

[Business Strategies]

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Advanced Products Business

Global First Supplier

Aiming to become a global first supplier that provides our customers who are our partners with products globally in a timely manner.

Yasunobu Suzuki, Executive Vice President and Executive Officer
President, Advanced Products Company

The strengths of Advanced Products Company are a consistent value chain from smelting connected to Metals Company to copper and copper alloys; development capability and processing technology for the production of oxygen-free copper, high-performance, high-quality copper alloys and other electronic materials; and the ability to provide fast and flexible solutions in collaboration with the Central Research Institute.

The main markets for our materials and components are automobile, semiconductor, electronics, and infrastructure including medical. Currently, the semiconductor industry continues to flourish through the increase in remote work as a COVID-19 countermeasure. Demand for automobiles and home appliances is recovering to the point it was at before the pandemic, but production decreases due to semiconductor shortages, logistics disruptions and other uncertainties remain. In the medium to long term, there are no major differences in market trends accompanying changes such as advances in

Specific Measures of the FY2023 Strategy

- Assign key account managers acting cross-sectionally
- Enhance information analysis by digital marketing such as the employment of AI or IoT
- Share product road maps with customers (co-creation capabilities)
- Develop new products through collaboration with Central Research Institute
- Enhance manufacturing capabilities (improve production efficiency and mass-production technologies, etc.)
- Pursue opportunities to execute M&A or business alliances

Projected Achievements at the End of FY2023

In our main business fields*, we will have:

- Earned customers' trust
- Released new products by integrating our technical capabilities
- Generated new applications of our products

*Next-generation vehicles, semiconductor / electronics, industrial machinery / infrastructure

EV and electronic control of automobiles against the backdrop of the low-carbon movement or the spread of 5G that is the backdrop of development of digitization and the data economy, and we believe this is in line with the direction of our business strategy. Furthermore, to anticipate the need for environmentally friendly materials, renewable energy utilization and advancement of medical devices for an aging society that are conscious of SDGs, we are developing activities while adding these items to our research, development and strategic planning.

First, we aim to become the first call vendor that customers all over the world turn to, and become a global first supplier in terms of customer satisfaction in quality and product originality in the long-term. In our Medium-Term Management Strategy, we aim to build a relationship of trust with our customers in priority business fields, develop new products by combining existing technologies and discover new product applications. Furthermore, our business fields are changing rapidly, and with the rise of new

technologies and start-ups globally, the market has become highly competitive. On the other hand, the market is expected to continue expanding, and we believe that we can achieve further growth and expansion by leveraging our strengths. We see the current business environment as an opportunity, and will further expand on our strengths by promoting our current DX activities, providing our unique materials, components, and services that support new technologies to our customers, who are our partners, globally and in a timely manner, in order to achieve our goal of becoming a global first supplier and steadily growing our business.

Social issues to be Materiality solved

- Advancing mobility
- Advancement and diversification of digital devices
- Automation of production and business processes
- Efficient use of mineral resources and alternative substances
- Efficient use of energy resources
- Development of renewable and unutilized energies
- CO₂ emissions reduction

Long-term business goals

Global First Supplier
Differentiated line of products
Price leader

Long-term strategy

- Create new businesses and products through the sophistication and integration of our core competencies
- Accelerate marketing activities to replicate successful practice

Our strengths (advantage)

- Material technology
- Processing technology
- Solution capability

Advanced Products Business

- Product-type Business
- Process-type Business

FY2023 Strategy

Risks

- Severing of the supply chain due to natural disasters, etc.
- Stuck in follower position
- Emergence of game changers

Opportunities

- Develop and supply products that contribute to decarbonization

Products & Services

Next-generation vehicles (including other transportation equipment)

- Copper strips for in-vehicle terminal materials
- Copper bars/busbars
- ECO BRASS
- Thermistor sensors
- Insulating heat-dissipation parts

Semiconductor manufacturing equipment and electronics

- Precision silicon products
- Columnar crystal silicon
- Seals and Packing Products, etc.

Robotics, industrial machinery, infrastructure

- Pneumatic Equipment Seal Products
- Superconducting cables

Mission

Contribute to build a prosperous society

- Advance and diversifying mobility and digital devices
- Automate production and business processes

Contribute to build a recycling-oriented society

- Develop and use materials with low environmental impact
- Efficient use of mineral resources and transition to alternative substances

Contribute to build a decarbonized society

- Efficient use of energy resources
- CO₂ emissions reduction
- Develop and supply products that contribute to decarbonization

Contribution Goals for a Sustainable Society

Sales volume of copper materials for new HV/EV

FY2020 results: 989 t

FY2023 target: 1,200 t

1.2 times or more

Sales volume of materials for next-generation vehicles and environmentally friendly products

FY2020 results: 4.2 billion yen

FY2023 target: 5.6 billion yen

1.3 times or more

FY2021

Net sales **357.1** billion yen

Operating profit **2.8** billion yen

Ordinary profit **6.1** billion yen

Breakdown

March 2022 (forecast) values were the values released May 14, 2021
Ratio of net sales is net sales to outside customers.

Aim to become a global-first supplier by enhancing marketing and technical development functions as well as investing heavily in the copper & copper alloy product business

We will create new businesses and products through the sophistication and integration of our core competencies (production and development technology for oxygen-free copper and copper alloys, and functional materials as well as technical capabilities such as bonding different metals, etc.), and build relationships of trust by sharing our product road map with key accounts.

Expand copper alloy sales

In addition to our acquisition of the Luvata Group (Special Products Division) in May 2017 for the goal of globalizing our copper & copper alloy business, we merged with Mitsubishi Shindoh Co., Ltd., the company with the top share of copper and copper alloy products in Japan, on April 1, 2020, to build a product supply system to create new value for our customers. One of our strengths is oxygen-free copper, which is a material required for increasing the current and voltage of next-generation vehicles, and high-performance copper alloys are widely used all over the world as the terminal material for automobiles, etc. Demand for copper & copper alloy products is expected to increase due to electronic control, IoT, and AI in markets such as robotics, industrial devices, and infrastructure, as well as the CASE (connected, autonomous, shared, electric) revolution in the automotive industry. We plan to make a capital investment of about 30 billion yen from 2020 to 2026 to increase production capacity by about 30%. Furthermore, in addition to “ECO BRASS,” our lead-free free machining brass series, which complies with the RoHS Directive and other lead regulations, we are also contributing to SDGs by developing more affordable next-generation lead-free free-cutting brass GloBrass with improved conductivity and hot molding workability. Furthermore, cooperating with Luvata Group, we will expand global sales of copper alloys as we aim to become a global first supplier in the copper & copper alloy product industry.

Global expansion of the Group



Electronic materials

In the electronic materials field, demand for 5G infrastructure, data centers and other products related to semiconductors are expected to remain strong, and we plan to increase sales of electronics- and automobile-related products due to the recovering market. In our FY2023 Strategy, our priority strategies are market development and sales expansion of next-generation automotive products and establishment of a system by which to increase production of silicon processed products. In fiscal 2021, we are steadily achieving results in the insulating heat-dissipation parts business, including achieving the target numbers for development of automobile products and strengthening our production system to meet customer needs. From fiscal 2022, we aim to maintain and improve profitability by establishing a production system and increasing production efficiency for the semiconductor-related products that continue to steadily trend upwards due to strong demand. Furthermore, in xEV products, which are expected to grow, we plan to utilize our development road map to build partnerships with important customers and promote the strengthening of development and production systems.

Enhance marketing & technical development function

Our strengths lie in advanced product development and technical capabilities such as bonding of heterogenous materials, and we have developed innovative products that were world-firsts, such as high performance insulated DBAC substrates for power modules, which dramatically improve heat cycle resistance in a high temperature range. In the FY2023 Strategy, we plan to further polish these strengths and share our future product road map with customers to quickly capture market needs and create new products and new businesses, including new product applications. We also plan to adopt digital marketing to fortify our analytical capability on customers and markets, as well as to strengthen the synergy between business divisions. Furthermore, we will utilize our global manufacturing, development, and sales network, including those of the Luvata Group, to build relationships of trust with customers all over the world and have our key accounts in particular recognize us as the first call vendor, and thereby aim to become a top supplier in terms of customer satisfaction regarding quality and product originality.

Products

Next-generation vehicles

Oxygen-free copper to handle the high current and high voltage requirements of xEV

Next-generation vehicles

Insulating heat-dissipation parts that combine reliability with high heat dissipation performance

Semiconductor manufacturing and electronics

Micromachined precision silicon products used in semiconductor manufacturing equipment, etc.

Semiconductor manufacturing and electronics

Seals with excellent heat resistance, chemical resistance, radical resistance, and low particle generation

Semiconductor manufacturing and electronics

Copper alloy lead frames for plating technology, stamping, and high-precision molds

Environmentally Friendly Products

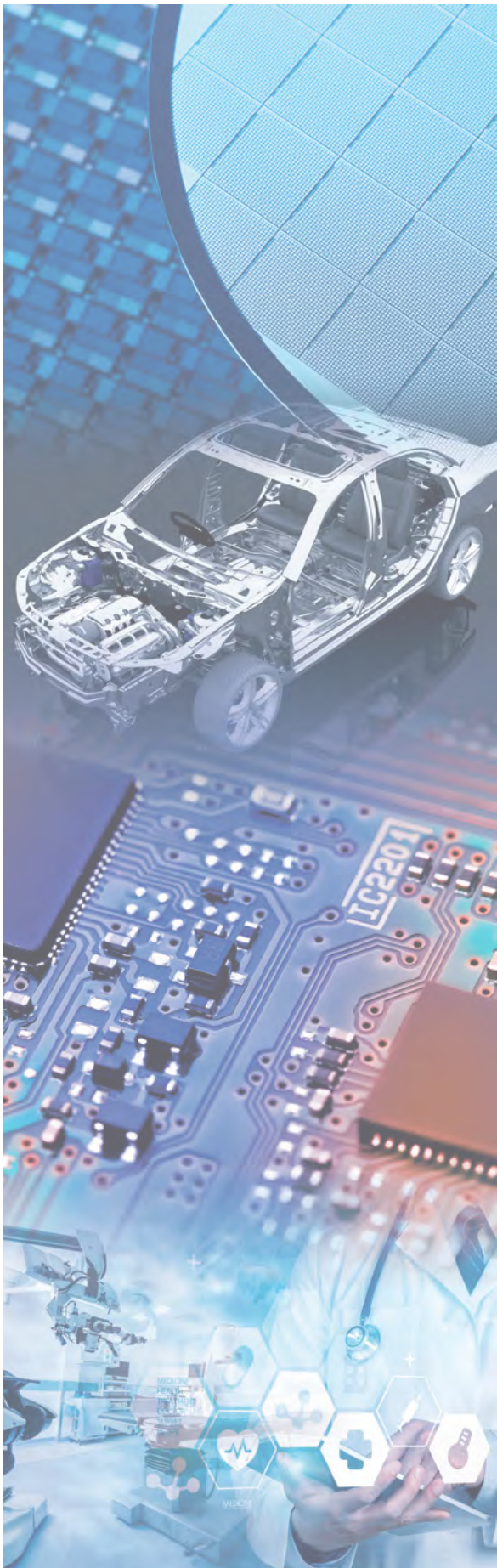
Lead-free brass, ECO BRASS products with high strength, wear resistance, and corrosion resistance

Robotics, industrial machinery, and infrastructure

Superconducting wires often used in medical devices for applications such as MRI and international science projects

Next-generation vehicles and electronics

On-board temperature sensors for xEV batteries and other electronic products



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Metalworking Solutions Business

Top 3 supplier in strategic markets

Aiming to be ranked by customers as a top three supplier in the automobile, aerospace, medical and mold and die industries, as well as for our efforts in manufacturing utilizing renewable energy and increasing recycling.

Tetsuya Tanaka, Managing Executive Officer
President, Metalworking Solutions Company

In our Medium-Term Management Strategy (FY2023 Strategy), the Metalworking Solutions Company is focusing on the strategic markets of the automobile, aerospace, medical, and mold and die industries. In fiscal 2021, the cutting tools market temporarily plummeted due to the global spread of COVID-19. After, demand has continued to recover, and we expect the market to exceed two trillion yen by 2030. Demand in the aerospace industry is recovering more slowly than in other industries, but we expect it to recover and expand in the medium to long-term, so we are preparing for that recovery. The Metalworking Solutions Company is focusing management resources on these strategic markets to expand business activities.

We believe that the strengths of the Company lie in our ability to develop distinct products with superior performance that feature material technologies and coating technologies as their core competency, stable quality, and our ability to provide added value through our technical centers and sales networks

Specific Measures of the FY2023 Strategy

• Increase recycling rate in our tool recovery system and utilize renewable energy

• Provide high efficiency tools and digital solutions

• Transition to smart factory and optimization of logistics and supply chain

• Expand advanced metal powder business to rechargeable battery market

Projected Achievements at the End of FY2023

• Establishment of a competitive global business base capable of expanding in strategic markets using digital technologies

around the world. By leveraging these strengths, we aim to provide products and services that contribute to strategic markets. Furthermore, by promoting our digital transformation (DX) strategy and strengthening support for providing customers with digital solutions, we will establish a system that improves customer productivity and social value.

As an initiative that contributes to the building of a recycling-oriented society, we are setting target values that are more specific than those from fiscal 2022 in order to promote manufacturing that utilizes renewable energy. In the long term, we aim to reduce greenhouse gas (GHG) emissions by 30% or more over fiscal 2014 by fiscal 2031. Furthermore, in order to strengthen efforts to collect used cemented carbide products and recycle them as cemented carbide materials, we are looking into establishing a scheme for recycling in areas where scraps are collected, mainly in Japan, Europe and the Americas, and collaborating with the Masan High-Tech Materials Corporation

Group, which we invested in in fiscal 2021. We were able to able to achieve our FY2023 Strategy target of 35% in fiscal 2021 thanks in part to an increase in collection and recycling of scrap in overseas areas. We are aiming for a long-term goal of 80% recycling by fiscal 2031.

By striving to increase both our social and economic value in this manner, we aim to be ranked one of the top three suppliers by our customers.

Social issues to be solved

• Advancing mobility

• Advancement and diversification of digital devices

• Automation of production and business processes

• Longer lifespans of people and buildings

• Efficient use of mineral resources and alternative substances

• Efficient use of energy resources

• Development of renewable and unutilized energies

• CO₂ emissions reduction

Long-term business goals

Top 3 supplier in strategic markets

Long-term strategy

Promote clean manufacturing

Provide high-efficiency products with advanced technology

Expand advanced metal powder business in electronic devices

Our strengths (advantage)

Consistent handling of everything from raw material powder to final products and recycling

Material technologies and coating technologies cultivated as a comprehensive materials manufacturer

Technical centers and sales networks around the world

MMC Group's Business

Product

Materials

Recycling

Resources

Metalworking Solutions Business

Product-type Business

Process-type Business

FY2023 Strategy

Risks

• Supply chain changes in the automotive industry

• Decreased internal combustion engines due to mobility revolution

• Rising raw material price

• Changes to the market structure due to COVID-19

Opportunities

• Processed materials becoming difficult-to-cut

• Increased new demand due to automobile electrification

• Demand for recycling

• Evolution of digital technologies

Products & Services

Cemented carbide products

• Cutting tools

• Wear resistant tools

• Rock tools

Advanced metal powder

Cemented carbide recycling

Mission

Contribute to build a prosperous society

Improve productivity by providing high efficiency tools and digital solutions

Contribute to build a recycling-oriented society

Increase the usage rate of recycled cemented carbide materials and reduce environmental impact via production activities

Contribute to build a decarbonized society

Promote manufacturing utilizing renewable energy and contribute to automobile electrification by advanced metal powder technology

Contribution Goals for a Sustainable Society

Ratio of recycled tungsten as raw material in cemented carbide tools

FY2020 results 28%

FY2023 target 35%

Up 25%

FY2021

Net sales 119.3 billion yen

Operating profit -1.1 billion yen

Ordinary profit -0.7 billion yen

Net sales (outside) 7.5%

Ordinary profit (inside) -%

March 2020

March 2021

March 2022

Breakdown

Net sales (outside) 7.5%

Ordinary profit (inside) -%

March 2022 (forecast) values were the values released May 14, 2021

Ratio of net sales is net sales to outside customers.

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Expansion of the utilization of new technologies and services that can solve customer issues
Enhancement of the global supply system and functions

The Company will conduct strategic investment in growing markets and enhance global competitiveness in order to achieve its aim of becoming one of the top three suppliers in the strategic markets of the automotive, aerospace, medical, and mold and die industries.

■ Encouragement of global collaboration and expansion of technical center functions

The Company has established nine technical centers around the world, including two in Japan (in Saitama and Gifu), which enable us to provide a wide range of solutions to customers around the world, including cutting tests, training, technical consultations, and direct proposals for improving customer processes.

In fiscal 2021, we worked to improve the function of cutting tests, simulations and technical education at our seven overseas technical centers in order to provide customers around the world with the same solution services provided in Japan. Furthermore, we also conducted remote cutting tests and workshop services in order to continue providing solution service amid the COVID-19 pandemic. Looking toward fiscal 2031, we plan to expand our menu of digital solutions.

■ Utilization of digital technologies for processing diagnosis and simulations

By digitizing information such as processing cases and product information and constructing a technology database while developing and adopting a system (MICS) for collecting and analyzing processing information, we are now conducting more detailed analysis. Our technical centers located all over the world enable us to propose the optimal processing methods and ways of solving customer problems based on digitized technical information and processing diagnosis conducted via a dedicated system.



■ Investment in Masan High-Tech Materials Corporation, Vietnam

We purchased 10% of Masan High-Tech Materials Corporation's (MHT) stock in December 2020.

By building a strategic partnership with MHT, we will launch a joint tungsten recycling business that utilizes the global bases of the MHT Group, and we also are looking into collaboration in midstream tungsten business, including technical partnerships related to the production of high-quality tungsten powder.

Furthermore, MHT has the rights to the Nui Phao Mine (Thai Nguyen Province, Vietnam), which boasts one of the world's largest tungsten reserves and the ability to smelt ore into high value-added tungsten compounds, and we will work to stably procure tungsten, which is the raw material for cemented carbide products.

■ Global expansion of recycling process

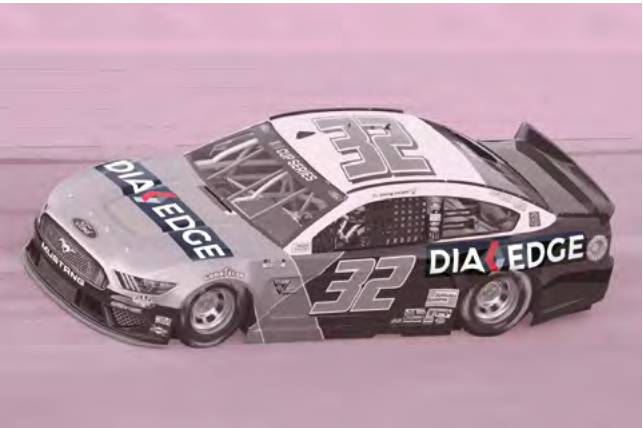
In the collection and recycling of used cemented carbide products, we were able to achieve our FY2023 Strategy target of recycling 35% in fiscal 2021 thanks to an increase in collection and recycling in overseas areas. We are aiming for 80% recycling by fiscal 2031. Furthermore, we are establishing a scheme for recycling in areas where scraps are collected, mainly in Japan, Europe and the Americas, and plan to look into collaboration with the MHT Group.

In order to promote manufacturing that utilizes renewable energy, we surveyed renewable energy procurement methods and formulated a road map for fiscal 2031. Starting in fiscal 2023, we plan to formulate and implement specific means of utilization at manufacturing and sales location in Japan and overseas. Additionally, we aim to reduce greenhouse gas (GHG) emissions by 30% or more over fiscal 2014 by fiscal 2031.

Strategic Markets

Automotive

Automobile manufacturers worldwide are responding to environmental issues with a variety of initiatives, such as implementation of fuel efficient and environmentally friendly technologies. Progress in production technology is essential for achieving these technologies, and we are involved in improving component processing technologies by closely cooperating with our customers worldwide. We are also involved in daily research into processing technologies for electric vehicles and fuel cell vehicles in order to respond to future changes in mobility.



Medical

In the orthopedic market, the Company is enhancing its ability to propose solutions in the medical industry by establishing a dedicated sales organization and marketing office in the United States, based on the fact that many cutting-edge technologies are found in North America. Many difficult-to-cut materials are used in orthopedic devices, which means that the life of cutting tools is extremely short and there is high demand for improvements to tool life. We contribute to improving customer productivity by developing tools over the entire process, from materials to finished products.



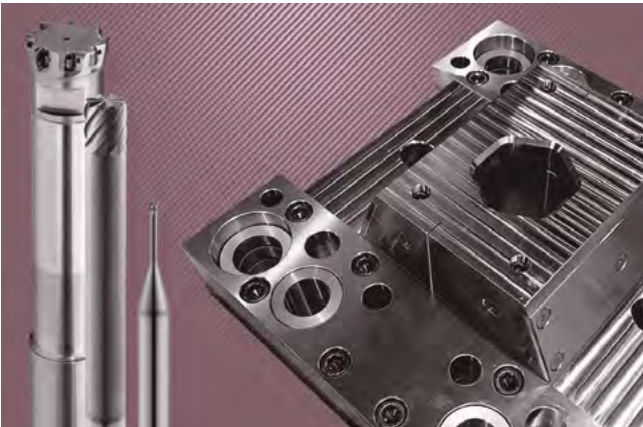
Aerospace

The aerospace industry demands advanced technology for machining difficult-to-cut high-performance materials into complex shapes. Our dedicated staff in Japan, Europe and the United States provide prompt and detailed response in order to provide high-level products and even more specialized services. We also collaborate with research institutes and universities in Japan and overseas to develop revolutionary cutting tools and provide processing methods that make full use of our simulation technology.



Mold and Die

In the mold and die industry, we are promoting sales activities that create value for customers by providing mold and die processing solutions and services centered on the "MOLDINO" brand, which features distinctive products and cutting-edge technology. Aiming to deepen mold and die processing, we are manufacturing molds and dies in-house and pursuing mold and die processing innovation from the customer's point of view in order to attain the number one share in the mold and die market globally.



[Business Strategies]



[Business Strategies]

Metals Business

Leader in environmentally-friendly mining & smelting business

Contributing to the development of society and its sustainability as a leader in environmentally-friendly mining & smelting business.



Tetsuro Sakai, Managing Executive Officer
President, Metals Company

The strength of our metals business lies in the Mitsubishi Continuous Process (Mitsubishi Process), a unique, proven technology with high efficiency and exceptionally low environmental impact. Utilizing this advantage, we established a large-scale E-Scrap processing system to be the forerunner in the industry. We now boast the world's largest processing capacity at 160,000 tons per year. Another feature is our distinctive production sites for smelting and refining materials such as copper, lead, tin, precious metals and PGM. We plan to build a process flow among all the production sites of our group in our Medium-Term Management Strategy (FY2023 Strategy) and turn this into an even greater strength. This will make it possible to make the best use of the processing capacity of each site and further expand E-Scrap processing. In the natural resource business industry, we have many years of operational experience in domestic mining, and we use this knowledge to promote investment in high quality mine projects and maximize the project profits.

Specific Measures of the FY2023 Strategy

- Secure clean copper concentrate by investing in new mines
- Develop impurity removal technology in copper concentrate
- Optimize valuable metal material flow
- Reduce fossil fuels

Projected Achievements at the End of FY2023

- Optimization of valuable metal material flow derived from E-Scrap
- Reduction of smelter CO₂ emissions by 5%

Under our long-term goal of being a “leader in environmentally-friendly mining, smelting and refining business,” we have set the goal of “Creation of a sustainable raw material portfolio consisting of clean copper concentrate and E-Scrap” in FY2023 Strategy. To achieve this goal, we aim to realize a balanced and sustainable raw materials portfolio, which consists of off-take copper concentrate from mines we invest in, copper concentrate from long-term contract and recyclable materials. Regarding new mine investment, we will steadily work to advance the Mantoverde mine in Chile, which we acquired 30% stake in February 2021, and the Zafranal Project in Peru, in which we hold a 20% stake. Additionally, we are working to optimize material flows among our production sites, Naoshima, Onahama, Hosokura and Ikuno, to recycle minor elements derived from E-Scrap with a high level of efficiency. Concurrently, we will figure out constraints in the input volume of E-Scrap and optimize the processing process. These efforts will lead to future expansion

of our recycling business. Furthermore, as a response to climate change, while making the best use of the superior qualities of the Mitsubishi Process, we will reduce fossil fuel usage and improve energy efficiency. We aim to reduce CO₂ emissions from smelters by 5% by the end of the FY2023 Strategy.

As a “leader in environmentally-friendly mining, smelting and refining business,” it is our mission to provide a stable supply of clean nonferrous metals derived from copper concentrate we procure from environmentally-friendly copper mines while promoting recycling business with the world’s largest processing capacity of E-Scrap and environmental advantage of the Mitsubishi Process. With the shift to EV, IT and a decarbonized society, the importance of copper and precious metals is increasing, and by fulfilling our supply responsibilities while taking the environment into consideration, we will contribute to the development of a sustainable society.

Social issues to be solved

- Advancing mobility
- Advancement and diversification of digital devices
- Automation of production and business processes
- Longer lifespans of people and buildings
- Effective measures against disasters
- Efficient use of mineral resources and alternative substances
- Efficient use of energy resources
- Development of renewable and unutilized energies
- CO₂ emissions reduction

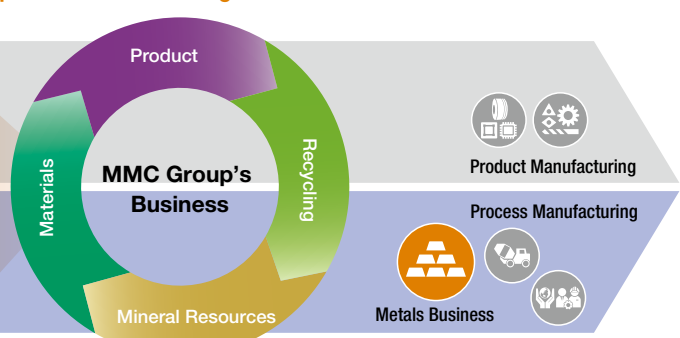
Long-term business goal
Leader in environmentally-friendly mining & smelting business

Long-term strategies
Stable supply and recycling of nonferrous metal materials, predominantly copper

- Creation of a sustainable raw material portfolio consisting of clean copper concentrate and E-Scrap
- Promotion of recycling
- Response to climate change

Our strengths (advantage)

- Long years of operational experience in limestone mining
- Mitsubishi Process featuring high efficiency and low environmental impact
- Advanced, large-scale E-Scrap processing technologies and systems
- One of the largest producers and sellers of gold in Japan



FY2023 Strategy

Risks

- Risks for copper concentrate procurement due to resource nationalism in resource-rich countries
- Intensifying competition following the growth of Chinese smelting and refining manufacturers
- Operational problems attributed to increasing input of minor elements in the smelting and refining process
- Stricter regulations on environmental concerns in smelting and refining operations

Opportunities

- Potential for developing technologies for removing impurities from copper concentrate
- Enhancing recovery of minor elements that are input and use of these in products
- Transition to a recycling-oriented and decarbonized society
- Worldwide expansion of the E-Scrap supply market with growing environmental awareness
- Increase in demand for gold as a safe asset

Products & Services

- Copper cathode
- Precious metals
- Various metals
- Sulfuric acid
- Copper slag
- Recycling

Mission

Contribute to build a prosperous society
Provide nonferrous metal materials, predominantly copper, and high value-added functional materials and products

Contribute to build a recycling-oriented society
Provide recyclable products and advanced technology-based waste recycling

Contribute to build a decarbonized society
Promote the development and use of CO₂ reduction technologies and ensure due consideration of environmental load in manufacturing

Contribution Goals for a Sustainable Society

E-Scrap processing capacity

FY2020 results: 160,000 tons

FY2031 target: 200,000 tons

Up 25%

FY2021

Net sales **728.2** billion yen

Operating profit **18.8** billion yen

Ordinary profit **32.9** billion yen

Item	March 2020	March 2021	March 2022
Net sales (billion yen)	665.0	728.2	825.9
Operating profit (billion yen)	18.6	18.8	13.2
Ordinary profit (billion yen)	27.4	32.9	22.8

Breakdown

Net sales (outside): **38.4%**

Ordinary profit (inside): **73.9%**

■ March 2022 (forecast) values were the values released May 14, 2021
Ratio of net sales is net sales to outside customers.

Stable supply and recycling of nonferrous metals, centering on copper

We will form a sustainable raw material portfolio consisting of clean copper concentrate and E-Scrap and enhance efforts to promote recycling and respond to climate change. The aim of this is not only to provide a stable supply of nonferrous metals essential for the development of society but also to contribute to efficient recycling of these.

Stable Supply of Materials

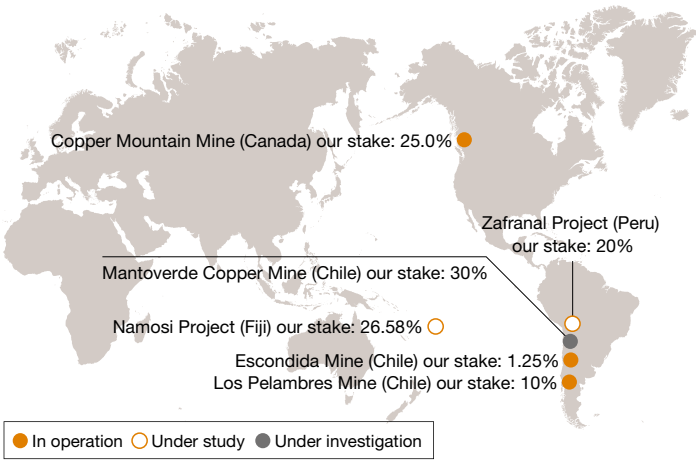
It is important to secure clean raw materials to fulfill our social mission as a smelting company to provide a stable supply of non-ferrous metals to society. We will promote new mine investments. We will also engage in R&D of new technology to remove impurities from copper concentrate and technical evaluation of mine projects at the Mining & Metallurgy Laboratory, which was newly established in April 2020. Furthermore, in order to expand opportunities for participating in high quality projects, we will continue to explore possibilities to invest in greenfield projects and form consortium.

In February 2021, we completed the acquisition of 30% stake in the Mantoverde mine in Chile. We will steadily advance the expansion of the concentrators and other facilities planned by the mine. Regarding the Zafranal Project, an environmental impact assessment (EIA) was prepared in fiscal 2021. The final investment decision is to be made in 2023 or later, following the application for the EIA, detailed engineering, and acquisition of the construction permit.

Additionally, in February 2021, we established a subsidiary in Chile to manage and operate our mine investment business in order to strengthen the foundation of the mine investment business in South America. For the time being, this subsidiary is expected to gradually expand its role while gathering information and supporting our smooth management of the mine investment business in South America.

We established the Mining & Metallurgy Laboratory to conduct geological and mineral analysis as well as metallurgy testing in order to improve operations at existing mines, technical evaluation of mine projects, development of new technology such as impurity removal technology in copper concentrate and separation and purification of by-products. At this laboratory, we are working to improve smelting and refining technology and train up resource engineer through industry-government-academia joint research projects. In April 2021, we established the Technology Strategy Department and its affiliate Mining & Metallurgy Laboratory as an independent unit of the Mineral Resources Division and the Metallurgy Division. This will enable us to steer development, conduct research and implement real world applications from a single location, resulting in clarification of responsibilities and accelerating the development and real world applications.

Company’s stakes in mining & mine development projects



Copper Mountain Mine (Canada)



Los Pelambres mine (Chile)



Escondida mine (Chile)



Mantoverde copper mine (Chile)



Zafranal Project (Peru)



Namosi Project (Fiji)

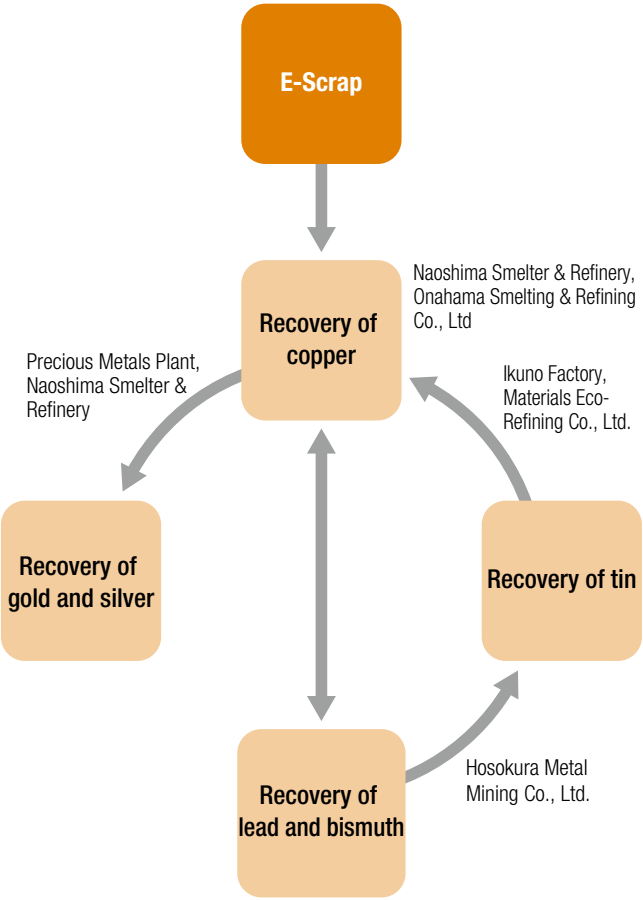
Promotion of recycling

For the promotion of the recycling business, we are working to build a new process flow among all the distinctive production sites and refine the processes of each sites. By taking advantage of the features of our group’s sites and organically connecting them, we aim to strengthen the recovery of valuable metals that include minor elements and establish an optimized recycling system that can effectively recover copper, gold, silver, platinum, palladium, lead and tin as well as nickel, bismuth, selenium, tellurium, rhodium and ruthenium. Furthermore, we are making efforts to figure out constrains in the processing of E-Scrap at every stage from receiving and sampling of E-Scrap to recycling. By optimizing the process, we aim to further increase E-Scrap processing capacity from the current 160,000 tons per year to 200,000 tons per year by fiscal 2031.

Dealing with climate change

As for response to climate change initiatives, under our Group-wide policy of achieving carbon neutral by fiscal 2051, we will reduce CO₂ emissions from smelters by 5% by fiscal 2023, and further reduction to follow after the FY2023 Strategy has finished. Specifically, while making the best use of the superior qualities of the Mitsubishi Process, our original smelting and refining process with a low environmental impact, we will reduce use of fossil fuels by effectively utilizing the heat generated from E-Scrap processing and replacing heavy oil with recycled oil. We also strive to improve energy conversion efficiency such as heat transfer efficiency of boiler and power generation efficiency, and improve energy use efficiency through efficient use of steam and improvement of current efficiency in the tank house.

Material flow



TOPICS

The History of “Mitsubishi Gold” Spans Over a Century

Mitsubishi initiated its gold metal refining business in 1896 when it acquired the Osaka Refinery from the Japanese government, as well as the Sado gold mine in Niigata and the Ikuno silver mine in Hyogo. “Mitsubishi Gold” has a purity of 99.99%. Its high quality meets international standards as evidenced by the stamp on its surface approved by the London Bullion Market Association (LBMA) and New York Commodity Exchange (COMEX). “Mitsubishi Gold” has earned a solid reputation over many years.



Mitsubishi Gold

[Business Strategies]

[Business Strategies]

Cement Business

Leader in the domestic and international cement industry with advanced environmental technologies

Realizing sustainable development of the cement business by utilizing synergies through business integration and investing in growth fields.

Kazuto Hirano, Managing Executive Officer
President, Cement Company

The strength of our Cement Company is a domestic network that includes subsidiaries that extend to downstream businesses for ready-mixed concrete and secondary products, the cost competitiveness of the Kyushu Plant, which has the largest domestic production of clinker, abundant limestone reserves, production of a wide variety of high-quality cement, and the stable supply of safe and reliable quality cement nationwide. Including the Kyushu Plant, we have four cement plants nationwide. At these plants, we collect and utilize waste as raw materials and thermal energy sources, detoxifying it then supplying it as a product. In this way, we contribute to building a recycling-oriented society, making another of the cement business's strengths its high social value. In April 2022, we will begin integrating our cement business with Ube Industries, Ltd., further enhancing these strengths. The integrated company will maximize synergistic effects, improving the efficiency of the business throughout the value chain, as we promptly invest in expected growth fields in Japan and overseas to increase effectiveness, and by doing so, further increase the business

Specific Measures of the FY2023 Strategy

- Improve and optimize production system through domestic business restructuring
- Expand capabilities in waste plastics processing and install chlorine dust cleaning equipment
- Introduce low-temperature burning technology and develop CO₂ reduction, capture, and recycling technologies
- Expand US business and develop new overseas bases

Projected Achievements at the End of FY2023

- Domestic business restructuring
- Optimized production systems and promotion of overall business efficiency

value of the integrated company.

In Japan, medium to long-term demand for cement is expected to increase for the strengthening of the country, but there are concerns that demand may decline because of delays in construction due to the COVID-19 pandemic. Furthermore, we must respond to soaring thermal energy prices and increasing social demand for carbon neutrality. In the Medium-Term Management Strategy (FY2023 Strategy), we are working to solve these issues by increasing thermal energy substitutes such as recycled oil and waste plastics, reducing energy costs by introducing high-efficiency equipment and developing technologies for CO₂ emissions reduction, collection and recycling. We are also working to improve operations utilizing AI and IoT.

In our US cement business, we have established a value chain that is vertically integrated from upstream to downstream through the development of cement plants, aggregate quarries, terminal ports and ready-mixed concrete plants. In the US, the long-term economic measures set out in the “American

Jobs Plan” are expected to increase demand for cement and ready-mixed concrete, so we are strengthening our business foundation by improving logistics efficiency and reducing costs, and have established a system to ensure we can reliably capitalize on demand. Additionally, in the FY2023 Strategy, we aim to improve competitiveness and expand business scale, including the expansion of existing mining and acquisition of new mines to acquire aggregates as well as the acquisition of ready-mixed concrete plants, while reducing costs by implementing DX and IT technology and working to improve safety. We plan to promote the development of new business bases in overseas markets where growth is expected.

By actively investing management resources in growth fields while utilizing our accumulated environmental technology, we aim to become a leader in the cement industry in Japan and overseas, where we have some of the best efficiency in the industry, and realize sustainable development of the cement business.

Social issues to be solved

- Advancement and diversification of digital devices
- Automation of production and business processes
- Longer lifespans of people and buildings
- Effective measures against disasters
- Efficient treatment of urban waste
- Efficient use of mineral resources and alternative substances
- Efficient use of energy resources
- Development of renewable and unutilized energies
- CO₂ emissions reduction

Long-term business goals

Leader in the domestic and international cement industry with advanced environmental technologies

Long-term strategy

- Stable supply of basic building materials for social infrastructure and disaster prevention infrastructure
- Sophistication of waste disposal
- Response to climate change by reducing CO₂
- Construction of a resilient domestic business foundation through business restructuring and business growth in overseas markets

Our strengths (advantage)

- High competitiveness of the Kyushu Plant
- Rich limestone reserves
- High-quality multi-purpose cement production
- High vertical value chain in the United States

FY2023 Strategy

Risks

- CO₂ emission regulations and securing of coal ash alternatives
- Resource depletion
- Decreased domestic demand for cement
- Labor shortages
- Rising thermal energy prices

Opportunities

- Restrictions on landfill of waste and handling of waste that is difficult to process
- Increased demand for cement in emerging countries and environmentally advanced countries (exports)
- Demand for advanced products
- Building national resilience, such as constructing embankments
- Low-temperature burning technology

Products & Services

- Cement
- Ready-mixed concrete
- Solidifying material
- High-functional cement products
- Aggregate
- Limestone/coal related products
- Recycling

Mission

- Contribute to build a prosperous society**
Contribute to create a safe, secure, and functional city
- Contribute to build a recycling-oriented society**
Promote sustainable resource recycling by protecting natural resources and recycling large amounts of waste
- Contribute to build a decarbonized society**
Reduce CO₂ emissions by improving manufacturing processes

Contribution Goals for a Sustainable Society

Waste and by-products processing volume in cement production

FY2031 target

4.5 million tons

(FY2020 production volume basis)

FY2020 results

3.9 million tons

Up 15%

FY2021

Net sales 215.8 billion yen

Operating profit 6.6 billion yen

Ordinary profit 6.1 billion yen

Operating profit

■ March 2022 (forecast) values were the values released May 14, 2021
Ratio of net sales is net sales to outside customers.

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MITSUBISHI MATERIALS CORPORATION INTEGRATED REPORT 2021 45

Reorganization of domestic business and development of new overseas bases

The Company will reorganize domestic business, optimize the production system, and aim to establish a stable profit base through economies of scale in order to respond to the decreased demand for cement in Japan. We will also utilize our superiority in Japan to expand growth in overseas markets by increasing our overseas bases, including those in the United States.

Businesses Integration

Establishing an integrated company combining our cement business with Ube Industries, Ltd., aiming to strengthen our business foundation

We decided to integrate our cement business, other related businesses and Ube Industries, Ltd. through a company split, and in April 2021, we established a successor company for this integration. This company is scheduled to start operation in April 2022 under a new name, after which, we will increase efficiency throughout the value chain and maximize synergistic effects by rebuilding our sales and logistics systems, including optimization of our production systems and ready-mixed concrete in downstream fields throughout Japan. These initiatives will further strengthen our business foundation and enhance our position as a company that contributes to the development of social infrastructure and a recycling-oriented society. Furthermore, we will concentrate our domestically produced management resources on businesses that are expected to grow in Japan and overseas, such as overseas cement and ready-mixed concrete business and high-quality limestone-based high performance inorganic materials business. Through these efforts, we will build an optimal business management system and aim for sustainable growth.

Domestic

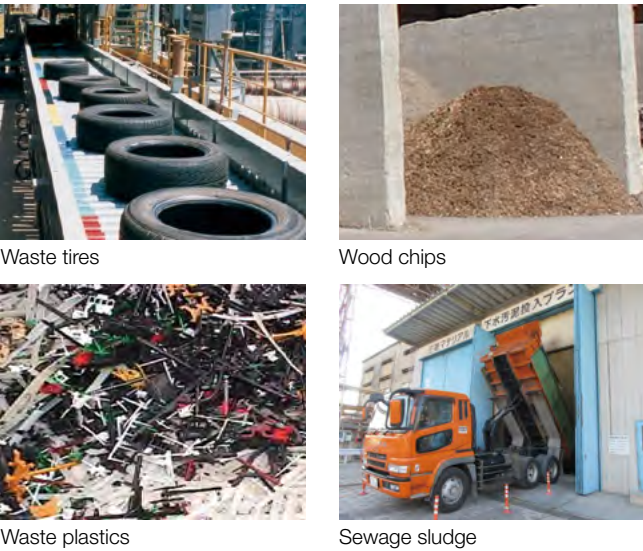
Reduction of thermal energy costs and CO2 by expanding environmental business and streamlining the manufacturing process

While aiming for further increased optimization and efficiency of production systems throughout our domestic business restructuring, we are focusing on the Kyushu Plant, which has superior cost competitiveness, working to respond to climate change by advancing our waste processing and developing technology for reducing, collecting and utilizing CO2.

The two sides of our energy cost reduction efforts are the expansion of waste processing capacity and increasing efficiency of manufacturing processes. Currently, we are promoting the enhancement of treatment capacity for coal ash and plastic waste, the installation of recycled oil receiving and input equipment, and the introduction of high-efficiency equipment (rotary kilns, clinker-coolers). Through these efforts, we are working to reduce thermal energy costs, reduce CO2 emissions and respond to stricter environmental regulations by improving dust collection equipment and other initiatives.

Furthermore, we are developing CCU (carbon capture and utilization) technology that captures and recycles factory CO2 emissions. We have begun demonstration testing for capture

and methanation equipment at the Kurosaki Production Section, Kyushu Plant. Furthermore, we are working to improve work efficiency and prevent equipment failures by utilizing AI and IoT to realize stable operations.



Amount of waste and byproducts:
Approx. 4 million tons/year

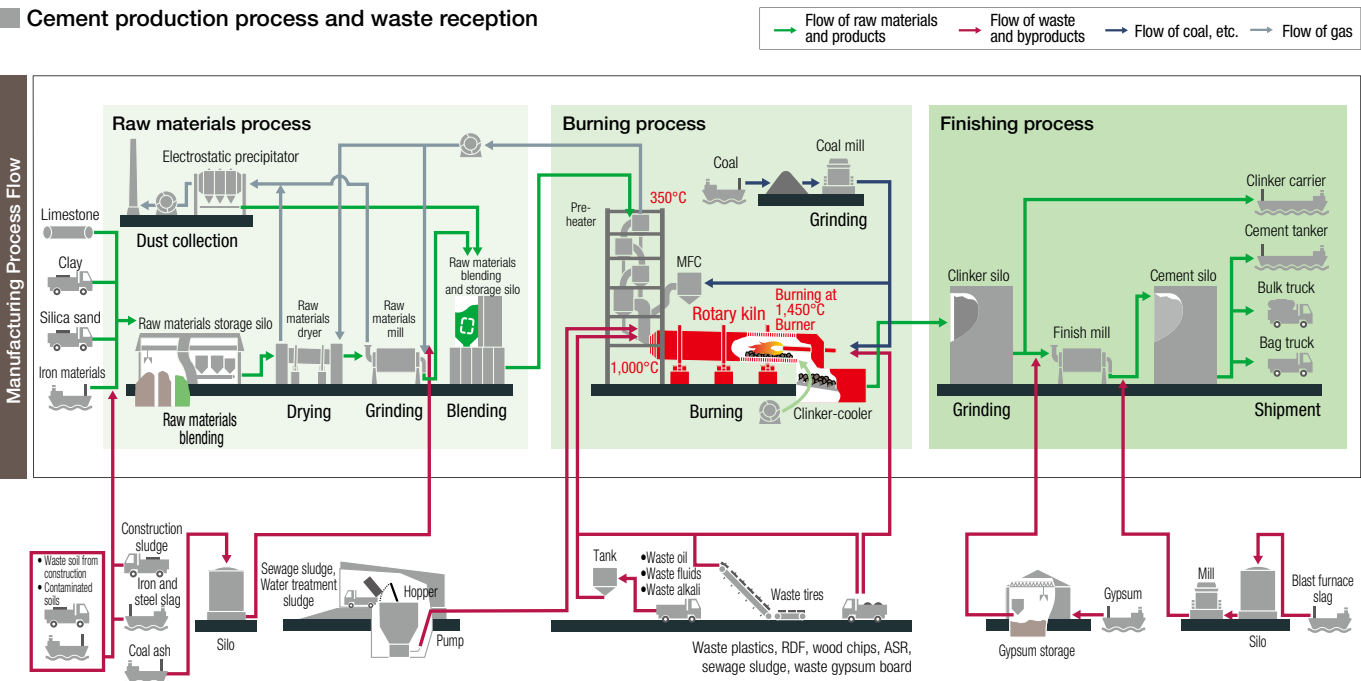
Overseas

Expanding the business foundation in overseas areas where growth is expected

We will aim to expand business and create new business in regions where future growth can be expected. In the United States, we will further enhance our business foundations by further developing and expanding upon the strengths of Robertson's Ready Mix, Ltd., which has the top share (approx. 40%) of ready-mix concrete in the region of Southern California. Additionally, we also plan to develop new business sites in areas other than the United States, with a focus on developed countries and similar regions where growth can be expected, in anticipation of business development via vertical integration.



Cement production process and waste reception

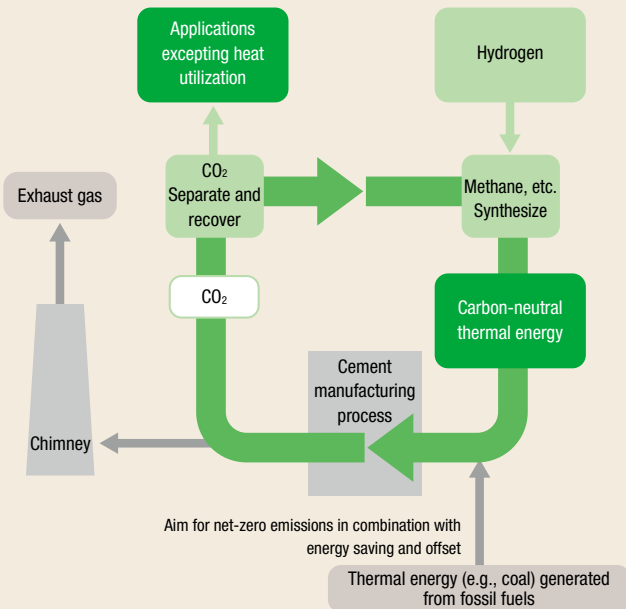


TOPICS

Start experimental study on the recovery and utilization (heat utilization) of CO2 emitted from our plants

We have set “contribute to building a decarbonized society” as one of our missions, and will reduce greenhouse gas (GHG) emissions across the Group by 17% or more by fiscal 2031 (compared to fiscal 2014, 15% reduction for the company), and have set a medium to long-term goal of carbon neutrality by fiscal 2051. To achieve this goal, we are developing CCU (carbon capture and utilization) technology that utilizes factory CO2 emissions, which we began demonstration testing for at the Kurosaki Production Section, Kyushu Plant in July 2021.

CO2 emitted during the burning process was difficult to curtail with conventional energy-saving measures or electrification. This technology separates and captures it, then creates a chemical reaction with hydrogen to synthesize methane. The project continues to make big steps toward becoming carbon-neutral. In the future, we plan to promote the development of technology that reuses the obtained methane as thermal energy for cement product or returns it to organic matter.



Conceptual design of carbon recycle from our plants

[Business Strategies]

Environment and Energy Business

[Environmental recycling] **Driving force of resource-recycling systems**

[Renewable energy] **Leading company in geothermal development**

Contributing to a sustainable society by utilizing our unique technologies in environmental recycling and renewable energy

Shogo Yamaguchi, Managing Executive Officer
President, Environment & Energy Business Company

The strength of our environment and energy business is that, in the environmental recycling business, we have realized an economical system for recycling that reduces urban waste. This system is based on the premise of coordination between efficient recycling technologies that utilize mine mineral and nonferrous smelting & refining technologies, cement plants and smelters & refineries. We recognize that the renewable energy business has a pioneering spirit that has promoted renewable energy development on its own through developing the mining and smelting & refining businesses.

In commercial markets, air conditioners and other home appliances are selling well, but the number discarded is also increasing, and automobile sales are showing signs of recovery. Scrap prices, especially copper, are rising, and we sense a push in the field of home appliance recycling. On the other hand, it has been difficult to negotiate the collection of incinerator fly ash and food waste with local governments due to COVID-19, and

Specific Measures of the FY2023 Strategy

- Expand home appliance recycling business, advance automation, and improve added-value of recovered products
- Demonstrate LiB recycling technology and solar panel recycling technology
- Secure stable plant operations in incineration fly ash recycling business and biogasification business
- Complete Komatagawa New Power Plant, construction of Appi Geothermal Power Plant, and survey of new geothermal areas

Projected Achievements at the End of FY2023

- Establishment of a stable business base for the environmental recycling business
- Expansion and stable operations of renewable energy plants and search for new geothermal areas

the food service industry, which was supposed to be the main collection location, has been severely damaged and so we are struggling to increase the amounts collected. Social demand for renewable energy is increasing.

Realizing carbon neutrality is a major issue, we believe that quantifying the reduction of environmental load and showing this data to clients, as well as thorough traceability, will be factors that set us apart. In the future, we will make full use of DX to build a system that reduces environmental load in a timely fashion.

As planned, we began operations of New Energy Fujimino Co., Ltd., our first food waste biogasification plant, in fiscal 2021. In our environmental recycling business, we focus on maintaining stability in the four business fields of home appliance recycling, automobile recycling, incineration fly ash recycling and food waste biogasification, and while aiming to establish eight new sites, and by fiscal 2031, we will also consider the business potential of lithium-ion battery (LiB) and solar panel recycling.

In renewable energy business, our large-scale investment projects, the Komatagawa New Power Plant and Appi Geothermal Power Plant, are proceeding without delay and will continue on-schedule. We will begin construction of another new geothermal power plant by fiscal 2031 with the goal of realizing small-scale hydropower.

The goal business of this company is to build a system that does not depend on a final disposal site, ensuring traceability and transparency in order to differentiate ourselves through a sense of security imparted to all stakeholders and client companies. We believe it is vital to be sensitive to changing values and social needs, reflect them in our policies and share them with our stakeholders.

Social issues to be solved

- Efficient treatment of urban waste
- Efficient use of mineral resources and alternative substances
- Efficient use of energy resources
- Development of renewable and unutilized energies
- CO₂ emissions reduction

Long-term business goals

(Environmental recycling) **Driving force of resource-recycling systems**

(Renewable energy) **Leading company in geothermal development**

Long-term strategy

- Provision of a safe recycling system with thorough traceability, etc.
- Decarbonization by expanding renewable energy business

Our strengths (advantage)

- Recycling processing technology
- Rare earth, etc. recovery technology
- Incineration fly ash recycling technology
- Possession of recycling systems (smelters & refineries/cement plants)
- Experience with geothermal development and operation

MMC Group's Business

Product-type Business

Process-type Business

Environment & Energy Business

FY2023 Strategy

Risks

- Rival company trends/participation
- Manufacturer restructuring
- Local government emission trends
- Changes to national policy and revisions to laws
- Local opposition from hot spring operators, etc.
- Consensus-building with stakeholders

Opportunities

- Depletion of mineral resources
- Increased demand for recycled resources
- Depletion of energy resources
- Securing energy in Japan
- Climate change (global warming)
- Reduction of CO₂ emissions and increased demand for renewable energy

Products & Services

- Home appliance recycling
- Automobile recycling
- Metal and resin, etc. recycling
- Incineration fly ash treatment
- Food waste
- Biogasification
- Renewable energy

Mission

- Contribute to build a prosperous society**
Ensure a stable supply of clean energy and recycled products
- Contribute to build a recycling-oriented society**
Solve urban waste problems, and build a sustainable social system
- Contribute to build a decarbonized society**
CO₂ emissions reduction by providing renewable energy

Contribution Goals for a Sustainable Society

Annual processing volume of home appliance recycling

FY2020 results: 2.75 million units

FY2023 target: 3.5 million units

Up 27%

Annual total power generated by renewable energy

FY2020 results: 437 GWh

FY2031 target: 533 GWh

Up 22%

FY2021 Performance

Net sales **26.2** billion yen

Operating profit **1.7** billion yen

Ordinary profit **3.1** billion yen

Breakdown

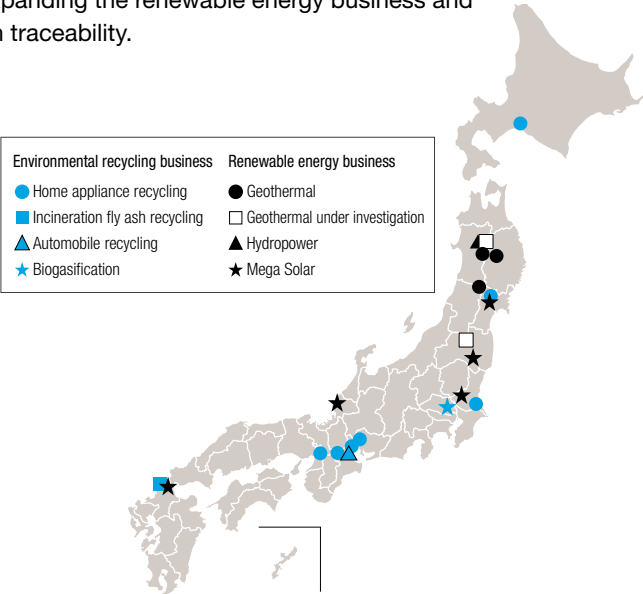
March 2022 (forecast) values were the values released May 14, 2021
Ratio of net sales is net sales to outside customers.

Enhanced competitiveness and expansion of environmental recycling businesses Completion of Komatagawa New Power Plant, construction of Appi Geothermal Plant, and survey of new geothermal sites

In order to achieve our goals of becoming a driving force of resource-recycling systems and a leading company in geothermal development, we will promote decarbonization by expanding the renewable energy business and providing reliable recycling systems via measures such as thorough traceability.

Environmental recycling initiatives

By making the most of the characteristics and functions of the materials company, we will aim to contribute to the building of a recycling-oriented society by developing and expanding the recycling business that does not rely on final disposal sites and can be trusted by stakeholders. As of July 2020, we have seven home appliance recycling business sites nationwide, and have started a lithium-ion battery (LiB) recycling verification project for automobile recycling. We started our food waste biogasification business in September 2020 and are promoting stable operation along with incineration fly ash recycling. By focusing on these four businesses, we will promote the building of a resource recycling system that gives customers peace of mind.



Home appliance recycling
We are promoting a home appliance recycling business at seven sties nation-wide that can contribute to building a recycling-oriented society by achieving higher added-value of recovered materials, development of automation technologies, and appropriate recycling processing.



Automobile recycling
As the electrification of automobiles continues, we will utilize our technologies and expertise accumulated in the home appliance recycling business to promote the automobile recycling business. We also work on developing LiB recycling technologies.



Incineration fly ash recycling
The Company promotes a recycling business that dechlorinates the incineration fly ash generated when household waste, etc. is burned to recycle it as material for cement.



Food waste biogasification
The Company promotes a recycling business that performs biogasification (methane fermentation) on the food waste output from locations such as food service industries, retail stores and factories to generate renewable energy (electricity), and thereby achieve both the suitable treatment of waste and the supply of energy to society.

Renewable energy business initiatives

Based on the management resources we have cultivated, we will expand the renewable energy business and contribute to the building of a decarbonized society by providing a stable energy supply with a low environmental impact. With a focus on geothermal development, we are continuing construction of the Appi Geothermal Power Plant in Hachimantai City, Iwate Prefecture, and aim to be a leading business company in Japan.

In the construction of the Appi Geothermal Power Plant, we are promoting land preparation, road construction, excavation work (four production wells, three reinjection wells), and ground equipment construction including steam and power generation equipment. Civil engineering and construction work in fiscal 2021 was completed basically as planned. Furthermore, the production well was drilled to a depth of 400 m as planned, and drilling work resumed in May 2021. Additionally, with the aim of developing a new geothermal power plant, we plan to conduct geothermal resource surveys in the Hachimantai Konomori area (Kazuno City, Akita Prefecture). We are also exploring promising areas, mainly in the Tohoku region, by taking advantage of our Group's underground resource exploration technology.

The construction of the New Komatagawa Hydro Power Plant (Kitaakita City, Akita Prefecture) is proceeding smoothly. There was concern regarding tunnel boring work exceeding 8 km that crosses wetlands, but we plan to break ground soon. Power plant site construction, including the head tank and power generation building, will reach its peak in fiscal 2022, and installation of facilities such as water turbines and generators will begin.

Furthermore, we are looking into the commercialization of woody biomass utilizing company-owned forests and new small-scale hydropower, and are actively working to expand renewable energy business in general.



Wasabizawa Geothermal Power Plant (Yuzawa City, Akita Prefecture)
Operator: Yuzawa Geothermal Power Generation Corporation
Started commercial operation in May 2019 (output capacity 46,199 kW)



Appi Geothermal Power Plant (Hachimantai City, Iwate Prefecture) (under construction)
Operator: Appi Geothermal Energy Corporation
Scheduled to start operation in April 2024 (output capacity 14,900 kW)



Komatagawa New Power Plant (Kitaakita City, Akita Prefecture) (under construction)
Operator: Mitsubishi Materials Corporation
Scheduled to start operation in December 2022 (output capacity 10,326 kW)



Irigama Solar Power Plant (Kurihara City, Miyagi Prefecture)
Operator: LM Sun Power Co., Ltd.
Started commercial operation in January 2015 (output capacity 6,930 kW)

[Business Strategies]

Other Businesses (Aluminum and Affiliated Businesses)

Utilizing our technical strengths in aluminum to accurately identify the needs of society and create new added-value

Our aluminum business is comprised of the Mitsubishi Aluminum Group, which runs our rolled and processing business, and the Universal Can Group, which runs the manufacturing of our aluminum beverage can business.

Our rolled and processing products business is anticipated to continue to grow further, since great expectations are placed on aluminum as a material that contribute to energy-saving through weight reductions in vehicles, and that can serve as a substitute for copper and other such high-priced materials. Mitsubishi Aluminum Co., Ltd. focuses its growth strategy on the aluminum foil for laminate type battery cases used for lithium-ion batteries in automobiles and is investing in its Fuji plant to improve productivity and profitability.

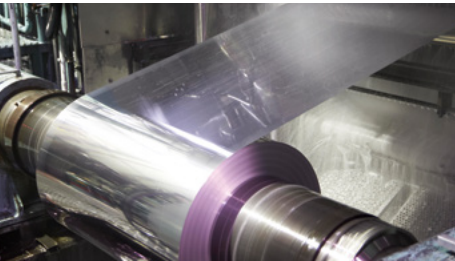
The Universal Can Corporation has contributed to the building of a recycling-oriented society through the utilization of used aluminum beverage cans as recycled materials, while leading the way in expanding the market ahead of its competitors, leveraging such advanced technical capabilities by introducing an aluminum bottle with outstanding resealing properties. The company uses the LCA method to calculate the environmental impact of its products (excluding the content filling process), and publishes those figures in a report that undergoes third-party review.*

▼ Related Materials:

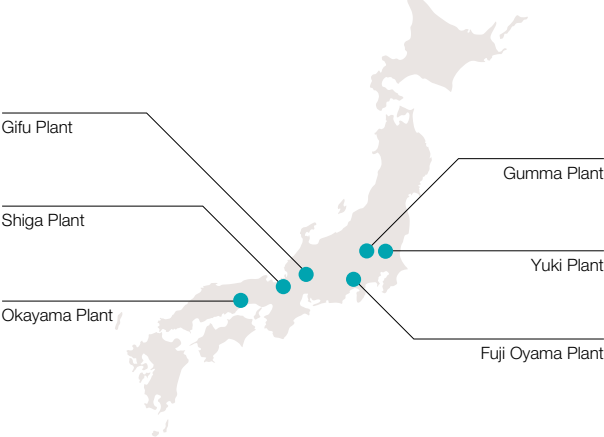
Universal Can Corporation LCA (life cycle assessment)*
<http://www.unican.co.jp/csr05.html>

*This data is only available in Japanese on the website.

■ Mitsubishi Aluminum foil rolling process



■ Manufacturing sites of Universal Can Corporation



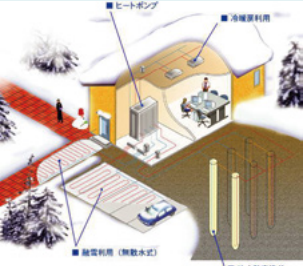
Affiliated Business

In affiliated businesses, diverse group companies operate a varied range of businesses.

In addition to engineering and trading, the businesses are involved in the manufacture and sale of salt, as well as tourism at former mining sites.

Mitsubishi Materials Techno Corporation conducts comprehensive engineering from design to post-construction maintenance in a wide range of fields including nonferrous metal plants and chemical/pharmaceutical plants, both in Japan and overseas. It is also expanding its business over Japan with heat pump systems that utilize geothermal heat, which is one form of renewable energy.

The Mitsubishi Materials Trading Corporation is a general trading company of the Group, but it is also engaged in recycling business, in order to contribute to collecting industrial waste as a raw material for cement, as well as copper, precious metals, rare metals, etc., from metal scrap, and coordinating the process from unloading, to transportation and processing. Additionally, in the BtoC business, we also sell fine gold cards and sterling silver clay produced at our Sanda Plant.



Concept for the geothermal heat pump system



Construction of a practical geothermal heat pump system (Tokyo Skytree)



Fine gold cards sold by Mitsubishi Materials Trading Corporation