

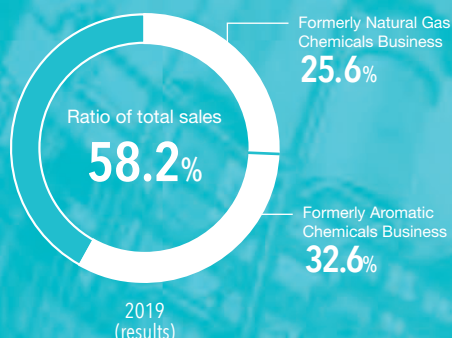
Growth Strategy

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Growth Strategy

Basic Chemicals Business

Using our unique catalyst and production technologies to provide a stable supply of essential products for society



Tomohiko Okubo

Director, Managing Executive Officer
In charge of Basic Chemicals Business Sector

Business Overview

Providing highly versatile products to diverse industries

The Basic Chemicals Business Sector was created in April 2020 to integrate and develop the businesses of the Natural Gas Chemicals Company and the Aromatic Chemicals Company. The Natural Gas Chemicals Business manufactures methanol, ammonia, and their derivative products. The Aromatic Chemicals Business produces highly original products, notably meta-xylene derivatives.

Many of the products manufactured by the sector are highly commoditized products that are high up in product chains and are widely used in industries around the world. Because these products are used in various industries and for a wide range of applications, these products have longer product lives than functional products. The sector is building a business foundation that is resilient to market conditions by leveraging proprietary technologies accumulated over many years, such as in methanol catalysts and HF-BF₃ catalysts, to expand its offerings of

highly original products.

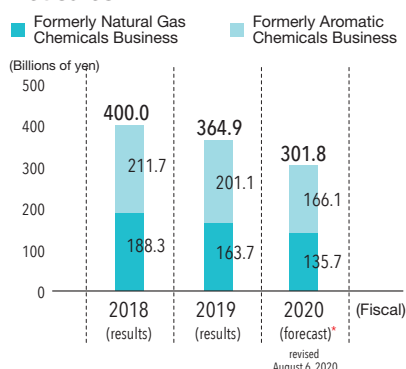
While manufacturing basic chemical products, we also have been exploring and developing natural gas—a component of numerous products—in Japan and overseas for decades. The sector also engages in other businesses, including using technology from its natural gas exploration and development operations to expand its geothermal resource development business in Japan and actively seeking to build the Life Science Business, which encompasses health food ingredients and antibody drugs.

Fiscal 2019 Review

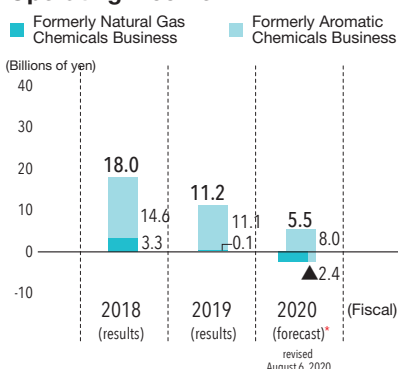
Market conditions impacted earnings, but new initiatives are making progress

Lower prices for the sector's core methanol products led to declines in both sales and profits in fiscal 2019. Market conditions deteriorated more than anticipated in early 2020 from the drop in crude oil prices and the spread of COVID-19. Profits were also affected by falling prices for the methanol ammonia derivative products methyl

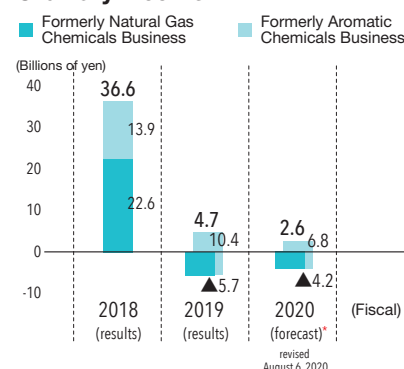
Net sales



Operating income

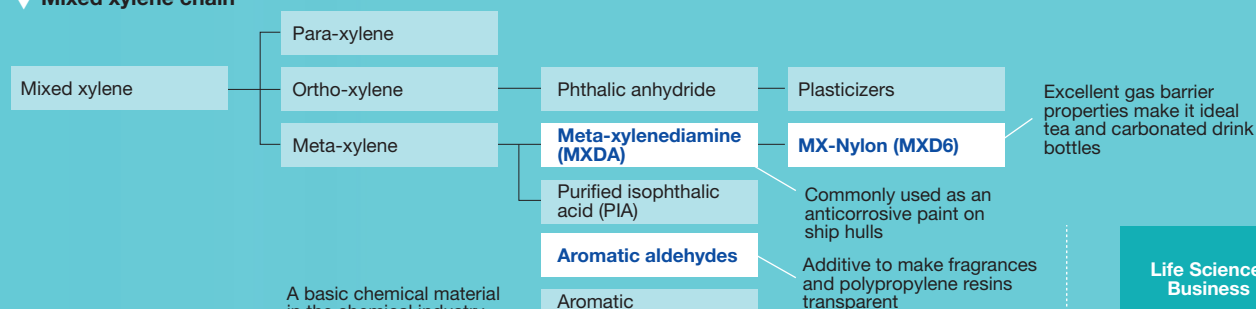


Ordinary income

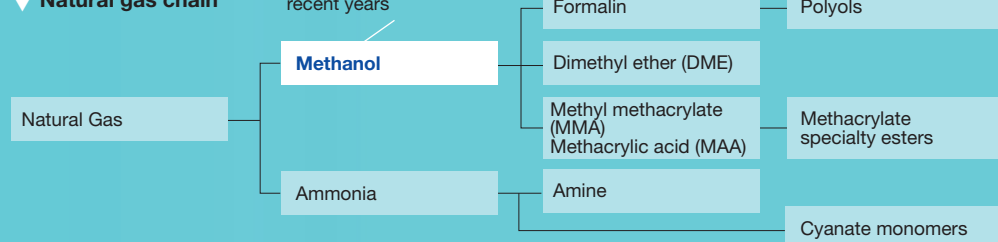


Basic Chemicals Business Main Products

▼ Mixed xylene chain



▼ Natural gas chain



Life Science Business

Energy & Resources Business

methacrylate (MMA) and neopentyl glycol as well as for natural gas commodity products, such as monomer-based chemicals.

We also recorded an equity-method loss in fiscal 2019 owing to a one-time expense due to revising the joint-venture framework for the methanol production operation in Saudi Arabia. Despite the temporary setback, the new framework gives us a considerable advantage by enabling us to continue our operations at the highly competitive Saudi Arabia plant and to respond to the ongoing strong growth in demand expected for methanol, including in China, a major consumer.

At the same time, our extensive lineup of unique aromatic products, such as our meta-xylene derivatives, was relatively unaffected by the pandemic. Demand for our aromatic aldehydes was particularly strong, and we recorded an increase in sales volume.

It was certainly a challenging year, but we still made positive progress in several areas. One such area was the Energy & Resources Business. In May 2019, the Wasabizawa Geothermal Power Plant in Yuzawa, Akita Prefecture completed construction and began operations, and construction began later in the summer for the geothermal power plant in Appi Kogen, Iwate Prefecture. We also made a key addition to the Group by bringing in the Toho Earthtech, Inc., a natural resources developer in Niigata Prefecture. We look forward to strengthening our collaborative activities with the company to develop several promising synergies.

Growth Strategies

Growth strategies for our businesses of particular interest to investors

Strengthening our methanol supply network

Our overseas methanol production bases in the Middle East, Asia, the Caribbean and South America enable us to efficiently distribute our production to our worldwide customers. This global network is resilient to fluctuations in energy prices and markets, and allows us to both diversify risk and maximize profitability.

The COVID-19 pandemic has necessitated significant delays to the construction of the joint-venture methanol plant in Trinidad and Tobago. On-site delays had previously pushed the completion date into 2020 then the pandemic forced all construction to be suspended. However, it is now possible to dispatch personnel to the country, and we are aiming to commence commercial operation during 2020. Bringing the plant on line will add further strength to our methanol supply network that should lead to improving profitability.

Stepping up investment in highly unique special aromatic products

We expect demand for our highly unique, high value-added MXDA and 1,3-BAC to continue growing across a wide range of fields, including housing, infrastructure, and automobiles and will accordingly step up investment in those areas. We are currently considering plans to construct an MXDA plant overseas with the aim of starting operations by the end of 2023.

We are also taking steps to increase the production of aromatic aldehydes, for which demand is growing as a raw material for fragrances and resin additives. Highly advanced technologies are needed for aromatic aldehyde production because of its use of HF-BF₃ catalyst, and we

Basic Chemicals Business

are examining ways to utilize equipment and expertise from the Mizushima Plant. We plan to incrementally increase capacity over about three years while actively working to expand the sales channels for our aromatic aldehydes.

We have high expectations for developing the new Neopulim™ aromatic product into a full-fledged business. The product is being considered for applications in numerous areas, including foldable displays, automobile head-up displays, and mobile device screens.

Using Our Business to Address Social Issues

Advancing the Energy & Resources Business with our well-tested excavation technology

We made steady progress laying the foundation for the Energy & Resources Business in fiscal 2019, including starting operations at the Wasabizawa Geothermal Power Plant, beginning construction of the Appi Geothermal Power Plant, and commencing operation in April of the No.1 unit at the natural gas power plant project underway in Fukushima Prefecture, which was engineered to have a minimal environmental footprint. Although these operations are not yet generating significant revenue, confirming that they can be competitive businesses even when generating power using externally procured LNG was a major step forward.

We also look forward to collaborating with our new Group member Toho Earthtech. The company has extensive experience developing safe and environmentally-friendly methods for collecting and selling water-soluble natural gas in Niigata Prefecture, and is also researching iodine contained in the minerals of water-soluble natural gas. We are using our broad knowledge and expertise in resource development and chemical product development in a collaboration with Toho Earthtech to begin development of new water-soluble natural gas. We have provided detailed presentations to local communities about the environmental conservation and have received their support and understanding for the project. This new



The Wasabizawa Geothermal Power Plant

approach to creating added value is also significant because it uses domestically produced natural resources.

Developing the Life Science Business in two main areas

The Life Science Business was established in 2016 with the aim of broadening our business in high value-added fields. The business is focusing on two main business lines—developing health food ingredients centered on pyrroloquinoline quinone (PQQ) and providing contract manufacturing of antibody drugs.

We are developing the PQQ project in collaboration with manufacturers of final food products. The project has advanced somewhat more slowly than we originally planned, but we are steadily gaining increasing recognition, including with the approval in Europe as a “novel food” under the region’s new food safety regulations. We are promoting recognition of the PQQ project while developing new applications to meet customer needs.

The contract manufacturing business for antibody drugs is currently engaged with a number of drugs that are still at the trial stage of clinical testing and has not yet been contracted to produce commercial products. The business’s technical capabilities offer much promise that the operation can be developed into a highly profitable new business.

Addressing social issues as an avenue for further growth

We understand that our business sector is the very foundation of the MGC Group as a chemical company. More than a primary revenue source for the Group, the Basic Chemicals Business is a reliable source of chemical products that are essential to industries and people’s lives, and in that sense we consider our business to be a foundation of society as well.

Part of our corporate social responsibility is to address climate change issues by using the geothermal resource development capabilities using the technologies and expertise we have accumulated in our operations developing underground resources. In recent years, we have also been participating in governmental carbon capture and utilization (CCU) demonstration project, contributing the unique technologies and expertise in catalyst technology that we have developed as a chemical manufacturer.

We expect the severe business conditions for our operations to persist as the impact from the COVID-19 pandemic extends to consumer goods, such as automobiles and home electronics. We are fully dedicated to our mission to provide a continuous stream of chemical products that society needs while aiming to realize sustained business growth.

MGC Innovation

Advances in aromatic chemicals using HF-BF₃ catalystsThe Mitsubishi Gas Chemical Mizushima Plant is applying strict safety management for the industrial use of superacid HF-BF₃.

World's first to successfully industrialize superacid

We have produced various products with our highly unique xylene separation technique using a combination of hydrogen fluoride and boron trifluoride, HF-BF₃. Mixed xylene contains four isomers, including meta-xylene and paraxylene, that are commonly used as raw materials for the chemical industry. However, separating the isomers was a complicated process, and there was no established technique for separating high-purity meta-xylene. The principles of the HF-BF₃ separation technique were identified in the 1950s by a researcher in the United States, however the extreme acidity of HF-BF₃ made it very difficult to handle and unsuitable for industrial applications because it would corrode factory equipment and pipes.

MGC took to the challenge to develop a way to use HF-BF₃ industrially and use it to create new technologies that would separate us from our competitors. We achieved a breakthrough in 1964 when we successfully used HF-BF₃ to continuously extract meta-xylene from mixed xylene. In 1968, the Mizushima Plant introduced separation and isolation process using HF-BF₃ capable of efficiently isolating the four isomers in mixed xylene.

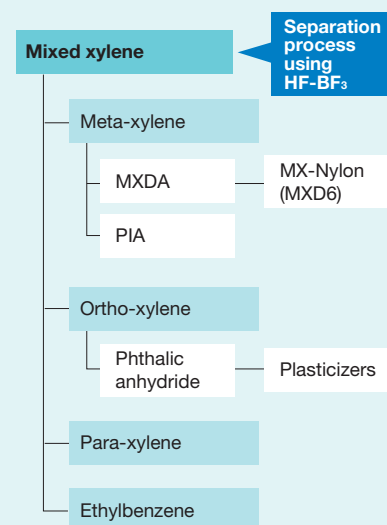
Our separation technology is lauded worldwide for its ability to isolate extremely pure (99%) meta-xylene in large volume and at low cost as well as for its minimal environmental impact through the recovery and reuse of the HF-BF₃ used in the processes.

HF-BF₃ also key to producing highly functional aromatic aldehydes

We also use HF-BF₃ as a catalyst to produce aromatic aldehydes. MGC is highly competitive in the field and currently manufactures and sells over 10 types of aromatic aldehydes, some of which we are the sole company capable of producing. In addition, since we recover and reuse the catalyst, our processes are environmentally cleaner than conventional processes using aluminum chloride as a catalyst.

Aromatic aldehydes are used in fragrances, additives, medicines, agricultural chemicals, and for a wide range of applications. Because the efficiency of our manufacturing techniques produces highly pure target substances, our products are also safe for use with food products, and we are receiving increasing demand from the food packaging industry.

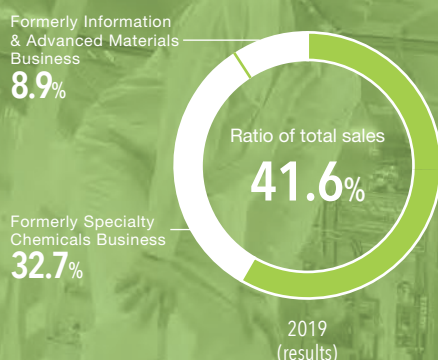
Original products using **high-purity** meta-xylene obtained by our separation process using HF-BF₃



Aromatic aldehyde improves the transparency of plastic containers

Specialty Chemicals Business

Using our refined technical capabilities and achievements to develop advanced products meeting market needs



Yasushi Kosaka

Director, Managing Executive Officer
In charge of Specialty Chemicals Business Sector

Business Overview

Business growth by meeting needs in the information and communication field

The Specialty Chemicals Business Sector was created in April 2020 combining the Specialty Chemicals Company and the Information & Advanced Materials Company and encompassing the five business segments of inorganic chemicals, engineering plastics, optical materials, electronics materials, and oxygen absorbers.

Our main products are commodity products such as engineering plastics and hydrogen peroxide used for bleaching, sterilizing, oxidizing, and polishing metal; and high value-added products meeting specific user and market needs, such as super-pure hydrogen peroxide used in semiconductor cleaning processes, resin used in high refractive index plastic lenses, liquid crystal film materials, and BT materials for semiconductor packaging. The Specialty Chemicals Business Sector aims to use a balance of both product lines to generate stable business development and growth.

Of the five focus fields set in the medium-term management plan, our business sector is particularly focusing on the information and communications field. We expect the emergence of 5G and IoT technologies to drive worldwide demand for products and services, particularly related to semiconductors and mobile devices. We are strengthening our development, manufacturing, and sales networks with the aim of growing our business with the expanding market.

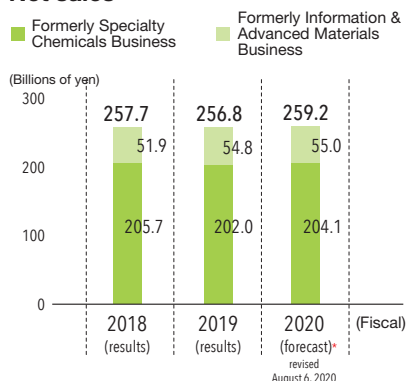
Fiscal 2019 Review

The information and communications field contributed solid profits in a harsh business environment

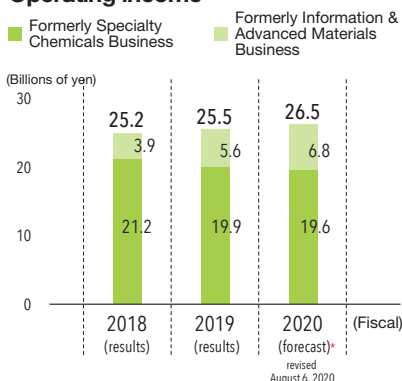
Profits from engineering plastics declined as the sharp year-on-year price drop for polycarbonate resins markedly narrowed the price margin with raw materials.

Sales volume of super-pure hydrogen peroxide expanded on the demand recovery in the semiconductor industry, although fixed costs rose with the launch of the

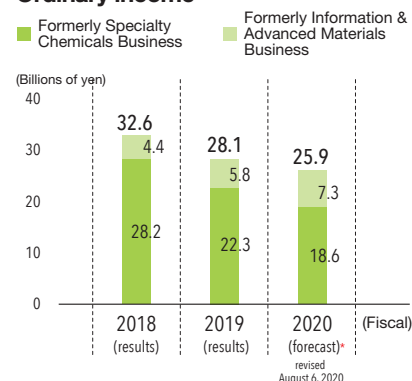
Net sales



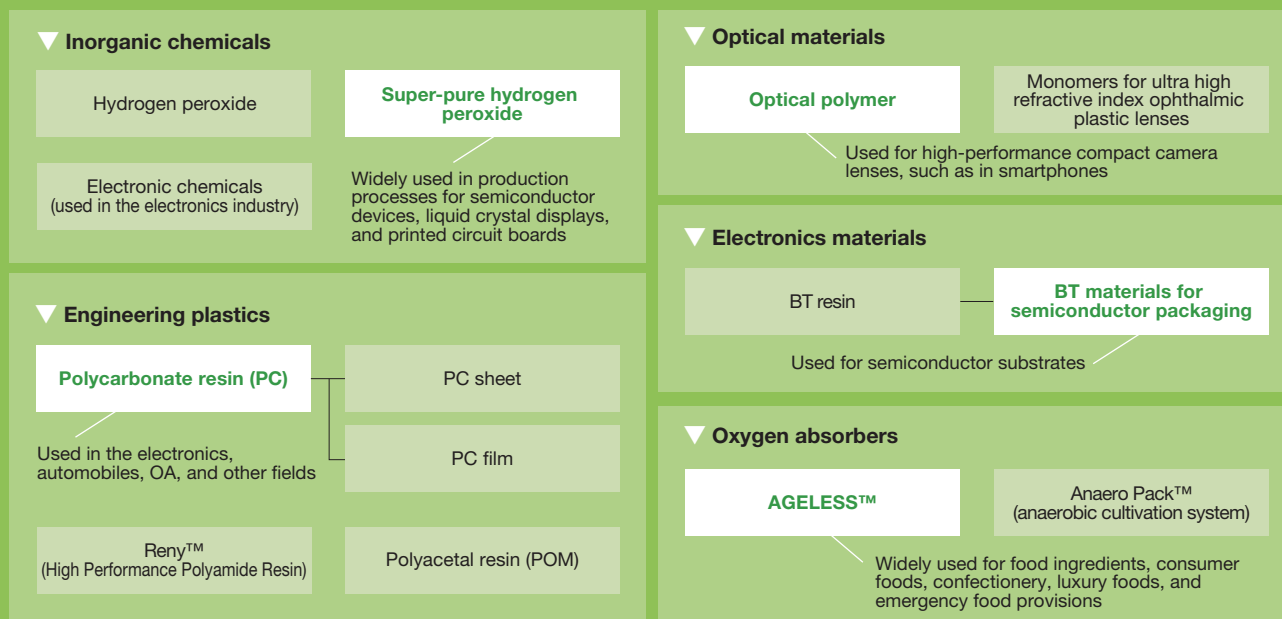
Operating income



Ordinary income



Specialty Chemicals Business Main Products



new plants in North America. Sales volume also grew for optical materials fueled by our expanded production capacity at the Kashima Plant to meet the growing demand from the smartphones equipped with multi-lens cameras. Sales and profits increased for electronic materials on the brisk smartphone demand, the recovery in memory demand in the third quarter, and steadily growing sales for our main product of BT for semiconductor packaging.

Although individual businesses turned in varying performances, considering the severity of the business conditions during the year, we believe our overall results represent a certain degree of success, particularly in the information and communication field.

Growth Strategies

Introducing our main businesses, particularly related to ICT

Expanding local production capacity for super-pure hydrogen peroxide

Super-pure hydrogen peroxide is used as a cleaning solution in the increasingly sophisticated manufacturing processes for semiconductors. The high quality of our products and our stable supply structure have earned us the leading position in the field with roughly 50% market share, and we plan to further strengthen our global production and sales structure to meet the growing demand.

We anticipate continuing steady sales volume growth in fiscal 2020 supported by the addition of new plants in North America and South Korea that commenced operations in fiscal 2019. We plan to expand our production systems in Asia to harness the brisk demand from the semiconductor production industry in the region.

Construction of a new plant in Taiwan to produce hydrogen peroxide materials has already been decided with the aim to further develop the site into an integrated producer of super-pure hydrogen peroxide. Also under way is a relocation project for a hydrogen peroxide material plant in China, where we are also considering a plan to create an integrated production structure from hydrogen peroxide materials to super-pure hydrogen peroxide.

Proposing BT materials for the 5G era

BT materials used in semiconductor packaging are another core product contributing to the sector's profitability. Our high-quality, high performance BT materials feature high heat resistance and low warpage. We command a leading 40% market share with a brand known worldwide. We expect demand for BT materials to continue growing as 5G technology becomes common and demand for semiconductors used in data centers grows.

We are focusing our sales activities on proposing materials for 5G smartphones and consumer premises equipment (CPE) as well as on applications for 5G small-cell base stations, where we anticipate growing demand. To meet the anticipated demand growth, we decided to strengthen our supply structure by expanding the production capacity of the Thai Plant. The plant's new production line is scheduled to start operations in 2022, and we plan to develop an optimal two-base global supply structure using the Thai Plant and our facilities in Fukushima, Japan.

Expanding optical polymers production capacity to boost profits

Demand for our optical polymer continues increasing as a lens material for smartphones and other devices with

Specialty Chemicals Business

high-performance compact cameras.

The measures to meet the strong demand by expanding the production capacity of the Kashima Plant, which is our main production site for optical materials, were completed in the second half of fiscal 2019, and immediately began contributing to profits. We expect a full year's operation with the expanded capacity to make a considerable contribution in fiscal 2020. At the same time, we believe the pace of the demand growth requires a further increase in supply and are currently considering plans to expand capacity.



Multiple camera lenses on smartphones are increasing demand for our materials

Using Our Business to Address Social Issues

Raising employee awareness and developing products that solve social issues

The growing awareness of environmental preservation is leading our OA equipment manufacture customers to adopt stricter procurement standards in which they will only accept plastic materials with a recycling rate above a certain level. In other words, regardless of whether products are targeted for other business entities or individual consumers, products can no longer be put on the market unless they are environmentally friendly. We also expect demand to become increasingly stronger for value creation that contributes to solving global social issues, such as represented by the United Nations SDGs.

As a manufacturer of chemicals, I believe we need to be especially aware of issues related to the environment and energy. We will continue to focus on raising employee awareness in all of our businesses and on developing new products that will not only decrease our environmental footprint but also help resolve a wider range of social issues.

Fostering our sense of unity as a new organization and strengthening our technological capabilities through collaboration among our businesses

My mission as the person in charge of Specialty Chemicals Business Sector is to maximize the benefits of

the organizational restructuring. My first objective is to cultivate a sense of unity as a new organization.

Eliminating the vertical division system and barriers in the old company structure and conscientiously promoting the exchanges of personnel and information between our businesses will enable us to share knowledge and information related to each business's technologies and growth strategies, the characteristics of its customers and sales channels, and the status of overseas business development. Then, taking a "technology inventory" across all of our operations to confirm the technologies and points of differentiation of each business, we can link technologies together or bring in technologies from outside to make us stronger.

I will also look to optimize our supply chains by shifting away from a narrow focus on improving production efficiency and minimizing costs on an individual product basis, and by taking a broader perspective to take advantage of the Group's production sites and networks of affiliated and partner companies.

Being sensitive to market changes and accelerating the shift to high value-added products

We expect the chemicals market to continue polarizing toward two types of products— highly versatile general-use products and high value-added products for specific applications.

Our business sector is responding to these conditions by shifting away from general-use products, which are difficult to differentiate in functionality and quality, and by focusing on high value-added products where products can be differentiated and are more profitable. Although they cover different business fields, several of our businesses are pursuing the common strategy to shift to high value-added products, and I will be looking to create new synergies among them for technologies and information sharing as well as through horizontal development of successful business models.

Key to accelerating this effort will be our ability to identify the needs of our customers and the markets. We are entering an era where a supplier that cannot meet the strict demands of its customers and the market will fall by the wayside. I have felt that myself over my many years in sales and development of engineering plastic. We must be constantly on the lookout for changes in the markets, trends, and final users, and it is crucial that we immediately and accurately convey all the information we find to the R&D department. Fortunately, we have many products in our sector that are relatively close to the end user. We will create a system facilitating quick delivery of information from the front lines to the R&D department to drive sustaining growth.

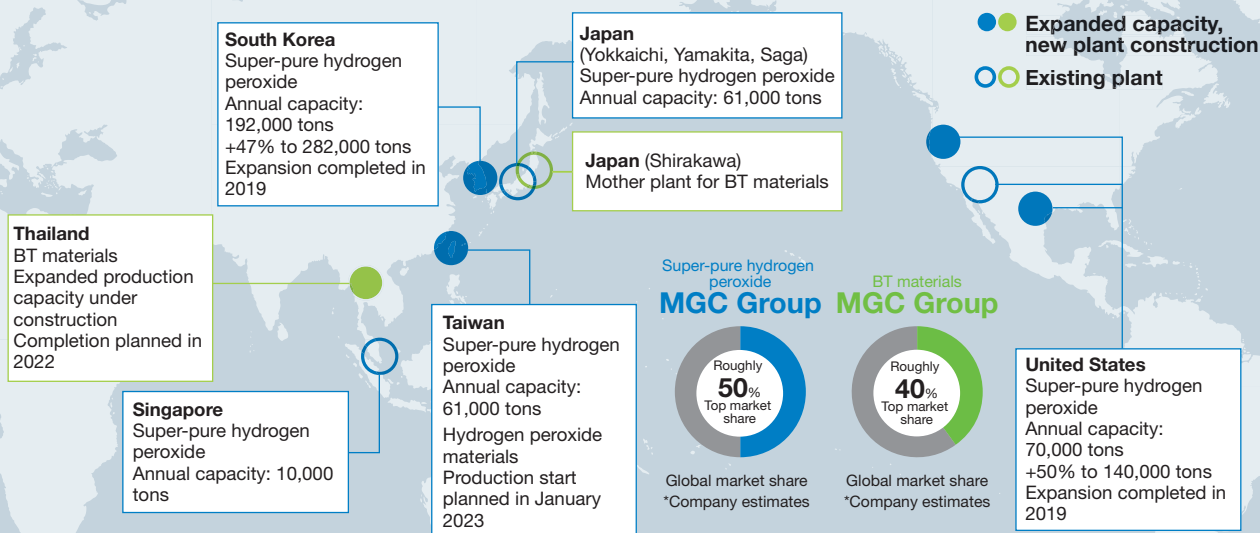
MGC's Main Markets and Products

Super-pure hydrogen peroxide and BT materials are driving the growth of the semiconductor market



Global Production Network

Accelerated expansion of production capacity since fiscal 2019



We project demand in the global semiconductor market to continue growing in the medium and long term supported by wider applications for semiconductors with the development of 5G, IoT, cloud, and AI technologies.

We are preparing to meet this growth by forming a global production and supply system for the super-pure hydrogen peroxide and BT materials that are an integral part of semiconductor manufacturing. We provide high-quality products meeting the needs of semiconductor manufacturers in all countries and regions. We currently command top market shares for both of these products worldwide and under the medium-term management plan are aggressively investing to ensure we continue to capture demand and grow our profits.

Our specific strategy is to fortify our production capacity of

ultra-pure hydrogen peroxide in areas where major semiconductor manufacturers have production bases. We have completed expansion projects in North America and South Korea, and are now focusing on our operations in Taiwan. We have successfully integrated production from hydrogen peroxide materials to super-pure hydrogen peroxide, and this is becoming a key advantage for maintaining and improving our competitiveness.

We are also enhancing our production capacity of BT materials. The expansion project at the Thai Plant is scheduled to be completed in 2022. In Japan, we are strengthening the mother factory functions of the Shirakawa Plant to broaden its production capabilities for high-performance products, such as for 5G applications.

Research and Development

We will accelerate R&D activities aimed at maximizing the return on investment and expanding the presence of the MGC Group



Kenji Kato

Director, Managing
Executive Officer
In charge of the Research &
Development Sector

Strengthen R&D capabilities under the new organizational structure

MGC has set “cultivate our R&D innovation capabilities” as a priority objective of the MGC Advance 2020 medium-term management plan. We have grown on the strength of our original technologies, and even now about 90% of our products were developed in-house. The creation of unique technologies that differentiate our Company can be considered the foundation point for advancing our management strategies.

That was one of the reasons we reorganized the business divisions in April 2020 and completely revised the structure of our R&D organization. (See the chart on the right above)

The new structure combines all of the research departments and laboratories of the four company divisions and the research departments of the Advanced Business Development Division in the Corporate R&D into the new R&D Promotion Division. The new structure will enable us to further accelerate our R&D activities from a Company-wide perspective.

Maximizing R&D return on investment

An R&D department’s chief purpose is to maximize return on investment, which essentially means raising the investment efficiency in R&D. We believe the following three points are the keys to achieving this.

1. Optimal allocation of R&D resources

The first is optimally allocating R&D resources from the

overall perspective of the Company. The new organization allows us to reconsider the research themes being pursued by the four company divisions and the Advanced Business Development Division from a Company-wide perspective. Then by evaluating each theme in terms of importance to the management strategy, connection with core competence, expected outcomes, and degree of technical differentiation, we can set a strategic priority level for each theme and concentrate management resources in the high-priority areas.

2. Accelerated R&D activity

The second key is accelerating the pace of R&D activities. Speeding up research in all areas is essential to achieving results within the timeframe that makes an investment worthwhile. We will carry out PDCA cycles faster as we continue to improve our research activities.

We are also dividing our approach to R&D. While the R&D teams of the company divisions pursued both research and development as a single unit, the R&D Promotion Division will now focus mainly on the research side—basic research and technology development—and the business sectors will conduct the development activities of product commercialization and market entry planning. The ability to clearly focus on specific parts of the research themes, such as on the basic technology or on the market entry plan, will accelerate our R&D activities. The R&D Promotion Division and each business sector will work in tandem to accelerate the activities on each side by communicating and convening regularly to discuss the progress status of each project.

New Organization (as of April 1, 2020)



3. Creation of products and businesses that provide large contributions to profits

The third key is creating new products and businesses that provide large contributions to profits. As an R&D-driven company, we created numerous products and businesses under the former company structure, and the new organization will further enhance our abilities and accelerate our efforts.

Our first focus will be on initiatives based on the current business domains. The closer integration of the R&D Promotion Division and the business sectors will enable us to efficiently develop products and businesses that can contribute to profits throughout the Company.

We will also work to create products and businesses in new fields for markets with future potential. This continues our past approach which successfully produced the plant cultivation factory providing safe and secure production of leafy vegetables in an optimal growth environment unaffected by weather conditions, and introduced medical-grade plastic containers that are lighter and safer than glass while offering high oxygen barrier properties. The R&D Promotion Division also has the important mission of selecting the new fields and research themes and will arrange and coordinate the research themes of all of our research facilities while taking a broad approach to identifying new research directions for the MGC Group. (Please see page 34 for the progress in new businesses)

I recognize that sustainability will be an increasingly important factor when identifying new fields for research. The priority we put on specific research themes and how we select the themes to pursue will take into account the potential for our work to contribute solutions for social

issues, as we have with our research into biodegradable resins and plant-based synthetic resins.

Creating synergies through Group company collaboration

Organizing the research structure into a single system will necessitate changes to how the Company interlinks with its Group companies. Many companies in the MGC Group have outstanding proprietary technologies, and this has created a situation where only the company divisions that were using those technologies were working closely together. Under the new organization, we will take an overall Group perspective on each company's technologies and strengthen links between companies based mainly on the field where the technologies can be best used.

Because the Group encompasses such a large number of companies, our first priority will be to set up synergies between MGC and Group companies with clear technological advantages and with companies that are active with customers and markets that are different from MGC. Utilizing the excellent technologies of our Group companies should speed up and streamline our R&D, and we are confident that it will lead to new creative technological developments.

Research and Development

Accelerating digital integration to R&D

Another major theme in our R&D activities is the integration of digital technology. Our research institutes extensively use ICT, such as computational chemistry for reaction analysis, but we need to integrate more sophisticated digital technologies, such as using AI in materials informatics for material development.

I also want our researchers to actively use digital technology to communicate with each other. Since the COVID-19 pandemic, information collection and exchange via remote meetings and the internet have become common in the Group. This is an opportunity to improve our communications, and I would like to take advantage of the efficient and effective communications that digital technology enables.

Strategically using our intellectual property to enhance our competitive advantage

It goes without saying that patenting technology created by our Company and maintaining and strengthening our competitive advantages are extremely important strategies. I believe R&D and intellectual property management should always be viewed together as one.

Staff in charge of R&D and in charge of intellectual property management meet daily to discuss patent applications and other matters. R&D and intellectual property management departments also regularly convene Intellectual Property Strategy Meetings and advance strategic applications of our intellectual assets. We are also planning to use digital technology to improve our intellectual property management, such as by using patent maps and citation analysis to our intellectual property strategy.

Combining our diverse knowledge and technologies to create new value

As mentioned earlier, we will emphasize the return on investment in R&D, but that does not mean we will restrain our investments. The steady R&D investments at each company division have produced a constant stream of new products and businesses that are contributing to our growth in sales and profits. The approach has proven successful, and we therefore plan to increase investment in R&D.

Constant innovation is essential for corporate growth, and I believe innovation does not come from scratch, but

from a melding of existing expertise and new knowledge and the interchange of existing technologies and ideas. The biggest objective of the organizational reform is to provide a catalyst for “cross-value innovations.”

The Group has a track record of innovation in a wide range of fields. I expect the new organizational structure that brings together our units and research institutes specializing in distinct fields into a single force to lead to even greater innovation and new knowledge integration.

Creating cross-value innovation will also require bringing in expertise from outside the Group. While tapping the synergies among our Group companies, we will expand our technological exchanges and joint research activities with universities, research institutes, and companies in Japan and overseas. To facilitate joint activities, we are renovating the training facilities in Meguro, Tokyo, and preparing bases across Japan to serve as host sites for exchanging knowledge with outside professionals. The new innovation sparked by combining knowledge and perspectives from inside and outside the Group will be a driving force for ongoing value creation.



The newly completed research building facilitates employee interaction and new idea creation by combining the Niigata Research Laboratory, the R&D Department and the Quality Assurance Department of Niigata Plant.

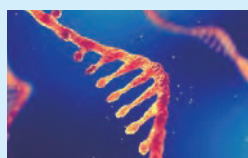
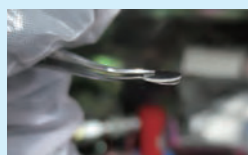


A relaxed atmosphere encourages conversation supported by an easily partitioned space with light exercise equipment to stretch and refresh, information signage, magazines, and a touch-screen computer for easy information access.

MGC's Leading Edge R&D

Progress Status of Projects in Advanced Business
Development Division

Photo provided by Farmship, Inc.



Marketing

Development

Prototype

Commercialization

Plant Cultivation Factory

Japan's largest plant cultivation factory using 100% artificial lighting started operating in October 2019 and is currently selling six types of lettuce in the Kanto region. The factory is environmentally efficient with higher yield (land use efficiency) and better water use efficiency than open-field cultivation.

OXYCAPT™

MGC has started supplying multilayer plastic vials and syringes with a middle layer made of our in-house-developed plastic with oxygen absorption and barrier properties. OXYCAPT™ is much more durable than the traditional glass. A venture company in Japan decided to use the OXYCAPT™ in November 2019.

Solid Electrolyte

Development is continuing with samples being provided to customers and through collaboration with public research institutes. The research structure is being expanded and mass production technology is being engineered with the aim of commercialization in two to three years.

Active Optical Cable

Trial sales started in fiscal 2019. We are aiming for a full-fledged entry to the active optical cable (AOC) market, which is expected to expand with growing demand for HDMI cable for high-resolution 8K video transmissions, equipment connection cables in large-scale data centers with the proliferation of 5G communication and IoT, and high-performance supercomputers.

Nucleic Acid Pharmaceuticals

We have invested in Veritas In Silico Inc., which conducts R&D of nucleic acid pharmaceuticals, as a strategic partner for product commercialization.

Future Research Themes

- New optical materials
- Functional composite materials
- Biodegradable resins and biomass-derived chemicals
- Advanced communication technology materials
- Energy development materials
- Healthcare raw materials
- Medical devices, such as allergy diagnostic chips
- Biomass Shore
(Biomass complex research course endowed at the University of Tokyo)

R&D Expenditure (consolidated)

