

WITH MATERIALS

vol. **02**
SUMMER
2022

Special Feature

Tackling Urban Mining

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INSIDE STORY



Naoshima Smelter & Refinery employees involved in the E-Scrap recycling business (from left: Kyosuke Nishikawa and Chinatsu Mihara, Production Control Sect., Production Dept.; Yudai Okamoto, Logistics Sect., Administration Dept.). They and many others are working hard with total commitment to daily operations with the spirit of “technology without limit.” In this issue’s special feature, we will present Mitsubishi Materials’ contribution to building a sustainable society through its E-Scrap recycling business.

EDITOR’S LETTER

One of the Mitsubishi Materials Group’s Mission is to contribute to the building of a recycling-oriented society.

We have been providing recyclable products and also recycling waste through advanced recycling technology.

In this special feature, under the theme of the E-Scrap recycling business, one of the Group’s wide range of recycling-oriented businesses, we will report on its initiatives and the thoughts of employees who support plant operations.

We also invited Mr. Mago Nagasaka, an artist who is contributing to the creation of a sustainable society from a different angle from us, to have a discussion with our Group employees.

Although active in different fields, they discussed how they are working toward the major common goal of “creating a sustainable society” from their respective standpoints, and inspired each other.

We hope you will find it interesting.

WITH MATERIALS Editorial Team

Special Feature

Tackling Urban Mining

Many home appliances, computers, and other electronic devices are indispensable to our lives. Although these devices are discarded after fulfilling their roles, they are referred to as “urban mines” due to the valuable metal resources such as gold and silver contained within them.

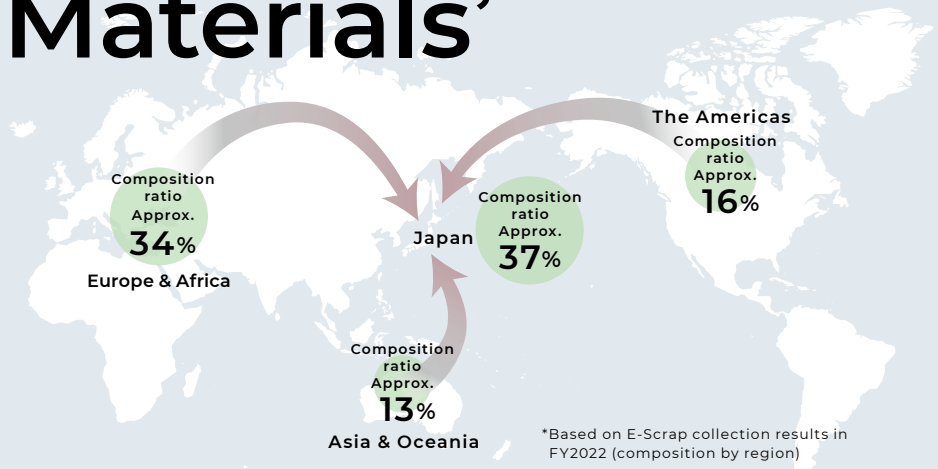
Since the 1990s, the Mitsubishi Materials Group has been collecting E-Scrap, a part of these urban mines, from around the world and establishing recycling systems to make effective use of limited resources, thereby contributing to the creation of a recycling-oriented society.

The Group's metallurgy business, which has been in operation since 1873, forms the backbone of these operations. We are taking on the challenge of solving social issues by leveraging the unique technological capabilities that we have cultivated over the years.

Through this special feature, we will illustrate these efforts.

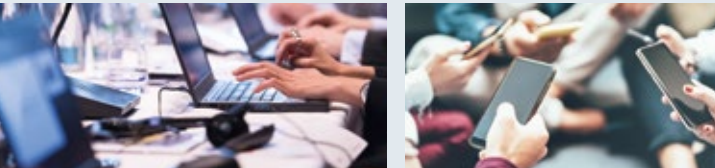
Mitsubishi Materials’ E-Scrap Recycling Business

The annual E-Scrap processing capacity of the Mitsubishi Materials Group is approximately 160,000 tons. This is equivalent to 20% of the approximately 800,000 tons of E-Scrap generated worldwide in a year. Since the E-Scrap market is expected to expand due to improved recycling rates, we aim to further expand our processing capacity to approximately 200,000 tons per year by the end of FY2031.



World-class E-Scrap processing volume

Electronic devices such as home appliances, computers, and smartphones contain valuable metals such as gold, silver, copper, platinum, and palladium. When these electronic devices are recycled, it is possible to recover discarded circuit boards called E-Scrap. E-Scrap is drawing attention as part of urban mining, and the amount handled is only increasing as the recycling rate of electronic devices improves. Mitsubishi Materials collects E-Scrap mainly from Japan, Europe, and North America, and its processing volume is among the highest in the world.



The E-Scrap recycling process



Weighing Inspection Sampling

Fair and impartial sampling

Sampling is performed to calculate the amount of valuable metals contained in the E-Scrap. The weighing, inspecting, and sampling of most of the E-Scrap collected in Europe is performed by MM Metal Recycling BV (hereinafter “MMMR”).

Crushed representative samples are flown to Japan and analyzed there to determine the purchase price. By conducting the entire process of sampling, analysis, purchase price determination, and payment in a fair, impartial, and speedy manner, we improve customer convenience and build relationships of trust. Sampling is objectively conducted by selecting the most appropriate method for each of the many different types of E-Scrap.



MMMR
(The Netherlands)



MMMR



Inside the plant

Weighing Inspecting Sampling

Smelted and refined into high-purity ingots at Naoshima Smelter & Refinery and Onahama Smelter and Refinery

E-Scrap collected from all over the world is smelted at the Group’s smelters and recycled into copper and precious metal (gold, silver, platinum, and palladium) ingots.



Onahama Smelter and Refinery

Analysis Smelting



Copper refining and casting at Naoshima Smelter & Refinery



Electrolytic copper



Naoshima
Smelter and
Refinery

Onahama
Smelter and
Refinery



Gold bullion

Enhancing facilities and services to meet customer needs

Expanding MMR facilities due to a surge in E-Scrap deliveries

In the past two years, we have experienced tremendous growth in E-Scrap deliveries to MMR. Since we are accepting more small lots than originally intended, MMR has enhanced its logistics capabilities, expanded its site, and added new facilities and parking. We have also added space for a third loading dock for containers to comply with environmental regulations. The recycling of non-ferrous metals contributes to a sustainable society. Through our business, we will save raw materials and reduce energy consumption and CO₂ emissions, thereby putting our Corporate Philosophy of “For People, Society and the Earth” into practice.

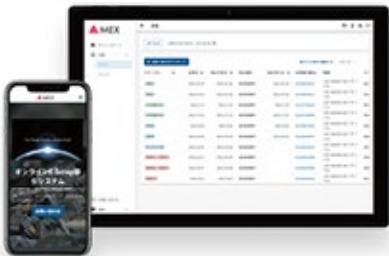


Harald Wagemaker
General Manager,
MMMR

The E-Scrap trading platform MEX has become even more convenient

In December 2021, Mitsubishi Materials developed and launched MEX (Mitsubishi Materials E-Scrap Exchange), a new platform for the E-Scrap recycling business.

In May 2022, in response to customer requests, we added an online communication function (confirmation function during inspection) and a paperless function, allowing customers to check necessary information 24 hours a day.



Messages from Naoshima Smelter & Refinery Employees

Contributing to a Recycling-Oriented Society through E-Scrap Recycling

Hoping to deliver clean metals derived from E-Scrap

Logistics Sect., Administration Dept. **Keita Tamaizumi**
Naoshima Smelter & Refinery

The Logistics Section is responsible for accepting E-Scrap, transforming it into copper, gold, and silver ingots, and shipping them to customers. We sum it up as “E-Scrap,” but different items have different properties, and not all E-Scrap can be treated the same way. Depending on the grade (metal content) and shape, sampling methods, the processing flow (the feeding process), and processing methods vary greatly. As a liaison between the smelting technicians and the Recycling Business Department at the head office, which is the contact point for E-Scrap collection, we handle various negotiations, including coordination of schedules and the amount of E-Scrap to be accepted. As a result, it feels very rewarding to maintain stable acceptance that contributes to smooth operations.

This year’s slogan for Naoshima Smelter & Refinery is “Evolving without fear of change – Into a smelter & refinery that can survive in the future.” Instead of being satisfied with the status quo, we will strive to enhance our receiving system in preparation for further expansion of processing capacity. Resources are gifts from the earth. The importance of recycling to reuse limited resources without waste will become increasingly important in the future. We will work hard every day with the expectation that by increasing the ratio of E-Scrap in our smelting raw materials, we will have a superiority over other companies’ copper, gold, and silver as a clean metal in the near future and be able to publicize it to the world.

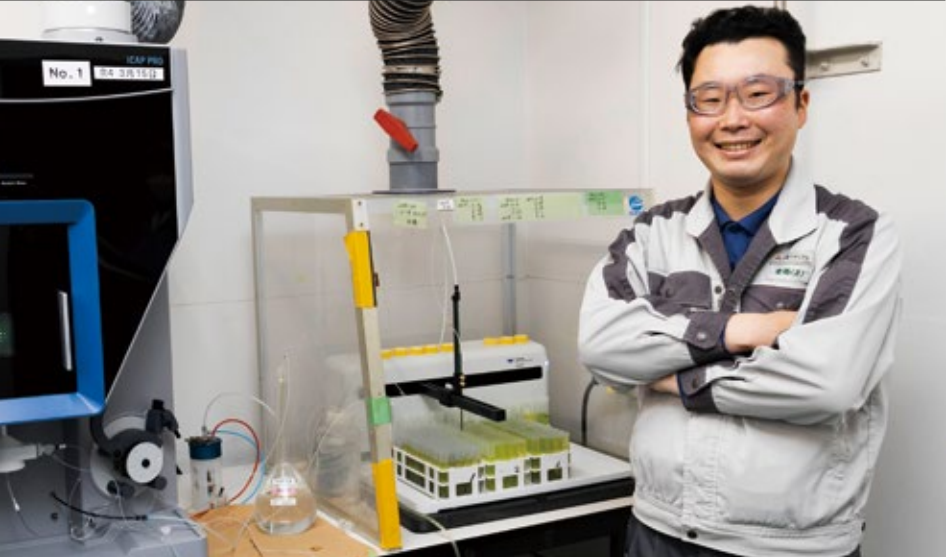


Standardization of analyses for fair and impartial evaluations

Analysis Section, Production Dept. **Masaki Doji**
Naoshima Smelter & Refinery

We determine the value of the E-Scrap collected from around the world through a process of weighing, inspection, sampling, sample preparation, and analysis. My job is to build a system for analysis. Analysis requires a high level of knowledge and experience. It’s not unusual for analyses of the same component to require very different knowledge simply because of different pretreatments or analytical equipment. While analyzers capable of measuring extremely small concentration ranges have been introduced in recent years, some analytical methods still require traditional manual labor and craftsman-like delicacy. In light of this situation, we aim to promote

standardization through the establishment of a system that will allow anyone to conduct fair and impartial evaluations so that the analysis work does not become a personalized task. We are also working to link our analytical processes and results with our information system. Through our internal network, it is possible to check at any time the status of E-Scrap registered on MEX, an online E-Scrap trading system released by Mitsubishi Materials last year, to see how far along it is in the process, from receipt of materials at the smelter to sampling and analysis. We believe this service will contribute to our world-class E-Scrap processing volume.



Hoping to continue taking on the challenge of advancing smelting technology

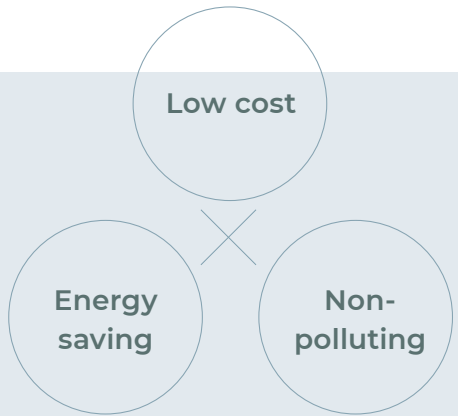
Production Control Sect., Production Dept. **Yuji Mizuta**
Naoshima Smelter & Refinery

I’ve been involved in the smelting process since joining the company. Currently, I am in charge of production control at the Naoshima Smelter & Refinery, providing technical advice to on-site staff and coordinating between production sections for overall optimization. Mitsubishi Materials is aiming to expand its E-Scrap processing volume, but partly due to soaring prices of precious metals, there is a lot of competition for recycled raw materials such as E-Scrap. To further increase our processing volume amid the increasing difficulty of securing resources, we need to offer the customers who supply us with recycled raw materials advantages that other companies cannot match. One of these is the rapid and accurate evaluation of recycled raw materials. Enhancing the system of sampling

and analysis processes, especially with automation, will be key to doing so. In addition, smelting technology must be further improved to process a wide variety of recycled materials in a stable and low-cost manner. In smelting E-Scrap, equipment is more prone to wear and corrosion and more difficult to operate than in smelting copper concentrate exclusively. To maintain stable operations of the equipment, we must tirelessly promote the development of technology. Although we have high technological capabilities, such as our proprietary “Mitsubishi Process” for continuous copper smelting, simply maintaining the status quo would be a step back. We will continue our unceasing efforts to maintain technological superiority.



The Naoshima Smelter & Refinery plays a central role in the metallurgy business. Its E-Scrap processing capacity is world-class. The annual amount that it processes is equivalent to the weight of about three Tokyo Sky Trees (approx. 110,000 tons). Below, we will introduce some of the employees who are working hard every day to recover valuable metals from E-Scrap.



What is the “Mitsubishi Process” for continuous copper smelting that is useful for E-Scrap processing?

The smelting (S) furnace, slag cleaning (CL) furnace, and converting (C) furnace are connected by the launders, transforming the conventional batch operating method into a single, continuous copper smelting process. This has made the facility more compact, allowing for energy-saving and low-cost operations. In addition, it prevents the leakage of sulfurous acid gas, meaning that it is non-polluting.

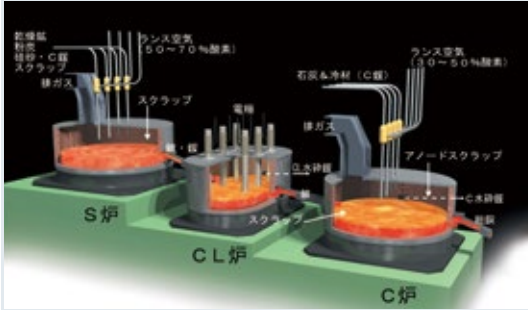


Illustration of the Mitsubishi Process for continuous copper smelting



Representative Director Artist
MAGO CREATION Co., Ltd.

Mago Nagasaka

Overseas Business Sect. &
Domestic Business Sect.
Recycling Business Dept.,
Metallurgy Div.
Metals Company

Hayato Yamagata

MMMR Admin Sect.,
Recycling Business Dept.,
Metallurgy Div.
Metals Company

Minori Furuhashi

Actions from all standpoints will lead to the realization of a sustainable society

Agbogbloshie is an impoverished area in Ghana that is known as the world's largest graveyard of electronic devices. After witnessing the poverty and environmental issues there, the artist Nagasaka began creating artworks from dumped e-waste and selling them. With the proceeds from these sales, he is trying to build a recycling plant in Agbogbloshie, develop products using waste materials, and create an upcycling mechanism. Two Mitsubishi Materials employees who are working to solve social issues through the E-Scrap recycling business discussed their thoughts on creating a sustainable society with Mr. Nagasaka.

Mago Nagasaka Profile

Born in Fukui, Japan in 1984. In June 2017, he visited Agbogbloshie, a slum in Ghana, and has since been creating art using waste materials. In August 2019, during his fifth visit to Agbogbloshie, he stayed for 53 days and established the first cultural center in the slum. His documentary film "Still A Black Star," which covers this project, won the Audience Award for Best Environmental Film at the 2021 Newport Beach Film Festival in the United States. The film is currently being prepared for release.



Mago Nagasaka's Still A "BLACK" STAR

Venue: The Ueno Royal Museum, Period: September 10 – November 6, 2022
<https://www.mago-exhibit.jp/>



Making Agbogbloshie a sustainable town

Furuhashi: As someone who is involved in the E-Scrap recycling business, I'm very interested in your activities making art from e-waste. How did you get involved with Agbogbloshie in the first place?
Nagasaka: When I was thinking about what I could do to contribute to sustainability, I read in a magazine that waste was being dumped in developing countries. And when I heard about Agbogbloshie in Ghana, my instincts told me that that was the place to go.
The first time I saw Agbogbloshie, I couldn't believe it was the same earth. I felt like I'd wandered into a different world that transcended space and time. Seeing people burning e-waste in the open and extracting metals while breathing toxic fumes, I decided that what I could do was to tell the world about this situation through art.
Yamagata: How did you build a relationship of trust with your local colleagues? We have customers who deal in E-Scrap all over the world, but I feel it is not so easy to build close relationships with people from different backgrounds.
Nagasaka: As I went back many times to establish a private school and museum, and as we all worked together to create an artwork called the "Moon Tower," the tribal chief recognized our efforts, and more and more people joined us. Perhaps I was able to convey my determination to spend my life trying to solve these problems.
Yamagata: We also make a point of visiting both our domestic and overseas customers' yards to see what kind of E-Scrap they are dealing with and to discuss business with them while looking at the materials. We also make presentations on how our smelter and refinery works in the hopes that the customers will become fans of our company.



I want you to use your technological capabilities to solve social issues

Furuhashi: We are working to contribute to the realization of a sustainable society through the power of recycling technology. Mr. Nagasaka, from your point of view, how do you see Mitsubishi Materials?
Nagasaka: I hope that you will continue using your advanced technological capabilities for the good of society. If we compare life in developed and developing countries these days, the developed countries enjoy a high-quality lifestyle that is 100 years ahead of developing countries. However, to realize a sustainable world in the future, it is necessary for developed and developing countries to come together. For this to happen, the developed countries need to turn around and pull up the developing countries. I think it is important for companies like Mitsubishi Materials, which has been refining its technological capabilities for many years, to propose solutions and show the way forward.
Yamagata: In December last year, we launched MEX. In addition to functioning as a communication tool with customers, this platform can also be used by customers for data analysis of the E-Scrap they delivered. Through MEX, we aim to become a closer partner to our customers than ever before, and in the process, we would like to increase opportunities to make suitable proposals to them.

Continuing friendly competition by taking advantage of each other's strengths

Furuhashi: To solve social problems and realize a sustainable society, we need both our "power of technology and service" and the "power of impact and message to move people" that Mr. Nagasaka's art has.
Nagasaka: As an artist, I want to have a meaningful impact on society. The money that I earn from the sales of my paintings will be used for projects in Ghana to improve poverty and environmental issues. A true sustainable society is one in which the gears of culture, economy, and social contribution are turning smoothly.
Yamagata: The unifying power of your art is inspiring to those of us who are also aiming for a sustainable society. Mitsubishi Materials has set a goal of increasing E-Scrap processing capacity to 200,000 tons per year, and we are promoting safe and secure recycling while complying with international standards and regulations. I will also ambitiously devote myself to this goal while envisioning an ideal future.
Furuhashi: Under our corporate philosophy of "For People, Society and the Earth," the future that we are working towards is one and the same. Mr. Nagasaka, we look forward to seeing your future activities and will use them as a driving force for our own.
Nagasaka: There are many things that I would like to do to create a truly prosperous and peaceful world. Let's make the most of our respective strengths and do our best.



Visiting a Town with MM

Ms. Stride, a woman traveling across Japan, visits a town where a Mitsubishi Materials Group hub is located.



**Navigator
Ms. Stride**
A woman in her late twenties who enjoys factory tours and strolls around town.

Hachimantai Green Energy edition

In this edition, we will introduce the town where Hachimantai Green Energy Co., Ltd., which supports the Mitsubishi Materials' renewable energy business, is located.

Hachimantai is an advanced renewable energy region that is well known to those in the know. Most impressively, Kazuno City in Akita Prefecture has an electricity self-sufficiency ratio of over 300%. Hachimantai Green Energy supports local infrastructure through the operation and maintenance of two geothermal power plants (one with steam facilities only) and six hydroelectric power plants.

One of Japan's three major bayashi* Hanawa Bayashi

Kazuno City has numerous historical festivals, but among them, Hanawa Bayashi, which has been held since the Heian period, is particularly well known. Every year on August 19 to 20, ten gorgeous floats pass through the town overnight, with musicians competing for the best performance. This festival is registered as UNESCO Intangible Cultural Heritage and is also a nationally designated important intangible folk cultural property.

*An instrumental performance accompanying an event



Registered as a World Cultural Heritage site! Oyu Stone Circles

This heritage site consists of two large stone circles (Nonakado and Manza) that date back to the late Jomon period. It is part of the Jomon Prehistoric Sites in Northern Japan, which were registered as a World Cultural Heritage site in 2021. It's said that the prefectural highway that runs between the circles will be relocated in the future. Employees from Hachimantai Green Energy participated in tree planting ceremonies in this area.

Local cuisine from Kazuno Hormone Kouraku

Kazuno is well known for beef/pork innards hot pot. The restaurant Hormone Kouraku, which was founded in 1951, originally fed the Osarizawa miners and is still beloved by the local people today. Its original dish consists of fresh beef/pork innards, tofu, and cabbage cooked in an iron pan. The sweet-spicy seasoning whets your appetite, so you can't help getting seconds of rice and beer! Many of the local people buy take-out and eat it at home.



Geothermal and hydroelectric power plants operated and maintained by Hachimantai Green Energy

Ikari Power Plant

A hydroelectric power plant established in 1907 to supply electricity to Osarizawa mine. The red brick building is recognized as a Civil Engineering Heritage Site by the Japan Society of Civil Engineers. Although its external appearance remains as it was, the inside has been renovated and the state-of-the-art facility is in operation.



Akita prefecture



There are so many green energy spots around Kazuno and Kita Akita!



Onuma Geothermal Power Station

Started operation in 1974 as the third geothermal power plant in Japan. As it is located in Towada-Hachimantai National Park, it was built at a height that would not spoil the scenery.

Daily communication with nature

Operating and maintaining hydroelectric power plants is a battle with nature. We occasionally have to remove driftwood, fallen leaves, and waste from the waterways with rakes to prevent them from clogging up!



Bears and people coexisting in harmony with each other



Bears are a common sight

Since the geothermal power plants are located deep in the mountains, we often come across bears. We wear bear bells when we work to warn them of our presence. In winter, it snows heavily in this area, so our work starts with shoveling snow first thing in the morning.

Guide
Assistant Section Chief,
Engineering Sect., Engineering Dept.
Hiroshi Wasada

Joined the company in 2009. After working at a geothermal power plant as an on-site engineer, he was put in charge of environmental research, including analysis of hot springs. His local recommendation is Hanawa Bayashi, a type of pure Japanese sake made from rice and spring water from Akita Prefecture.



Guide
Assistant Section Chief,
General Affairs Sect., Administrative Dept.
Akihiko Shibamori

Joined the company in 2009. Responsible for maintaining hydroelectric and geothermal power plants. Since April, he has been involved in administrative work at head office. His recommended local spot is "Dragon Eye," a miraculous view near the summit of Hachimantai during the snowmelt season.



“A company where everyone can work comfortably and with a sense of fulfillment.”

Haruka Fujita

Diversity & Inclusion • Health & Productivity Management Dept., Human Resources Strategy Div., Strategic Headquarters

Diversity and Inclusion is essential for creating new value

Mitsubishi Materials is aiming to contribute to a sustainable society through its corporate philosophy of “For People, Society and the Earth.” To that end, Diversity and Inclusion is essential. We believe that new value is created when diverse human resources mutually recognize and respect one another and actively demonstrate their individual abilities at their very best.

It is estimated that the percentage of diverse individuals who can make the necessary impact to create change in an organization is over 30%. At the moment, most of our decision makers are Japanese males who were hired as new graduates. Of course, each of those individuals has their own personality and values, but when viewed by attribute, the organization is highly homogeneous. Therefore, we have begun seriously discussing the question “Does our Group need Diversity and Inclusion?” Top management is now taking the lead in communicating these keywords within the company, and we are focusing on mid-career hiring, as well as hiring women, non-Japanese, and people with disabilities.

Specific initiatives to enable diverse employees to play an active role include the Sponsorship Program in which executive officers serve as sponsors to support the accelerated

development of female managers, career building support for female career-track employees, action plans to promote the advancement of women and employment of persons with disabilities at offices and plants, development of a follow-up system for mid-career employees, language learning support for non-Japanese employees, trainings related to Diversity and Inclusion in general and unconscious bias, and encouraging male employees to take childcare leave.

Promoting sustainable work styles that enable people to lead fulfilling lives

To increase the diversity of our human resources and enable each individual to demonstrate their abilities, it is important for employees at various stages of life to be able to choose a work style that allows them to comfortably balance their personal and professional lives, including childcare, nursing care, and self-improvement. In April of this year, the Remote Work System was introduced for managers, and in May, the Work-from-Home System was introduced for all employees. Moving forward, we will continue to propose flexible work styles and enhance our organization's performance.

I'm currently working shorter hours, and this has made me more aware of prioritization and efficiency to produce results in a limited

timeframe and of teamwork to ensure that operations are not delayed in the event of an unexpected absence due to a child's illness or other circumstances. I hope that the coexistence of diverse human resources and diverse work styles will help us to reevaluate our norms and that our lives will be enriched by making the company a more comfortable place to work for all employees.

Striving for top class employee engagement in Japan

My current goal as a member of human resources is to make our employee engagement level top class among Japanese companies. To realize this ideal, it is important not only to introduce various personnel systems but also for employees to be enthusiastic about their work and voluntarily want to contribute to the company.

Increased employee engagement benefits the company as it is related to productivity and turnover, but it is also linked to the joy and value that we derive from working, which makes it a very positive initiative for each of us. I would like to promote human resource policies from the perspective of Diversity and Inclusion so that everyone can work energetically, demonstrate their abilities, and contribute to society.

At recruitment events, we explain our policies, goals, current situation, systems, and other items, and then frankly talk about our feelings as employees in a panel discussion afterwards.





The Power of Materials Builds Society

Regenerative Medical Devices

Cutting tools that improve machining efficiency through a unique process

Regenerative treatments restore bodily functions lost due to injury, disease, or aging by utilizing the body's own regenerative power. Mitsubishi Materials is developing cutting tools for machining parts for artificial joints, artificial bones, and other products in the field of biological substitution, in which body parts are replaced to restore functionality.

Cutting tools are used to cut or remove excess layers of metals into certain shapes. Difficult-to-cut materials such as cobalt-chromium, titanium, and stainless steel alloys are often used for artificial joints, artificial bones, and other products. Since machining them is difficult and the tools wear out easily, there is a need to develop cutting tools that can be used for longer periods of time. By handling the development of everything from materials to finished products, Mitsubishi Materials has commercialized products with higher machining efficiency and longer tool life than conventional tools. As one of the few cutting tool manufacturers with a lineup extensive enough to provide the optimal product for the intended use, we are highly regarded by many medical device manufacturers.

PICK UP

**VQXL SMART MIRACLE series
End mills for
difficult-to-cut materials**

The VQXL series was developed to achieve long tool life and consistent machining quality in the manufacture of small precision parts made of difficult-to-cut materials such as titanium and SUS alloys.

The Secrets of Materials



Exploring the “secrets” of new materials Mitsubishi Materials has developed!”

SOZAI FILE NO.2

What type of material is

“MOFC-HR”?

MOFC-HR (Heat Resistance) is a copper material that overcomes the shortcomings of conventional oxygen-free copper, such as limited strength and vulnerability to heat.

This is an unprecedented oxygen-free copper with the world's highest level of strength and heat resistance!

*MOFC stands for “Mitsubishi Oxygen Free Copper.” The MOFC series includes a wide variety of oxygen-free copper materials including MOFC-HR.



an expert on materials
Dr. Materials,
A doctor who loves materials devoted to research at a Mitsubishi Materials lab.

Is there a trade-off between electrical/thermal conductivity and strength?

Oxygen-free copper

Pure copper with a purity of 99.96% or more. While it is highly conductive, it is vulnerable to heat and low in strength.



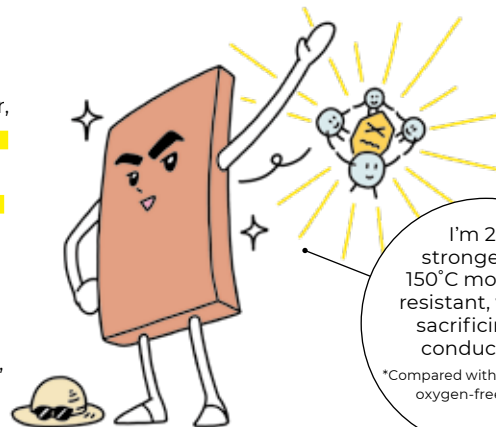
I want to become stronger and heat resistant, but then I lose my conductivity...

Adding a small amount of magnesium significantly improves heat resistance and strength while maintaining conductivity!

I'll solve your problem!



We discovered that by adding a very small amount of magnesium during the production of oxygen-free copper, it was possible to **segregate sulfur, an impurity that has a negative effect on conductivity, and slightly increase conductivity.** Using this effect, we improved heat resistance without lowering conductivity by controlling the addition of magnesium, and by increasing strength at the same time, we created MOFC-HR!



I'm 25% stronger and 150°C more heat resistant, without sacrificing my conductivity!

*Compared with conventional oxygen-free copper

Areas of applications



Electric vehicles/Next generation energy

MOFC-HR is expected to play an active role as a key material for electrical components that require large current capability and high heat dissipation in harsh environmental conditions. It can also withstand heat treatment during manufacturing and has the strength required for size reduction, allowing for a wider range of processing methods.

It is a groundbreaking material that overcomes the weaknesses of oxygen-free copper!



TOPICS

Here are some of the main topics involving Mitsubishi Materials from April – July 2022.

Start of the Second Term of the Laboratory of Non-ferrous Extractive Metallurgy -Endowed Chairs Supported by Mitsubishi Materials at the Graduate School of Engineering, Kyoto University -

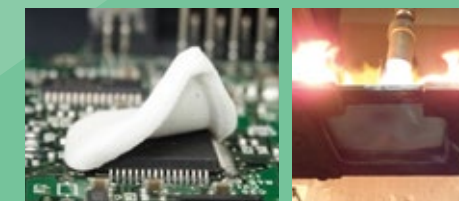
Mitsubishi Materials and Kyoto University established the Laboratory of Non-ferrous Extractive Metallurgy in April 2017 with endowed chairs supported by MMC. Courses have been provided at the Department of Materials Science and Engineering, Graduate School of Engineering, Kyoto University. Its second term started in April 2022. Activities from the first term will be enhanced in this second term, including a further expansion of web courses for young engineers and a strengthening of support for overseas study for graduate students. We intend to facilitate the development of human resources that are required by the non-ferrous metallurgical industry and maintain the industry in Japan to contribute to the realization of a society with more advanced sustainability by making use of the recycling business.



Development of New Materials to Solve Social Issues

MMC Innovation Center starts to develop the following products:
- Clay-like thermal conductive material “Thermal Conductive Putty”: This is a thermal conductive material that conforms to the shape of components it is in contact with to achieve closer adhesion. It is intended for use in lithium-ion battery modules and electronic circuit boards to prevent heat generation.

- New fire-resistant light-weight material “Fire-resistant Plastic”: A fire-resistant plastic that does not burn or melt when exposed to flames. For example, if it were used for a lithium-ion battery case and a cell had to ignite, it would prevent the fire from spreading.



Thermal Conductive Putty Fire-resistant plastic

Participation in 30 by 30 Alliance for Biodiversity

Mitsubishi Materials has participated in the 30 by 30 Alliance for Biodiversity (“Alliance”) at the initiative of the Ministry of the Environment (“MOE”). This Alliance is a coalition of the willing, which was established to achieve the nature-positive global goal to halt and reverse biodiversity loss by 2030. In addition, from May to August 2022, we provide information about our activities in Teine Forest, which is one of our Materials Forests, to the demonstration project regarding the certification of “Natural Symbiosis Sites” (tentative name) including the certification review process to be conducted by the MOE, as a study case to support the establishment of a certification system for “Natural Symbiosis Sites” (tentative name).

We will contribute to the realization of a sustainable society by supporting the purpose of the Alliance's establishment and striving to obtain OECM (Other Effective area-based Conservation Measures) designation in the future with 14,000 ha of company-owned forests across Japan, etc.



Proprietary Copper Alloy MSP5 Receives 2021 Technology Award from the Japan Copper and Brass Association

Mitsubishi Materials' proprietary copper alloy MSP5, developed in 2015, was recognized as a new technology that contributed to the increasing demand for copper and copper alloy products, and received the 2021 Technology Award from the Japan Copper and Brass Association. MSP5 boasts the highest level of strength-conductivity balance among copper alloys and features high stress relaxation resistance (resistance to decrease in spring properties due to heat) in addition to excellent formability. Full-scale mass production of the alloy started in April 2021. It has been widely adopted especially for applications including small terminals and press-fit terminals used for automobiles, etc., and has received positive feedback from many customers for its high performance and reliability.

We will continue to develop technologies that achieve high performances to ensure more customers will use MSP5 in the future.



Participation in a New Geothermal Development Project in the Esan Area, Hakodate City, Hokkaido

Mitsubishi Materials has invested in Hakodate Esan Geothermal LLC as a new business partner of RENOVA, Inc. and Daiwa Energy & Infrastructure Co. Ltd. By utilizing the abundant experience and high technological capabilities we have cultivated over many years through our development and management of coal and metal mines, we have been working on the “development and promotion of the use of renewable energies such as geothermal energy” and intend to engage in this project by making use of our experience and technological capabilities through investments to contribute to the success of the project.



Second-term Ambassadors to Promote Inner Branding Assigned

Since the last fiscal year, Mitsubishi Materials has started inner branding and developed a wide range of measures for the purpose of “Taking ownership of the Group's Mission,” primarily driven by “Ambassadors,” members recruited from across the Group by application. We have appointed 16 members as second-term Ambassadors who will promote this year's activities.

Through discussions at meetings, they comprehend the present situation and recognize issues. While conducting interviews with the president as well as colleagues, they deepen discussions and prepare a new action plan for this fiscal year.



Please take part in the WITH MATERIALS survey

We would love to hear your honest thoughts and opinions about this issue of “WITH MATERIALS” and what you would like to see covered in the future.

Forests

and Materials



Otome-no-taki ("Maiden Falls"), Teine Forest, one of our Materials Forests (Sapporo, Hokkaido)

The Close Relationship between Forests, Rivers, and Oceans

Forests and oceans. At first glance, they may seem unrelated, but they are actually connected through rivers. The rich nutrients contained in the fallen leaves, branches, and soil of forests flow into the ocean through rivers, nurturing the fish and seaweed that live there to create a rich ocean environment.

Many rivers flow through Mitsubishi Materials' forests. In addition to delivering nutrients to the ocean, these rivers also provide homes for plants and animals and are important places for protecting water resources. And they are precious playgrounds for us humans.

To protect the richness of rivers and oceans, we regard the forests around rivers as conservation areas that protect water, soil, and ecosystems and keep the felling of trees to an absolute minimum.

Even during the hot summer season, the air around water in forests is cool and refreshing. If you'd like to cool off, why not visit a forest?