※ 2 ERP Enterprise Resource Planning

## MMXD Theme: Activity Status for FYE March 2025

MMXD Theme		FYE March 2025 Main Activity Results
Business DX	Metalworking Solutions Company DX	[MI (Market Intelligence)] Completion of unification and renewal of product information website (Japan and overseas) [Solution Proposal] Release of tool search function "Tool Assistant" [Supply and Demand Management] Start of trial operation of supply management module (Akashi Plant)
	Advanced Products Company DX	[Advancement of Electrical Material Cost Management] Completion of introduction of cost management system in Ceramics Plant. Currently, it is being introduced to MMC Electronics (Laos) overseas.
	Metals Company DX	E-Scrap Enhancement Release of Trading Partner Dashboard
Manufacturing DX	Safety and security	Began operation of the Safety Activity Database
	Automation and labor saving	Development of small-diameter deformed hole drill manufacturing (Gifu Plant)
R&D DX	MI・data utilization	Demonstration of usefulness of experimental data utilization (6 cases)
Company-wide DX	Upgrading procurement	New procurement system Sourcing area started
	Operational Efficiency Improvement	RPA (* 1) gradually developed
	Talent Management	Skill management function started
Renovation of core business	ERP(*2)	Completed implementation of ERP accounting domain in Mitsubishi Materials Corporation (Non-consolidated). Currently, implementation of ERP accounting domain in Group companies is underway.

※ 1 RPA: Robotic Process Automation

※ 2 ERP: Enterprise Resource Planning

## MMDX Theme Example: Machining DX - Solution Proposal Ability -

Launch of "Tool Assistant" Service to Suggest the Optimal Cutting Tool  
 - DX tool selection to achieve appropriate tool selection from approximately 400,000 criteria -

- Tool Assistant is a service that suggests the most appropriate tool and machining conditions based on the material to be cut and the dimensions to be machined. Tool selection requires specialized knowledge and experience, and often requires inquiries from manufacturers and dealers, making it a time-consuming task. In addition, it is expected that the number of skilled personnel capable of appropriate selection will decrease, making it even more difficult to quickly select tools.
- To address these issues, we have developed Tool Assistant, which concentrates the tool selection know-how of skilled engineers. By simply selecting and inputting the necessary information, the user can select the most suitable tool like an expert engineer, regardless of time or place. By providing this service to DX tool selection, we will contribute to improving productivity in the cutting industry and solving the issues of technology succession.

The screenshot displays the MMDX Tool Assistant web application. On the left, there are filters for material (P6 low alloy steel), machining conditions (roughing, high-performance machining center), and tool types (insert, end mill, head exchange). The main area shows search results for a specific tool, with a table listing various tool options and their specifications.

Image	ホルダー製品名	インサート製品名	材質	工具外径 mm	加工時間 sec	Pop 幅方向/1次取	Pos 径方向/1次取
	VPX300R08010CA	LOGU1207080PNER-M	MPG120	80	17.57	1	3
	APX400R08007CA	AQMT184808PEER-M	MPG120	80	18.08	1	3
	APX300R08009CA	AQMT123608PEER-M	MPG120	80	23.44	1	3
	VPX300R08007CA	LOGU1207080PNER-M	MPG120	80	25.1	1	3
	ASX400R08006C	SQMT12T308PEER-JM	F7030	80	26.05	2	2
	WVX200R08009CA	GNMU0906080PNER-M	MPG130	80	34.32	2	2

Press Release dated October 31, 2024 "Launch of Tool Assistant service to suggest the most suitable tool"  
 URL: <https://www.mmc.co.jp/corporate/ja/news/press/2024/24-1031a.html>



## MMDX Theme Example: Machining DX - Solution Proposal Ability -

Exhibited our “Tool Assistant” at the 32nd Japan International Machine Tool Fair “JIMTOF2024”

WEBで簡単！「あなたにぴったりの工具」をご提案します

# Tool Assistant



工具選定に関するこんなお悩みはありませんか？



工具や加工の  
知識や経験など  
専門性が必要



誰かに相談が  
必要なため、  
時間がかかる



自社に本当に  
最適な提案が  
不安が残る

 MITSUBISHI MATERIALS CORPORATION

### Tool Assistant の使い方

- 1 | ワーク材質や、加工形態を一覧から選ぶ
- 2 | ワーク寸法や、精度などの詳細パラメータを選ぶ
- 3 | 入力された条件に最適な工具の組合せ、加工条件、寿命など各種シミュレーション結果をご提案

#### 工具や加工の 専門知識が不要

操作は直感的で、工具  
選定に不安のある方でも  
安心してご利用いただけ  
ます



#### いつでもどこでも 最適な選定

ご利用になりたい時間や  
場所に関係なく、最適な  
工具の選定が可能です



#### 最適な工具を ご提案

熟練エンジニアの選定  
ノウハウを凝縮し、最適  
な工具をご提案します



### Tool Assistant のご利用方法

三菱 ツールアシスタント

検索

または下記URL、二次元バーコードからアクセス頂けます  
<https://www.mmc-carbide.com/jp/ta/search>



 三菱マテリアル株式会社 加工事業カンパニー

最新情報・お問い合わせはWEBにて  
三菱 切削工具で検索 <https://www.mmc-carbide.com/>

WEBトップ



お問合せ/サポート



(仕様は変更されることがありますのでご了承ください)

 あなたの、  
世界の、  
総合工具工房  
YOUR GLOBAL CRAFTSMAN STUDIO

### ■ Message from the Development Team

There are many factors involved in cutting, and it is not easy to select the most suitable tool and cutting conditions. We hear that there is a shortage of skilled technicians to review cutting tools, that it takes time to consult with manufacturers, and that there are concerns about whether one's choice is optimal.

We developed Tool Assistant to solve these problems. Tool Assistant is a symbol of technological innovation and digital transformation (DX) because it can quickly select the most suitable tool from approximately 400,000 different conditions.

Handout brochure

## DX Activity Topics

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### Mitsubishi Materials selected as a "Noteworthy DX Companies 2024" in "DX Stocks 2024" for the second consecutive year

- Mitsubishi Materials Corporation ("MMC") has been selected as a "Noteworthy Digital Transformation (DX) Companies 2024" following last year in a program run by the Ministry of Economy, Trade and Industry (METI), the Tokyo Stock Exchange (TSE), and the Information-technology Promotion Agency, Japan (IPA).
- The "DX Stocks" program is a system to select and introduce companies listed on the Tokyo Stock Exchange that have achieved outstanding results using digital technology by establishing internal mechanisms to promote DX that lead to increased corporate value.  
"Noteworthy DX Companies" are selected from the companies that are not classified as "DX Stocks," and are implementing initiatives that are particularly noteworthy in terms of their contribution to corporate value.



**DX注目企業2024**  
Digital Transformation

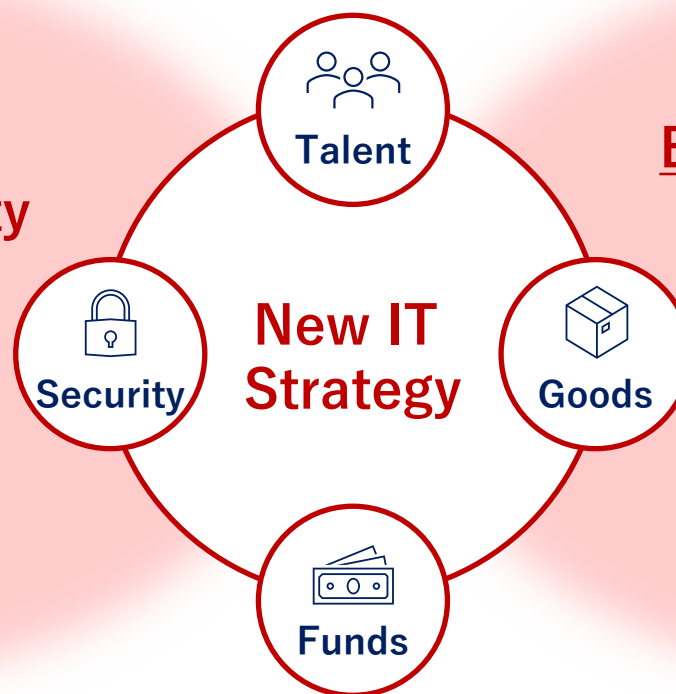
Press Release dated May 28, 2024 "Mitsubishi Materials selected as a "Noteworthy DX Companies 2024" in "DX Stocks 2024" for the second consecutive year  
URL:<https://www.mmc.co.jp/corporate/en/news/2024/news20240528.html>

## Basic Principles in the IT Area

- In the IT area, our basic principles are the establishment of governance (IT security) and synergy (commonization & standardization).

### IT Governance Ensuring IT Security

Implementation is crucial to maintain security throughout the MMC Group



### Benefits of IT Synergy

Reduce costs & eliminate resource waste by commonizing wherever possible

Principles of Global IT Governance

**Establishing the MMC Group IT WAY**



## IT Strategy

- To realize the MMC Group IT WAY, we promote IT modernization to support our businesses from the perspective of data utilization, work style, and security.
- We will invest on the order of ¥10 billion while keeping IT costs below 1.0% of net sales in FYE March 2031.  
(Currently approximately 0.8%)

Policy on IT Initiatives	Major Measures
<b>Establish &amp; Execute the MMC Group IT WAY (IT Governance and IT Synergies)</b>	<div> <b>IT Governance = IT Security</b> <ul style="list-style-type: none"> <li>● Equalize global security levels and implement security measures appropriate for current global standards.</li> <li>● Implement new network and cloud-based security for global common policies and Company-wide enforcement.</li> </ul> </div> <div> <b>IT Synergy = Commonization / Standardization</b> <ul style="list-style-type: none"> <li>● Promote the utilization of data analysis infrastructure, cloud infrastructure, and IT services common to the entire Group.</li> </ul> </div>
<b>Move from Legacy to Global Standard IT Infrastructure; Implement Appropriate Information Security Measures</b>	<ul style="list-style-type: none"> <li>● Gradually refresh systems developed with legacy technologies and move away from legacy architectures by approximately FYE March 2031.</li> <li>● Implement ERP starting in the accounting area to improve operational efficiency and data availability.</li> <li>● Strengthen security measures against increasingly sophisticated external threats in both IT and OT.</li> </ul>
<b>Develop and Secure Experienced IT Talent Able to Work Effectively in the Market and Build an Optimal IT Organization</b>	<ul style="list-style-type: none"> <li>● Optimize the division of IT roles among Strategic Headquarters, Group Companies, MMIS, and External Partners.</li> <li>● Governance and synergies (commonization and standardization), business support (individual systems), and execution functions.</li> <li>● Develop career paths and education plans for IT talent to improve their expertise, while increasing IT talent by approximately 10% by FYE March 2031.</li> </ul>

## Positioning of IT Area

- In the IT area, we provide essential system functions for our business that support the promotion of DX.
- We will continue to provide safe and efficient system infrastructure, and we are also promoting new initiatives.

## ICT Tools

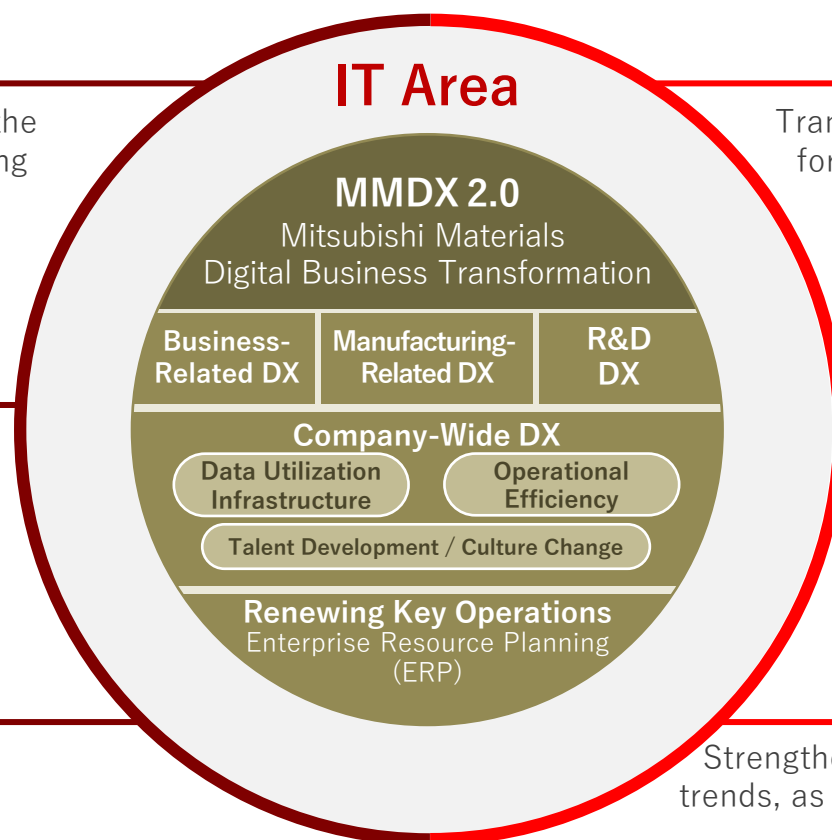
Providing a digital workplace to increase the productivity of all employees and promoting IT utilization

## IT Infrastructure

Providing stabler, more efficient IT infrastructure to the whole Group through commonization & standardization

## Securing IT Talent

Developing human resources with the expertise needed by business IT talent



## System Modernization

Transitioning to architecture that is appropriate for data utilization, new work styles, and more

## IT Organization Optimization

Reevaluating the role of the IT organization within the Group, including MMIS

## Enhancing Security

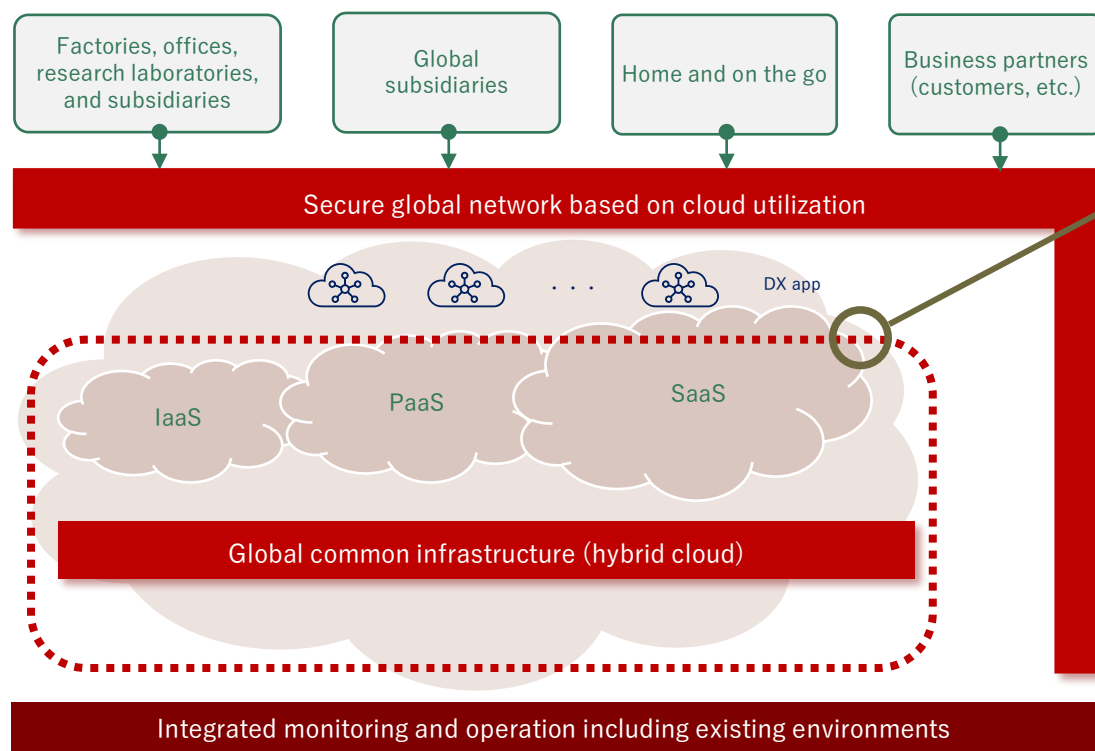
Strengthening security measures in line with current trends, as external and other threats continue to grow

### Goods Area: Establishing a New IT Environment (1/2)

- Development of a company-wide common infrastructure for efficient and safe use of the cloud as an IT infrastructure to support global business.

#### IT infrastructure to realize the utilization of the cloud

- ❑ Development of a global internal base, secure network for customer access, and common cloud infrastructure
- ❑ Construction of a system that utilizes the common infrastructure for many DX initiatives, including the company-wide renewal of core business



Renovation of all core business systems to the cloud and expansion of the infrastructure

- ERP was introduced in the accounting domain in March 2024. It will be gradually introduced to Group companies in Japan and overseas.
- We are also promoting system renewal and standardization for other core business processes. Aiming to utilize data across the entire Group
- Aiming to improve quality and development efficiency when introducing services by establishing in-house development infrastructure for cloud environments

## Goods Area: Establishing a New IT Environment (2/2)


We are promoting modernization of our workplaces and business systems, as a way of promoting data utilization and supporting our businesses through work style improvements.


### Workplace & Business System Modernization


- ❑ We initiated rapid modernization of our workplaces in conjunction with our response to the COVID-19 pandemic.
- ❑ We believe it is necessary to both realize further work style diversification and improve productivity, so we are proceeding with various modernization plans.


#### Increasing Workplace Sophistication while Balancing Diversity of Work Styles and Improved Productivity

- ✓ Increasing operational efficiency by taking advantage of the strengths of devices such as PCs and smartphones, and promoting internal communication
- ✓ Using generative AI to increase operational efficiency, competitiveness, etc.


 **Strengthening the remote work environment**

 **Proactively utilizing generative AI**

 **Use of smartphones by all employees, including those at plants**

 **Strengthening our service team to promote IT utilization**

 **Deploying RPA to further increase operational efficiency**

 **Utilizing no-code and low-code tools to improve productivity**

#### Active Utilization of Generative AI

- We have established generative AI that can handle confidential information and have deployed it to domestic group companies.
- While ensuring security, we aim to improve overall productivity across the group.

#### Strengthening the Integrated Service Desk

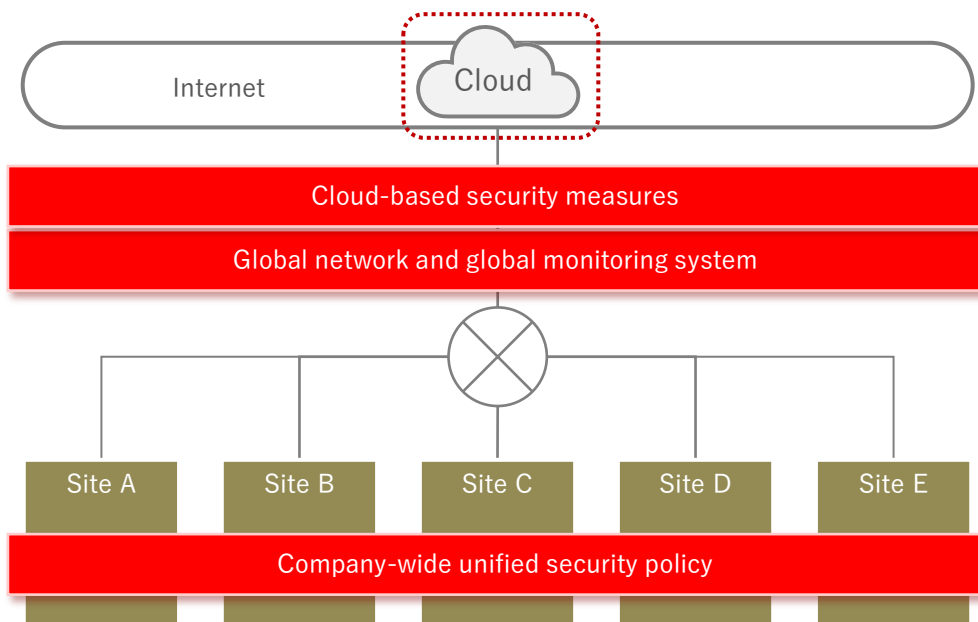
- The integrated service desk has expanded its support scope to 11 systems and plans to continue expanding the target range.
- By consolidating inquiry windows, we aim to further improve operational efficiency and reduce costs.

## Security Area: Efforts to Ensure Security

- As an effort to ensure system security, we will implement appropriate information security measures globally in response to changes in the external environment.  
We will implement appropriate information security measures globally.

## Execution of Information Security Measures

- ❑ Introduction of a distributed architecture for stable operation and enhanced security of the global network  
The system has been completed in Japan, China and Southeast Asia, and [will be expanded to Europe and North America in fiscal 2024](#)
- ❑ Gradually expand the scope of the Security Operations Center (SOC) to be monitored, and [in fiscal 2024 we will promote a global monitoring system for the entire Group](#)
- ❑ Strengthening security measures in the OT area



## Stability and fault tolerance

Distribute access points in each country to ensure stable operation without crossing international borders

## Flexibility and cost reduction

## Cloud-based network environment improves flexibility and network quality according to regional characteristics and reduces costs

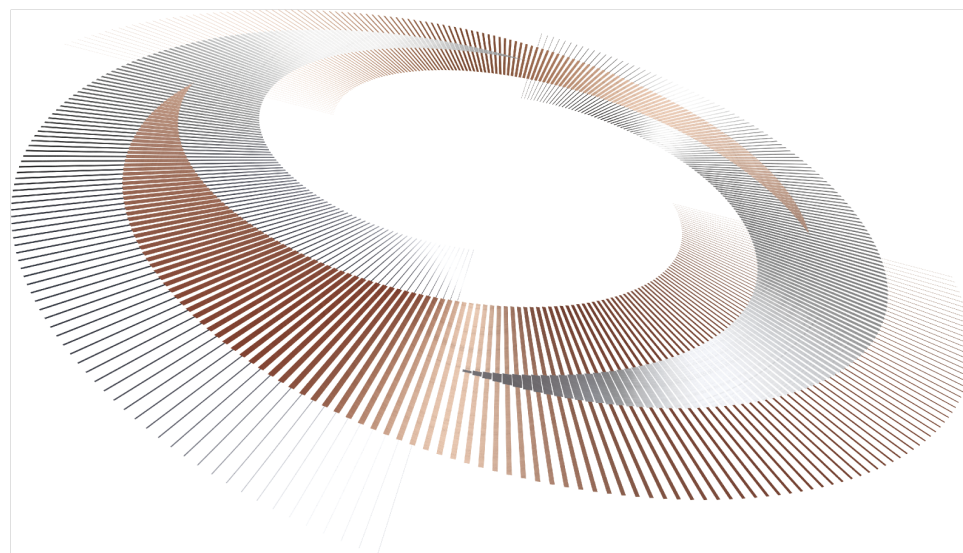
## Security enhancement

Provides network security functions as a cloud service and applies company-wide security policies even in a distributed environment

## OT security enhancement based on "connection assumption"

Enhanced security by installing high-performance control equipment between OT/IT networks and introducing SOC monitoring. Reduced impact in the event of a failure by segmenting the OT network.

## Continuing information security measures based on trends



For people, society and the earth, circulating resources for a sustainable future



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**For more information, please contact :**

**Mitsubishi Materials Corporation  
IR Group, Corporate Communications Dept.**

**Marunouchi Nijubashi Building, 3-2-3, Marunouchi, Chiyoda-ku,  
Tokyo 100-8117, Japan**

**email: [ml-mmccir@mmc.co.jp](mailto:ml-mmccir@mmc.co.jp)**

**HP: <https://www.mmc.co.jp/corporate/en/>**

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