

Business Strategy

Message from the Business Unit Heads

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Frank Randall (Randy) Queen

Executive Vice President
Head of Specialty Materials*



As a longtime member of MCG, I can say now is the most exciting time to be part of the company. “Forging the future” is a transformational journey that is touching every part of the business. I’m especially excited about the transformation that is happening within the Specialty Material Business Group (SMBG). Our team is fully committed to transforming the SMBG organization into one of the world’s leading organizations at solving complex problems and bringing solutions to challenging applications through chemistry.

Profile

1989: Joined Verbatim Americas LLC
2021: President & CEO, Mitsubishi Chemical America
2023: Executive Vice President, Head of Specialty Materials, Mitsubishi Chemical Group Corporation

* Includes Films & Molding Materials and Advanced Solutions

Hitoshi Sasaki

Executive Vice President
Head of Polymers & Compounds / MMA



In the Polymers & Compounds / MMA Division where I work, we are expanding production capacity for sustainability-related products that can help reduce food waste and GHG emissions and constructing facilities for chemical recycling of MMA. We are also tackling longer-term challenges aimed at achieving green transformation, such as the development of products and manufacturing processes that do not use petrochemical raw materials. In this way, we will help the MCG Group reach our targets.

Profile

1983: Joined Mitsubishi Rayon Co., Ltd. (now Mitsubishi Chemical)
2019: Managing Executive Officer / Head of MMA, Mitsubishi Rayon and President of Mitsubishi Chemical Lucite Group
2022: Executive Vice President, Head of Polymers & Compounds / MMA Mitsubishi Chemical Group Corporation

Toshihiko Hamada

Representative Director, President CEO
Nippon Sanso Holdings Corporation



We are implementing five key strategies set out in the NS Vision 2026 medium-term management plan announced in May 2022: (1) sustainability management, (2) exploring new business toward carbon neutrality, (3) total electronics, (4) operational excellence, and (5) DX initiatives. We are working to boost corporate value across the entire MCG Group.

Profile

1981: Joined Nippon Sanso Ltd. (now Nippon Sanso Holdings)
2021: Representative Director, President CEO

Manabu Chikumoto

Executive Vice President
Head of Basic Materials



Our petrochemicals and carbon products businesses support social foundations and people’s lives through the stable supply of quality products to all types of industries. For the carbon products business, we aim to determine the best owner to allow further business development, while in the petrochemicals business, we plan to play a leading role in industry restructuring as we strive to achieve carbon neutrality and a recycling-oriented society.

Profile

1988: Joined Mitsubishi Kasei Corporation (now Mitsubishi Chemical)
2015: President, MCC PTA Asia Pacific
2023: Executive Vice President, Head of Basic Materials, Mitsubishi Chemical Group Corporation, and Representative Director, Director Petrochemical Business Division, Mitsubishi Chemical Corporation

Akihiro Tsujimura

Executive Vice President
Head of Pharma



In the pharmaceutical business, we aim not only to meet our targets in the “Forging the future” management policy, but also to achieve growth over the medium and long term. We are strengthening our pipeline and maintaining our business foundations in Japan, while also expanding our presence in the United States and other overseas markets in order to increase our overseas sales ratio and provide options that give hope to those facing illness around the world.

Profile

1992: Joined Nichimen Corporation (now Sojitz Corporation)
2004: Joined Santen Pharmaceutical
2017: Appointed Member of Board of Directors, Executive Corporate Officer at Santen
2018: Joined SanBio
2021: Appointed Executive Vice President, Chief Operating Officer at SanBio
2023: Executive Vice President, Head of Pharma, Mitsubishi Chemical Group Corporation, and Representative Director, Mitsubishi Tanabe Pharmaceutical

Business Strategy

Specialty Materials*

* Includes Polymers & Compounds, Films & Molding Materials, and Advanced Solutions

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MCG Group's engine for profitable growth

In the Specialty Materials business, we will achieve sales growth and improved profit margins through fiscal 2025 by executing three key strategies in line with the growth, performance, and sustainability pillar. We have defined EV/Mobility, Digital, and Food as our strategic focus because we expect particularly strong growth in these markets. We aim to grow our businesses at a rate commensurate with market growth. We will transform the Mitsubishi Chemical Group into a specialty materials group by strengthening the position of our products in markets where growth is expected, developing our businesses globally, and stepping up innovation to solve sustainability issues.

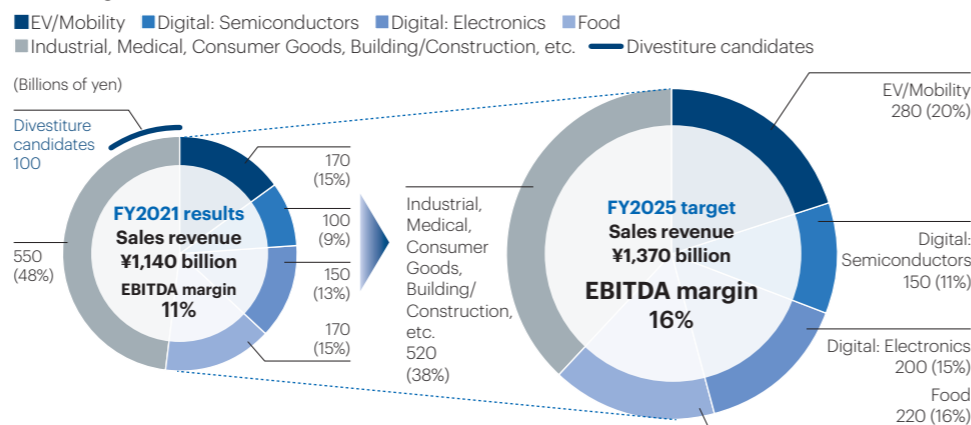
Strategic focus

- Move from product-focused to market-oriented organization
- Grow existing products globally
- Build leadership positions in sustainability areas

	FY2021 results	FY2025 target
EBITDA (Billions of yen)	133.9	225.0
EBITDA margin	12%	16%
Core operating margin	7%	11%
ROIC	6%	10%

Portfolio changes

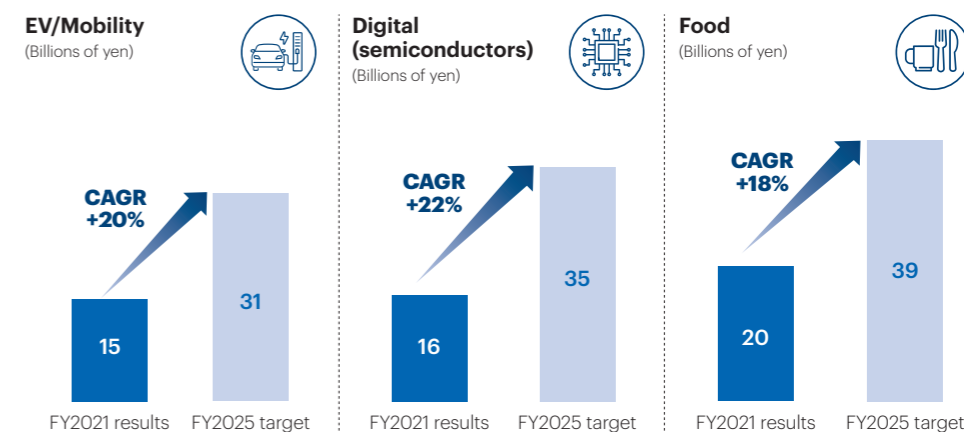
Our strategic focus



SWOT analysis

<p>Strengths</p> <p>S</p> <ul style="list-style-type: none"> • EV/Mobility High-performance engineering plastics: Global network of businesses capable of handling operations from plastic production to molding and processing Electrolytes: Ability to develop functional additives that create high-performance batteries • Digital EL chemicals: High-level purification and quality management technologies to monitor microscopic particulate contamination • Food High-performance films: Technological capability to add various functions to create gas-barrier, porous, and multilayer films, etc. 	<p>Weaknesses</p> <p>W</p> <ul style="list-style-type: none"> • EV/Mobility High-performance engineering plastics: Global economic and currency risks Electrolytes: Dependence of raw material supply chain on China • Digital EL chemicals: Supply concerns for raw materials • Food High-performance films: Concentrated mainly in the domestic market
<p>Opportunities</p> <p>O</p> <ul style="list-style-type: none"> • EV/Mobility High-performance engineering plastics: Rising demand for lighter materials Electrolytes: Rising demand driven by wider use of EVs • Digital EL chemicals: Rapid market expansion and demand for new materials due to semiconductor circuit miniaturization and multilayering • Food High-performance films: Rising demand in overseas markets 	<p>Threats</p> <p>T</p> <ul style="list-style-type: none"> • EV/Mobility High-performance engineering plastics: Shrinking market due to growing adoption of new technologies Electrolytes: Profit squeeze due to sharp rise in raw material prices • Digital EL chemicals: More local production for local consumption • Food High-performance films: Medium- and long-term decline in domestic demand

EBITDA targets



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Business Strategy

Specialty Materials




Strategic focus 1
Move from product-focused to market-oriented organization

Promoting the change to a market-oriented business

Among our focus markets, we expect particularly strong growth in the EV/Mobility, Digital, and Food markets. With our specialty materials lineup, we can offer multiple products plus the technological capabilities and skills to supply these markets. To grow our businesses at a rate commensurate with market growth, we will move from a product-focused to a market-oriented organization and grow our products globally.

Rather than taking individual products into specific markets as we have done thus far, we will move to an area-based organization that will allow us to leverage our entire product portfolio to reach customers.

Focus market growth and projected sales growth

EV/Mobility	Digital	Food
		
<ul style="list-style-type: none"> Electrolytes Fiber-reinforced plastics and composites 	<ul style="list-style-type: none"> Semiconductor cleaning Epoxy resin Semiconductor equipment components 	<ul style="list-style-type: none"> Emulsifiers Packaging films and materials
Market growth*1 >14% per year	Market growth*1 >10% per year	Market growth*1 >7% per year
Projected sales growth*2 13% per year	Projected sales growth*2 7-11% per year	Projected sales growth*2 7% per year

*1 Addressable market growth rate in EV, battery, and mobility
*2 Sales growth rates until fiscal 2025 for selected target applications

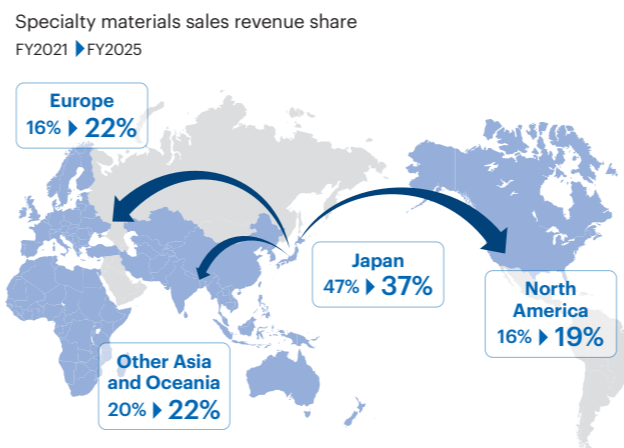
Strategic focus 2
Grow existing products globally

Making the entire product portfolio available globally

To foster growth in expanding overseas markets, we need to make our entire product portfolio available globally. To develop business in global markets, we will transfer significant authority to each region and develop locally based sales activities.

We will work closely with fast-growing customers around the world to grow our business and also promote key account management (one face to the customer).

Targets for global sales revenue share



Strategic focus 3
Build leadership positions in sustainability areas

Further expanding our sustainability position

As we transform under the growth, performance, and sustainability pillar, we are achieving rapid growth through our sustainability brands. The MCG Group has a wide-ranging lineup of products valued for both their superior physical properties and their sustainability. We will further solidify our market position by growing sales of these sustainability brands.

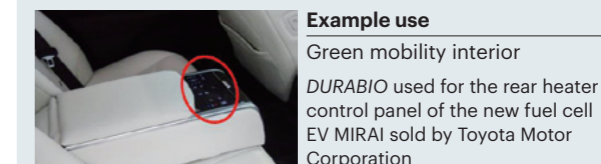
Some of the MCG Group's sustainability brands

Brand	Chemistry	Type		
		Bio-based route	Biodegradable	Recyclable
BioPBS	Polybutylene succinate	○	○	
DURABIO	Isosorbide-based polycarbonate	○		
SoarnoL	EVOH*1			○
Nichigo G-Polymer	BVOH*2		○	
GOHSENO	PVOH*3		○	

*1 Ethylene vinyl alcohol copolymer *2 Butenediol vinyl alcohol copolymer
*3 Polyvinyl alcohol

DURABIO—a truly innovative bio-based engineering plastic

- Bio-based engineering plastic that combines the advantageous properties of polycarbonate and those of PMMA
- Designed for applications requiring exceptional durable transparency and visual appearance



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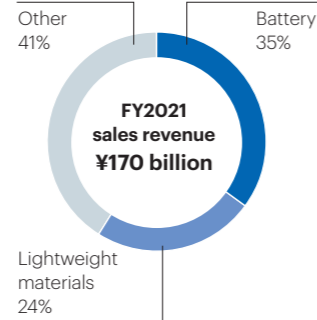
Specialty Materials

Product highlights

EV/Mobility product supply and electrolyte expansion strategy

Key products in the automotive market

Sales revenue by product in the EV/Mobility segment



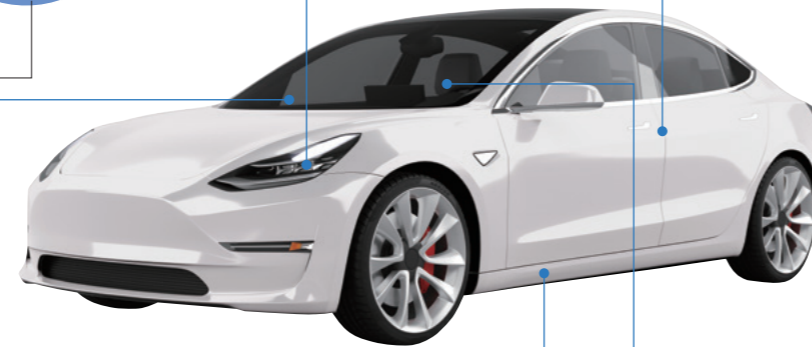
Engineering plastics

Wide-ranging business development, including PC*1 plastics used in headlamps and other components because of their superior heat resistance and shock resistance, and PBT*2 plastics used in electrical equipment components because of their superior electrical properties and chemical resistance

*1 Polycarbonate
*2 Polybutylene terephthalate

Carbon fiber composite materials (SMC)

Can be used to mold complex shapes in short time frames, realizing uptake of carbon fiber materials in mass produced vehicles



LiB materials

Lineup that includes not only electrolytes, but also materials to provide improved performance in the overall battery pack



Electrolytes

- High power output
- Durability, long life, high safety
- Control of side reactions at the electrode

Anode materials

- High capacity, long life
- Stable supply
- Materials with low environmental impact

Bio-based engineering plastics

DURABIO is a bio-based resin that features excellent transparency, durability, and shock resistance, making it suitable for use in interior and exterior components.



Thermoplastic elastomer for airbag covers

Superior strength at elevated temperatures and shock resistant at low temperatures, contributing to improved car safety



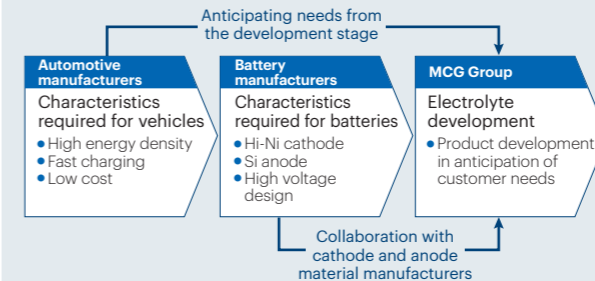
Electrolyte expansion strategy

The MCG Group's electrolytes for LiBs use proprietary additive technologies to suppress side reactions in the electrode, resulting in high power output performance. This, combined with the outstanding durability and high degree of safety of these electrolytes, means automotive applications are expanding. The MCG Group has production and sales sites in four countries, and is bolstering its production capacity in line with the expansion in demand for xEVs (electric vehicles). Furthermore, the Group is considering providing licenses and outsourcing production to accelerate growth.

Demand for LiBs is growing rapidly for automotive applications, particularly EVs, due to increasing awareness of environmental issues worldwide. The global market for automotive LiBs is projected to grow at nearly 30% per year. Automotive manufacturers in the United States are moving to local procurement of parts and materials, and we are also working to strengthen our supply chain. xEVs are taking off in emerging countries as well. For example, the Indian government has set out a policy for EVs to make up 30% of new passenger car sales by 2030. The country is seeking to attract technical support and companies from outside the country. The MCG Group aims to respond to this demand. In India, the Group is helping strengthen the supply system for LiB electrolytes by granting production technologies for electrolytes to Neogen Chemicals Limited, a chemical manufacturer in India with strengths in lithium-related products. The MCG Group has positioned EV/Mobility as a focus market. The Group plans to strengthen the global supply system and help realize a carbon-neutral society by providing products that contribute to reduced environmental impacts.

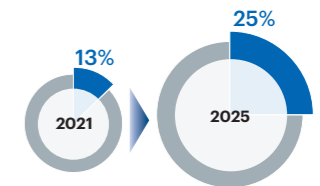
MCG Group strengths

- High-performance additives with a strong patent network
- Design capability to combine various raw materials to achieve the battery characteristics required by our customers
- Customer relations for capturing the innovation cycle



Breakdown of global electrolyte market share

■ MCG Group
■ Other competitors



Note: Including licenses and contract manufacturing

Aiming for growth of up to 25% of overall market share by 2025

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Business Strategy

Specialty Materials

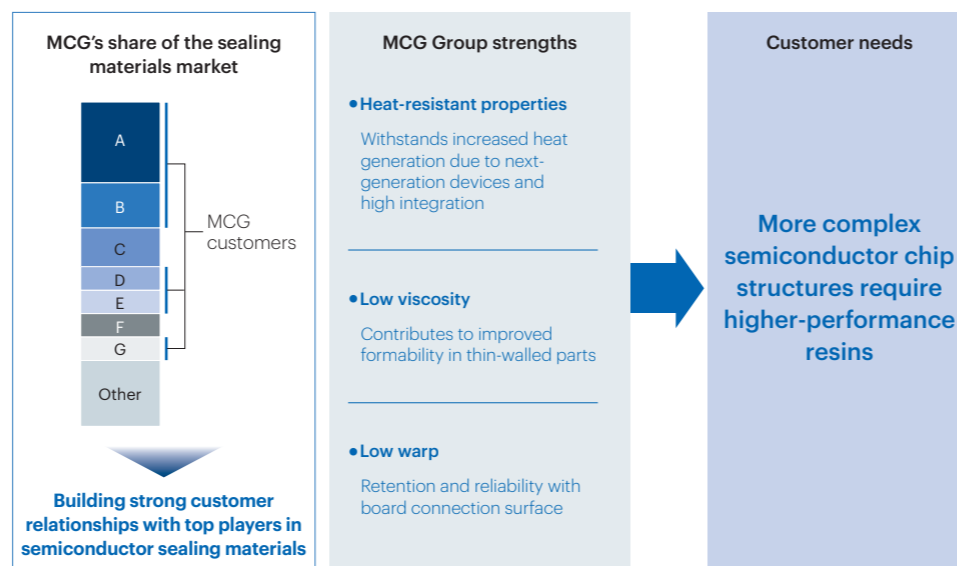
Product highlights

Digital: Epoxy resin expansion strategy

Epoxy resins are used for a variety of applications, such as paints, adhesives, and semiconductor sealing materials. MCG’s specialty epoxy resins have excellent properties, including high heat resistance, low melt viscosity, and low water absorption, and some of them have been adopted as the de facto standard worldwide for semiconductor sealing materials.

The semiconductor market is expected to continue growing rapidly. Previously, we manufactured epoxy resins at our Tokai Plant, but in April 2023 we started operations at a newly constructed production line in our Kyushu Plant to manufacture special epoxy resins for semiconductor sealing and electronic materials in order to satisfy strong demand in the semiconductor market and strengthen our supply capabilities. This new line increases our production capacity by around 30%. MCG will consider further enhancement of production capacity in the future to satisfy increasing demand.

Epoxy resins: High adaptability to cutting-edge IC trends maintains high market share

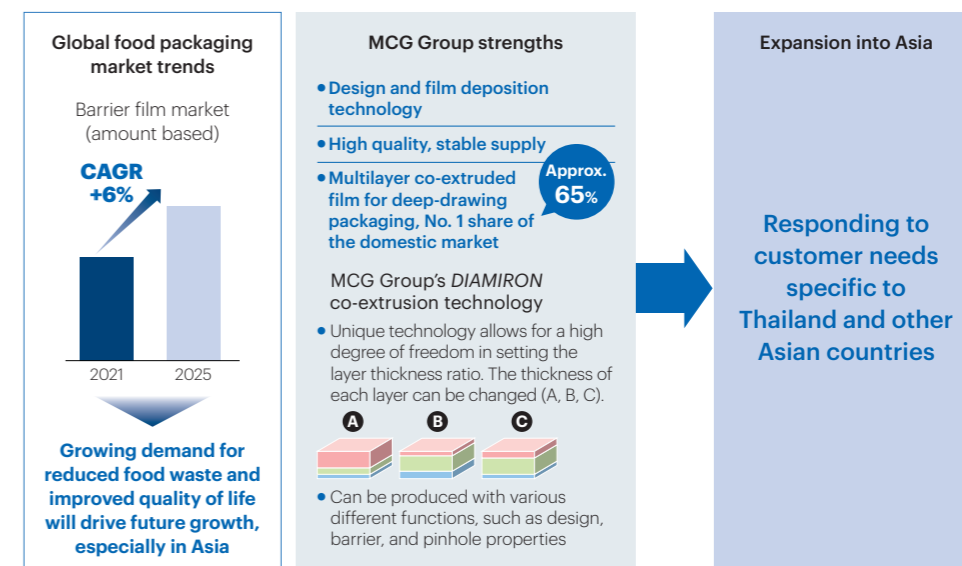


Food: SoarnoL expansion strategy

SoarnoL exhibits excellent gas-barrier properties and is used as a food packaging material to help preserve food flavor and quality and reduce food waste. Furthermore, our multilayer olefin film that contains the recycling aid Soaresin added to SoarnoL has been very well received for its recyclable properties.

Demand for SoarnoL is growing around the world in response to rising demand for environmentally friendly products, and we expect solid growth for SoarnoL in the future. To respond to this increase in demand, the MCG Group is building a new production line for SoarnoL at its U.K. plant. We expect this line to boost our production capacity by a further 21 kt per year. The new line is scheduled to start operations around fall 2025. For DIAMIRON food packaging film that uses SoarnoL, we are leveraging our technology and No. 1 track record in Japan to develop this business in Asian countries, particularly Thailand. The MCG Group has positioned Food as a strategic focus and aims to grow this business and contribute to sustainable food supply through the development and use of high-performance materials such as food packaging materials.

Food packaging materials: Leveraging our No. 1 track record in Japan for multilayer film to appeal to the food needs of Asian countries where demand is expected to increase



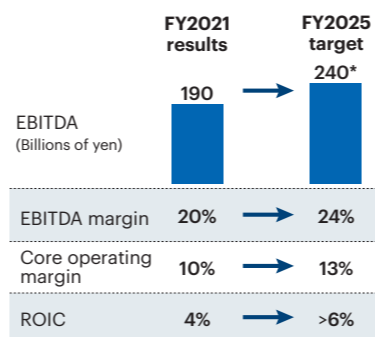
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Industrial Gases

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Grow globally and reinforce our comprehensive capabilities

In the industrial gases area, we will act on opportunities for growth worldwide and continue to grow our business in the four global regions (Japan, United States, Europe, and Asia/Oceania) through fiscal 2025. In Japan, we will reorganize our business portfolio, while overseas we aim to improve profit margins and increase productivity, with a focus on gases and equipment for medical applications and electronic materials gases for the semiconductor industry. We will actively explore opportunities to gain more synergies in the fields of R&D and digital technologies and will work to increase corporate value across the entire Group.



* Midpoint of the range as disclosed in the medium-term management plan of Nippon Sanso Holdings, rounded up

Strategic focus

- Grow in the four global regions (Japan, United States, Europe, and Asia/Oceania)
- Improve profit margins
- Strengthen collaboration between the MCG Group and Nippon Sanso Holdings (NSHD) Group

Applications for high-growth markets



Air separation units (ASUs) that supply highly pure nitrogen in the semiconductor industry

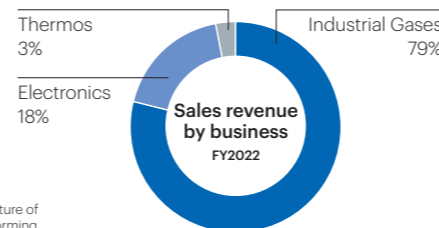
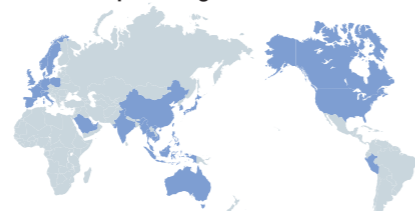


HyCO* plant for hydrogen supply



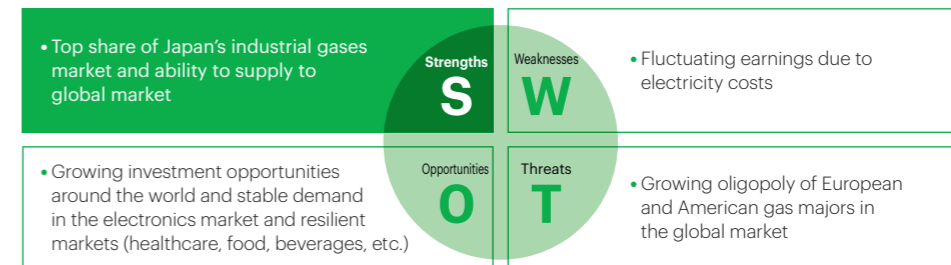
Oxy-fuel burner that contributes to reduced CO₂ emissions

Business development regions



* Also called synthesis gas. Comprises hydrogen (H₂), carbon monoxide (CO), or a mixture of both. Produced by separating H₂ and CO from natural gas using steam methane reforming (SMR) equipment. The HyCO business provides large-scale supply of H₂ and CO to customers in oil refining and petrochemical industries by way of a pipeline.

SWOT analysis

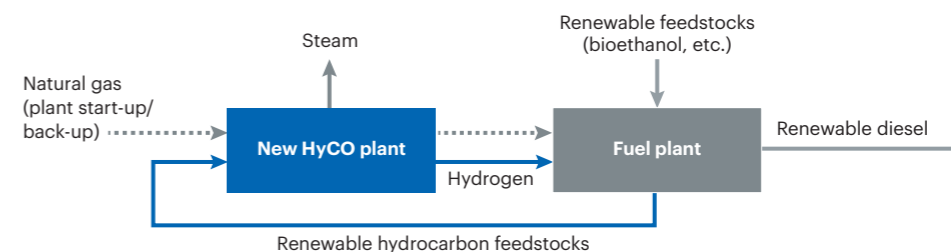


Promoting the HyCO business as a provider of materials for renewable fuels

NSHD's U.S. operating company Matheson Tri-Gas, Inc. (Matheson) has signed a long-term supply agreement to meet hydrogen requirements for renewable diesel production at a 75,000 barrel per day (bpd) refinery in Mobile, Alabama owned by Vertex Energy, Inc., in addition to supplying hydrogen from an existing facility. A newly established HyCO facility will have a hydrogen production and supply capacity exceeding 30 million standard cubic feet per day (mmscfd) using renewable hydrocarbon feedstocks (including bio-naphtha and other bio-offgases) from Vertex's renewable diesel production.

This initiative demonstrates the NSHD Group's commitment to carbon neutrality through gas supply for commercially sound renewable energy projects and represents a significant additional dimension for the NSHD's Global HyCO business footprint. The NSHD Group will continue to actively explore target customers and projects, and through careful scrutiny will continue to realize business growth and contribute to a carbon-neutral society.

Hydrogen production flow in a new HyCO plant



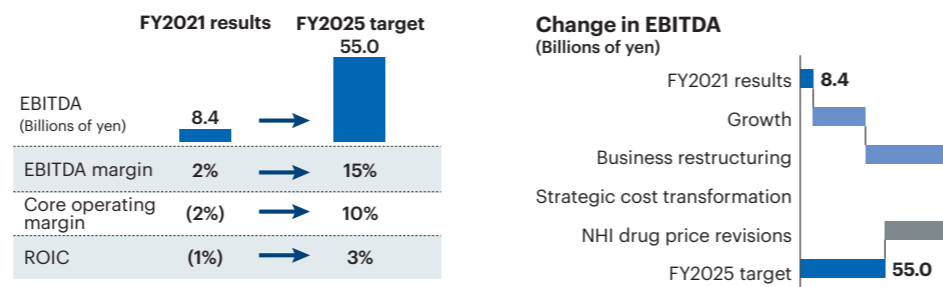
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Health Care

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Strengthening the pipeline and maximizing product value

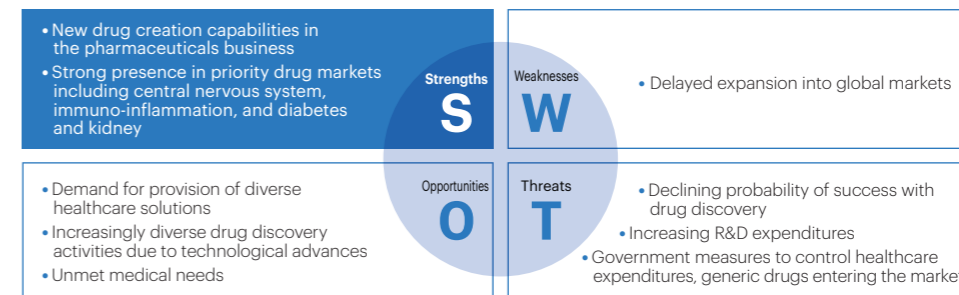
To achieve our fiscal 2025 targets, we are focusing on (1) maximizing the value of priority products in Japan and the United States and (2) strengthening partnering and establishing new sales and development alliances. We restructured our business in fiscal 2022, including withdrawal from the business operated by Medicigo Inc. that was developing a vaccine against COVID-19. We will now focus R&D spending on indications in the core areas of central nervous system, immuno-inflammation, and oncology, with the goal of strengthening our pipeline and maximizing product value.



Strategic focus

- Advance precision medicine through upgraded R&D processes
- Focus innovation development on rare diseases and continue to invest in a new pipeline
- Leverage partnerships for development and sales

SWOT analysis



New treatment option for ALS patients

The oral suspension formulation of edaravone was approved as a treatment for amyotrophic lateral sclerosis (ALS) in the United States in May 2022, in Canada in November, in Japan in December, and in Switzerland in May 2023.

This oral suspension formulation of edaravone contains the same active ingredient as the intravenous infusion formulation *RADICUT* (U.S. product name: *RADICAVA*). We undertook its development with the aim of reducing burdens on ALS patients such as injection pain and outpatient visits. Previously, intravenous infusion was the only available route of administration, but now there is a new treatment option.



Area	Focus	Targeted indications	Key markets	MCG Group's key growth products	Launch plans for main pipeline programs			
					FY2022	FY2023	FY2024	From FY2025
Central nervous system	Development, sales	ALS Tardive dyskinesia	U.S., Japan	RADICAVA DYSVAL	MT-1186 ALS (oral suspension) (U.S., Canada)	MT-1186 ALS (oral suspension) (Japan)*2	ND0612 Parkinson's disease (global)	MT-0551 Myasthenia gravis (Japan)
					MT-5199 Tardive dyskinesia (Japan)			
Immuno-inflammation	Development, sales	Inflammatory bowel disease Erythropoietic protoporphyria	U.S., Japan	STELARA MT-7117				MT-0551 IgG4-related disease (Japan) MT-7117 Erythropoietic protoporphyria (EPP), X-linked protoporphyria (XLP) (global)
Diabetes and kidney	Sales	Type 2 diabetes Chronic kidney disease (CKD) associated with type 2 diabetes	Japan	MOUNJARO CANAGLU	TA-7284 CKD associated with type 2 diabetes*1 (Japan) MP-513 Type 2 diabetes (China)		TA-7284 OD tablets Type 2 diabetes, CKD associated with type 2 diabetes*1 (Japan)	
Oncology	Development	Rare cancers	U.S., Japan	MT-2111				MT-2111 Relapsed/refractory diffuse large B-cell lymphoma (DLBCL) (Japan)

*1 CKD associated with type 2 diabetes, but excludes patients with end-stage renal failure or undergoing dialysis

*2 Approved in Switzerland

(As of August 2023)

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MMA

Build a solid global No. 1 position

MMA is used for a wide range of applications, including cars, building materials, displays, transparent sheets, and coatings. Demand is expected to rise steadily in line with each country’s GDP. The MCG Group has capabilities in all three main MMA manufacturing methods, including the new ethylene method (Alpha technology) that is the most cost competitive, and is equipped with the world’s largest capacity. We aim to leverage this potential to build a solid global No. 1 position. At the same time, we are working to develop PMMA recycling technology and bio-MMA monomer to contribute to a circular economy.

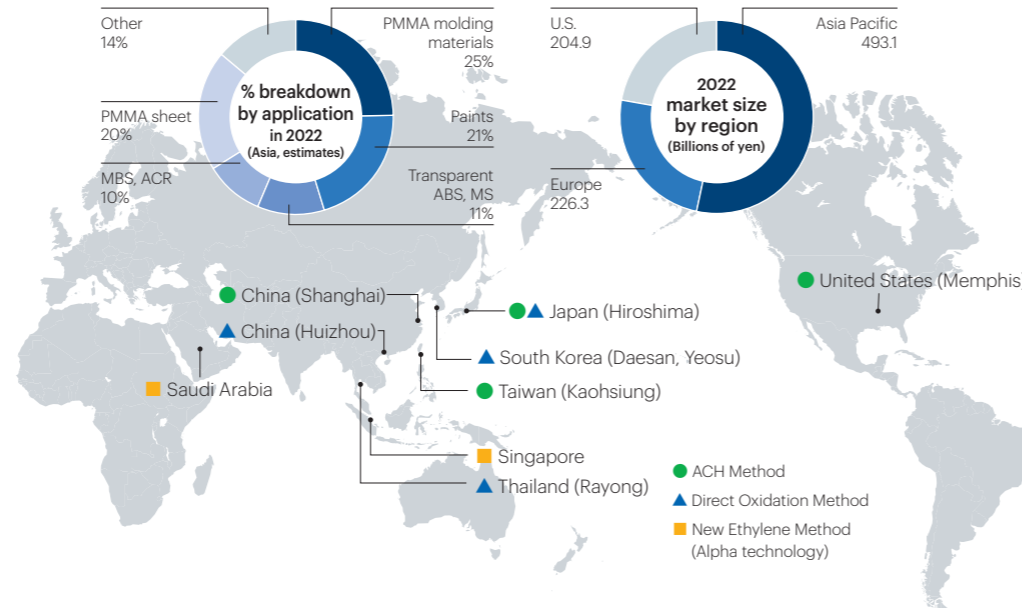
Strategic focus

- Boost productivity, improve raw material access, and leverage the best technology through an optimized footprint of new facilities
- Benefit from lower demand volatility in the United States
- Strengthen the sustainability focus based on existing PMMA recycling and bio-MMA

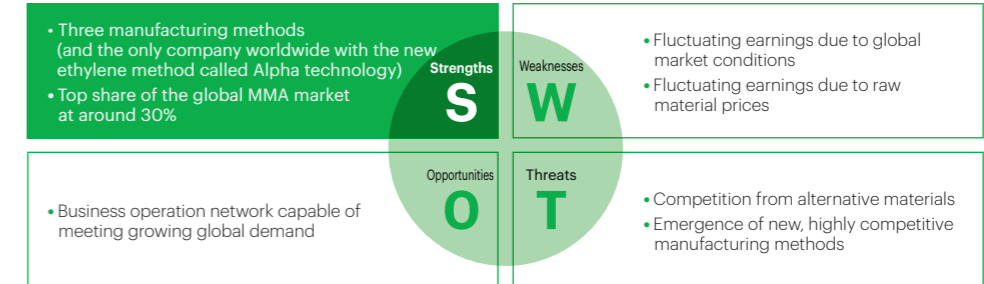
	FY2021 results	FY2025 target
EBITDA (Billions of yen)	51.3	55.0
EBITDA margin	17%	15%
Core operating margin	11%	11%
ROIC	7%	7%*

* Includes the effect of partially complete large investment in a U.S. facility; ROIC excluding the investment is 9%.

MMA global market conditions and MCG Group manufacturing sites



SWOT analysis

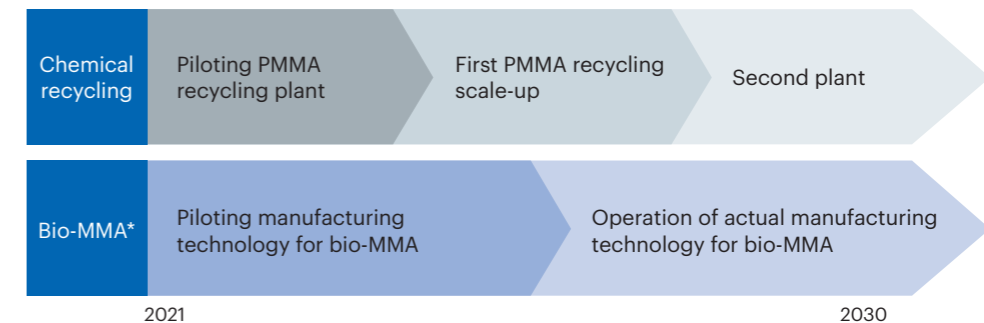


Expanding the sustainable MMA portfolio

The MCG Group defines “sustainable MMA” as MMA monomer manufactured through (1) chemical recycling, where used acrylic resin is collected and broken down for reuse; (2) new manufacturing technologies that use bio-based raw materials with existing MMA monomer production processes; or (3) entirely new manufacturing technologies that use fermentation of bio-based raw materials to produce MMA monomer directly. We are working to develop these technology approaches to MMA manufacturing.

For approach (1), we constructed pilot facilities in Japan in June 2021 and are running tests ahead of commercialization. We have also made progress in the technology development for approach (2) and are now designing a new pilot plant. We will start operating the pilot plant in fiscal 2023 to test the technology and product quality, with the goal of applying this technology to existing commercial-scale plants in 2026. We will take an active lead in initiatives to realize a circular economy by reducing the environmental burden right across the supply chain.

Further strengthening our sustainability-related products



* Refers to approach (2) in the text above

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Business Strategy

Petrochemicals and Carbon Products

Stronger business foundations and the carve-out process

Within the MCG Group, the petrochemicals and carbon products businesses are currently the biggest emitters of CO₂. In these businesses, we would need to make a large environmental-focused investment in the future if we are to achieve carbon neutrality. Moreover, domestic demand for petrochemicals and carbon products is declining and Chinese companies are emerging, resulting in ongoing oversupply. Against this backdrop, we are transforming our business model in both petrochemicals and carbon products in order to achieve a circular economy and become more competitive. At the same time, we are moving ahead with processes to carve out the petrochemicals and carbon products businesses from fiscal 2023.

	FY2021 results
EBITDA (Billions of yen)	108.1
EBITDA margin	11%
Core operating margin	7%
ROIC	11%

Note: Assuming JV core operating income of approx. ¥40.0 billion and net income of approx. ¥20.0 billion, 50% ownership

Increased business value from a petrochemicals joint venture

- Quick and focused decision-making
- Synergies to improve the cost structure and margin expansion
- Business portfolio and asset evaluation and optimization
- Growth based on new technology both for green transformation and a circular economy
- Increased value and healthy position to monetize exit

Transforming the carbon products business model

To meet the changing structures of the domestic steel industry, we have restructured to optimize existing sales portfolio and production systems at the MCG Group’s Kagawa Plant, which supplies coke for use in blast furnaces. The coke supplied under the SAKAIDE COKE brand is known for its highly uniform and stable quality and enjoys a correspondingly strong reputation with steel manufacturers worldwide. We aim to continue providing stable supplies of high-quality coke in the future.

Changing to an export-oriented business model

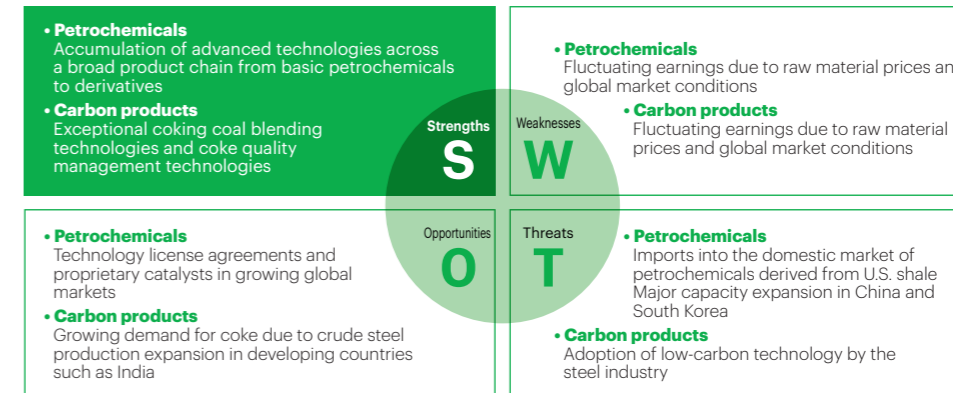
Restructuring in the domestic steel industry

- Cease operations at five of 25 blast furnaces in Japan by 2023
(crude steel production to be reduced by 9 million tons per year, resulting in a drop of 4 million tons per year in demand for coke)

Restructuring of the MCG Group’s coke business

- Reduce the number of coke ovens at the Kagawa Plant from 323 to 250 and optimize operations
- Double export shipping lines to two

SWOT analysis



Achieving carbon neutrality through stronger ties with the oil refining industry and neighboring regions

As we work to achieve carbon neutrality by 2050, the MCG Group is implementing energy conversions at domestic plants and is considering the commercialization of basic chemicals such as ethylene and propylene produced from bio-based raw materials. Working with ENEOS Corporation, we are constructing a chemical recycling facility at our Ibaraki Plant that will convert waste plastic to oil, with an annual processing capacity of 20,000 tons, the largest of its type in Japan. We aim to commence operations during fiscal 2023.

The Kashima coastal industrial zone, located in Ibaraki Prefecture, is one of Japan’s leading industrial clusters centered on the basic material industries of petroleum refining, petrochemicals, and steel. The MCG Group will collaborate and cooperate more closely with Ibaraki Prefecture with the goal of creating an industrial base that is both highly competitive and carbon neutral, centered on the Kashima coastal industrial zone.

Carbon-neutral programs in the Kashima coastal industrial zone

