

Management Overview Briefing

May 27, 2024

Central Glass Co., Ltd. Management Overview Briefing

Date: 27 May, 2024

Presenter: Representative Director, President & CEO Kazuhiko Maeda
Held via Zoom Webinar

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02 Overview of Business (FY2023 Results by Segment)

03 2030 Vision for Each Business

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- (2) Electronic Materials
- (3) Energy Materials
- (4) Applied Chemicals
- (5) Fertilizers
- (6) Glass
- (7) Glass Fiber

04 Research and Development Initiatives

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- (2) Research & Development Topics
 - (i) Etching Gas (ii) SiC Wafers (iii) Circuit Pattern Collapse Prevention Agent

05 Promotion of Human Capital Management

06 Response to Environmental Issues

07 Shareholder Returns

Thank you very much for attending today's management overview briefing of Central Glass Co., Ltd.

This will be our first management overview briefing, and we have prepared easy-to-understand materials on the current and future status of our business as well as other initiatives. Thank you in advance for your cooperation.

First, I would like to explain VISION 2030, which we announced on May 10. Next, I will present an overview of our business, including Results by Segment for FY2023, followed by “Current Status and Future Vision in Seven Businesses,” “Research and Development Initiatives,” “Promotion of Human Capital Management,” “Response to Environmental Issues,” and “Shareholder Returns,” in that order.

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VISION 2030

02

Overview of Business (FY2023 Results by Segment)

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2030 Vision for Each Business

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Research and Development Initiatives

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Promotion of Human Capital Management

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Response to Environmental Issues

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Shareholder Returns

VISION 2030

Become a Specialty Materials Company
contributing to the realization of a sustainable society

Operating profit

ROE

Numerical targets

20 billion yen × **At least 10%**
(Highest earnings on record)

Business strategies

Expansion of specialty products

- Creation of new value
- Creation of a strong business model

Strengthening of essential products

- Strengthening of earning capacity
- Creation of high added value

Optimization of business portfolio

Promotion of human capital management

- Promotion of diversity, equity and inclusion
- Increasing engagement
- Promotion of health and productivity management

Response to environmental issues

- Initiatives for the reduction of GHG emissions
- Initiatives for the realization of a recycling-oriented society
- Initiatives for the reduction of environmental impact

Promotion of utilization of digital technology

- Improvement of efficiency of operations
- Enhancement of management foundations
- Digital human resource development aimed at DX

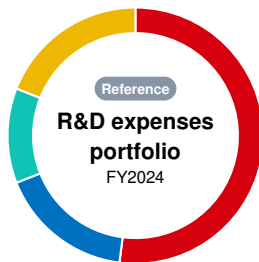
Strengthening of business foundations through ESG management

VISION 2030 is shown here. Our vision is to **Become a Specialty Materials Company contributing to the realization of a sustainable society**. Our numerical targets are “operating profit of 20 billion yen,” which is the highest earnings on record, and “ROE of at least 10%.”

Business Strategies

Expansion of specialty products

- Creation of new value (R&D, innovative ideas)
- Creation of a strong business model



New value creation targets

Semiconductors and power semiconductors

Batteries

Life sciences

Lifestyle, environment and food

Essential products

Strengthening of essential products

- Strengthening of earning capacity
- Creation of high added value

Specialty products

3 advantages

Technological advantage

Products using unique technology such as intellectual property

Originality

Products that have established a unique and powerful business model

Sustainability

Products contributing to social and environmental issues

Next, I will explain what is meant by specialty products and essential products in our VISION.

Specialty products refer to products with which we operate with a high degree of competitiveness with respect to one or more of the three “advantages,” meaning technological advantage, originality, and sustainability.

As typical examples, electronic materials are a business with a technological advantage, the anesthetic agent sevoflurane has originality in terms of the business model, and electrolytes address sustainability.

Essential products are a group of products that by no means have a highly competitive advantage, but for which there is a compelling social need, such as glass, glass fiber, fertilizer products, and some chemical products. We will work to strengthen earning capacity and create high added value for these products as well.

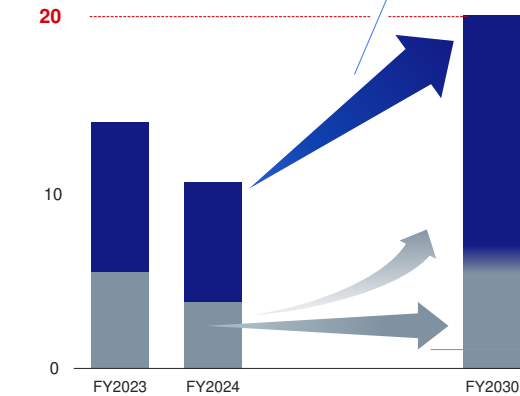
We have presented the expansion of research and development as a means of moving forward with the “expansion of specialty products.” We will find highly profitable products by acquiring intellectual property rights through innovative ideas from R&D, and by firmly establishing business models and supply chains through contracts and other means. As a result, we will expand or introduce specialty products in the fields of “semiconductors and power semiconductors,” “batteries,” “life sciences,” and “lifestyle, environment and food” as shown here. We are not satisfied with our current level of advantage, and we are committed to continuing to raise the level of our advantage.

Roadmap to the Operating Profit Target of 20 Billion Yen

We aim to reach 20 billion yen by doubling the operating profit of specialty products

Operating Profit

■ Specialty products
■ Essential products
(billion yen)



Expansion of specialty products

Target

Semiconductors and power semiconductors

Batteries

Life sciences

Lifestyle, environment and food

Specialty product groups

Etching gases, cleaning gases, SiC wafers, next-generation display materials, etc.

Electrolytes, next-generation battery materials, etc.

Pharmaceutical products (inhalation anesthetics, etc.)

Low GWP materials, environmentally friendly coated fertilizers, PFAS-free materials, high value-added glass products, etc.

Strengthening of essential products

Essential products

Strengthening of earning capacity and creation of high added value

This slide illustrates the roadmap to achieving our VISION. It also lists specific products in the four fields described on the previous slide. Our specialty products already represent a significant portion of profit, all of which have the track record of being products that are the result of our research and development. Most recently, electrolytes are such products. In addition, several new initiatives currently under development are just about to bloom in their respective fields in the future. We will continue to focus on research and development and increase the number of specialty products, aiming for operating profit of 20 billion yen by 2030.

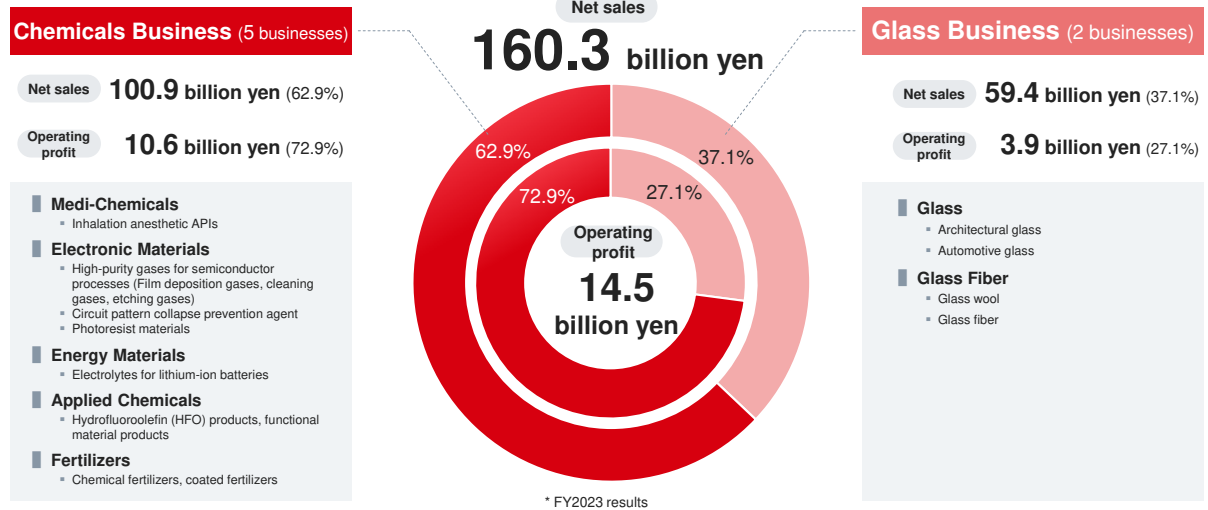
AGENDA

- 01 VISION 2030
- 02 Overview of Business** (FY2023 Results by Segment)
- 03 2030 Vision for Each Business
- 04 Research and Development Initiatives
- 05 Promotion of Human Capital Management
- 06 Response to Environmental Issues
- 07 Shareholder Returns

We will now move on to the “Overview of Business (FY2023 Results by Segment).”

2 Overview of Business (FY2023 Results by Segment)

After expanding into the glass business from the original soda business, the Company further expanded its business domain and is currently expanding earnings from the chemicals business, including semiconductor-related products.



Our business consists of the Chemicals Business and Glass Business, and as you can see from the pie chart in the center, the Chemicals Business is currently growing in terms of earnings and accounts for about 72% of our total operating profit. In addition, the Glass Business, which had been stagnant for many years, has been profitable for two consecutive years and has transformed into a business that provides stable earnings.

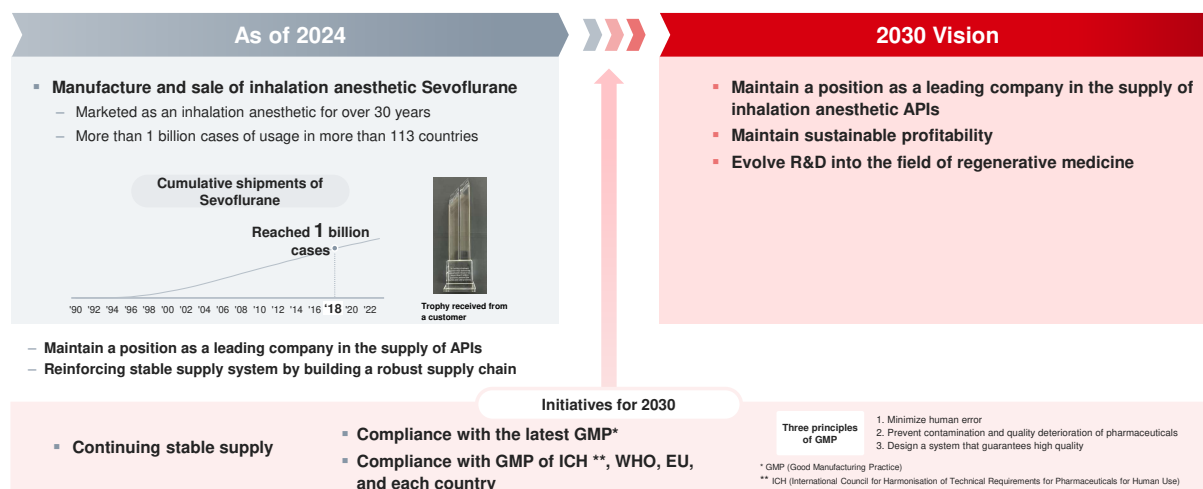
Please refer to the summary of FY2023 financial results and financial results presentation materials for details of the business performance.

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From here, I will explain specific initiatives for achieving VISION 2030 in each of our seven businesses.

“ Contributing to people’s health through inhalation anesthetic APIs ”



First is the Medi-Chemicals business.

Since the late 1970s, we have promoted the development of hydrofluoric acid products with added value and have developed many fluorinated organic and inorganic compounds. One of these is hexafluoroacetone (HFA). As a derivative using HFA, sevoflurane bore fruit as a business in the 1990s. We supply bulk sevoflurane, an anesthetic, to pharmaceutical manufacturers, who commercialize finished goods made by us in small batches and supply them to medical facilities, especially operating rooms. For more than 30 years since around 1990, we have been providing our products to the medical community in more than 113 countries around the world, and they have already been used for 1 billion patients, boasting a high share of the global market. Therefore, we have set our vision for this business in 2030 as “contributing to people’s health through inhalation anesthetic APIs.”

Products are manufactured in compliance with GMPs of the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use in Japan, the U.S. and Europe, the WHO, the EU and other countries in order to be highly responsible for quality control and to maintain a stable and safe supply. We also undergo regular audits, for example, last year we cleared a periodic inspection by the U.S. FDA. As a leading company in the supply of bulk sevoflurane, we will continue to ensure thorough quality control and strengthen our supply chain for pharmaceuticals. As for the third part of our vision, we have been engaged in drug discovery and the development of key intermediates for pharmaceuticals, but with the sale of Central Glass Germany, we have changed our portfolio from drug discovery-related research to research into regenerative medical materials. Important results have already been obtained in the area of regenerative medicine, although they are still in the research and development stage. In this way, we are focusing our efforts to bring next products to market in the area of life sciences.

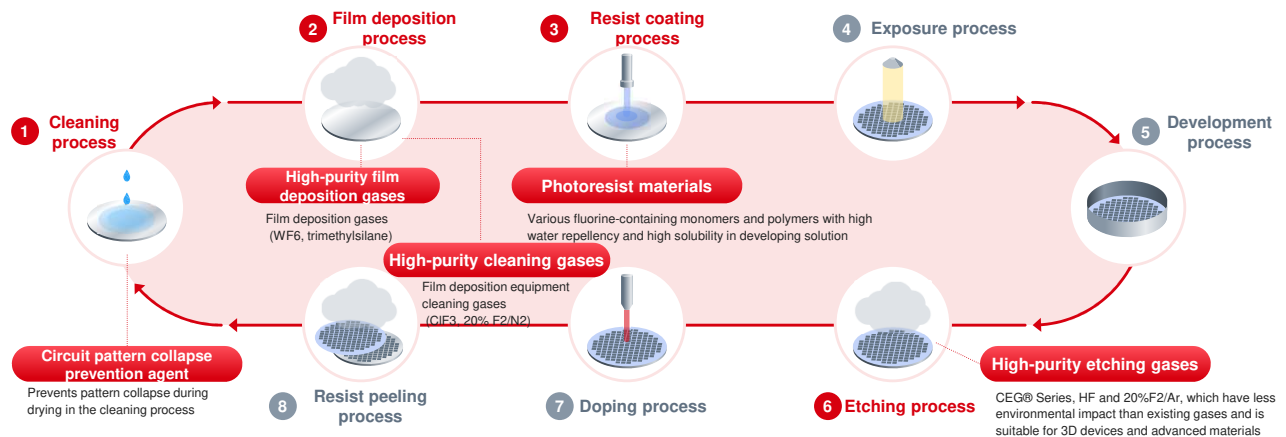
3 2030 Vision for Each Business (2) Electronic Materials (1/2)

Semiconductors and power semiconductors

In the Electronic Materials business, manufacture and sell high-purity gases for semiconductor processes, resist materials, and circuit pattern collapse prevention agents.

Business Profile

The Company's products in the front-end process of semiconductor manufacturing

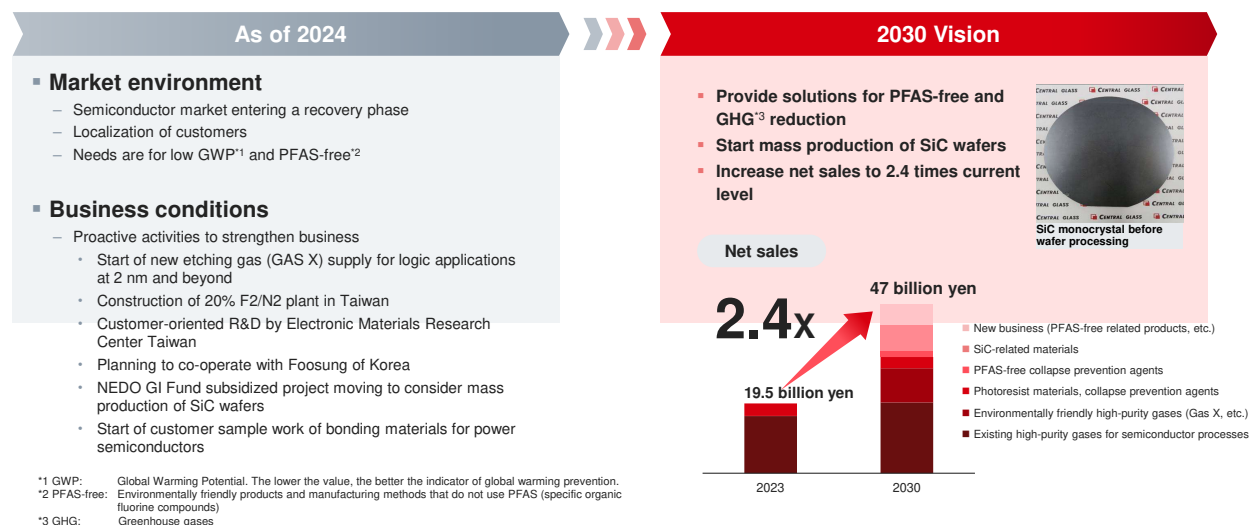


Next, we move on to Electronic Materials business.

Our electronic materials are highly competitive, consisting primarily of high-value-added materials used in the front-end processes of semiconductor manufacturing. This diagram shows the general semiconductor front-end manufacturing process, and our products are used in the four processes highlighted in red on the slide. First, in the film deposition process, high-purity gases are produced as deposition wiring gas constituting the semiconductor pattern, and cleaning gas for removing materials adhering to equipment without disassembling and cleaning the equipment. We also manufacture and sell raw materials for photoresists in resist coating and exposure processes, as well as protective film materials required for protecting resists from water and maintaining high resolution in immersion ArF lithography. Next is the etching process, where we produce etching gas that uses the resist exposure pattern as a mask to etch the underlying material. We currently sell high-performance etching agents as the CEG series, which support cutting-edge nodes at 2 nm and below.

In addition, after etching, the wafer is cleaned through doping and resist stripping processes before proceeding to the next cycle. When doing so, problems arise causing the manufactured circuit pattern to collapse, lowering yields. A particular issue is pattern collapse in the process of drying after immersion in the cleaning solution. We were the first in the world to develop a chemical solution that prevents pattern collapse during drying by treating the pattern surface with a water repellent, and many semiconductor manufacturers have adopted it as a pattern collapse prevention agent (Pattern Keeper™). This technology was originally developed through the fusion of chemical and glass technology.

Focus on advanced semiconductor materials and power semiconductors



On this page, we have described our challenge for 2030 in the Electronic Materials business.

We will continue to “focus on advanced semiconductor materials and power semiconductors” in the future.

Currently, the market is rapidly recovering, and semiconductor manufacturers who are our customers have expressed a need for localization of production, low GWP, and PFAS-free materials. We have therefore invested the equivalent of 50% of our R&D expenses to promote aggressive research and development, and as a result, we have developed a new etching gas (Gas X) for the cutting-edge 2nm node and beyond, and have already started supplying it. In Taiwan, we are also moving forward with plans to invest in semiconductor gas production facilities in a new company that has already been announced. We had postponed the construction of the plant due to a temporary slump in the market, but we have once again begun to consider the specific timing of the investment.

Furthermore, in order to promote customer-oriented R&D in Taiwan, we have established a local electronic materials research center and have repeated close discussions with key customers. Meanwhile, since customers in South Korea are also looking to localize their operations, we are currently discussing collaboration with Foosung, which is working on semiconductor materials in South Korea through fluorochemicals. Please wait for further disclosure on the details.

In addition to silicon semiconductors, we are also developing SiC wafers for power semiconductors, which are considered essential for the future of EVs. Instead of using the sublimation method, which is the widely accepted SiC wafer manufacturing method, we chose to use a solution growth method based on our proprietary technology. Details will be explained in the slides that follow. This development is being carried out as a project subsidized by the NEDO Green Innovation Fund. We have already completed basic consideration and have moved on to consideration of mass production. In addition, we have developed a unique bonding sintering material for power semiconductors that exhibits high electrical and thermal conductivity at low curing temperatures using our proprietary technology, and have already started sample work for our customers.

I would like to emphasize three points here about our vision for 2030. Since PFAS was recognized as an issue, we have focused on the development of PFAS-free materials in addition to GHG reduction, and many PFAS-free semiconductor material candidates have been identified as a result.

We are currently in the process of obtaining patent rights for these products. For example, we have succeeded in the development of a PFAS-free collapse prevention agent and the development of Gas X, which is PFAS-free and contributes to GHG reduction. By not only introducing several new products in this way, but also striving for new research and development, we plan to increase sales by 2.4 times by 2030.

3 2030 Vision for Each Business (3) Energy Materials (1/2)

Batteries

In the Energy Materials business, manufacture and sell electrolytes and other lithium-ion battery materials for EVs and ESS. Build an optimal global supply chain.

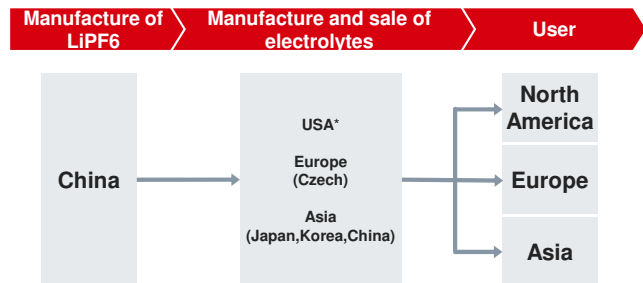
Business Profile

- Production of electrolytes using cost-competitive “LiPF₆ electrolyte” and a proprietary manufacturing process
- Manufacture of proprietary high-performance additives that improve battery performance when added to electrolytes

■ Business Locations



■ Supply Chain



*Planning to establishment of supply chain in US.

Next, I will explain the Energy Materials business.

The Energy Materials business manufactures and sells electrolytes used in electric vehicles (EVs) and lithium-ion batteries for energy storage, and is one of our core businesses that has been growing rapidly in recent years. Our affiliate in China manufactures cost-competitive LiPF₆ electrolyte using a proprietary process, and we also manufacture proprietary high-performance additives in Japan and South Korea that improve battery performance when added to electrolytes. For electrolytes, we have a competitive supply chain with local production for local consumption through manufacturing in Japan, South Korea, China, and the Czech Republic. In other words, we have accumulated the know-how to reduce total costs by comprehensively controlling everything from Li raw materials to product manufacturing and global transportation, and we have the strengths enabling us to propose electrolytes with superior performance and cost competitiveness to our clients, and also ensure supply stability. In the U.S., we are currently considering the establishment of a supply chain.

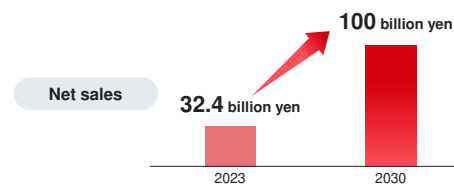
“ Environmental contribution through electrolyte business for EVs ”

As of 2024

- **Market environment**
 - EV market steadily expanding
 - IRA bill and EU Battery Regulation
 - Localization of battery manufacturers
- **Business conditions**
 - Establishment of supply chain in the United States based on IRA

2030 Vision

- **Triple sales volume (100,000 metric tons)**
 - Sales expansion in the United States
 - Expansion into India and ASEAN
- **Commercialize next-generation battery materials**
 - Sodium-ion battery-related products
 - High-performance additives
 - All-solid-state battery-related products
- **Target net sales of 100 billion yen**



We have positioned our electrolyte business as a business that contributes to the environment, and we are actively promoting business development to contribute to carbon neutrality. This is our vision for 2030 of “environmental contribution through electrolyte business.”

The market for batteries used in EVs and other products had grown rapidly until FY2022, but plateaued in the latter half of FY2023. Although our shipments have rapidly cooled down as well due to the imbalance between supply and demand caused by the suspension of subsidies and increased competition resulting from the increase in the number of players, the EV market is steadily expanding in essence. In addition, coupled with the Inflation Reduction Act and the need to comply with battery regulations in Europe, battery manufacturers are currently increasingly localizing their production in each region. Under these circumstances, we have set our goals for 2030 as 100,000 metric tons, three times the current sales scale, and 100 billion yen in sales, by taking in the United States, India, and ASEAN as markets where we can demonstrate our strengths and where demand is expected to grow in the future. In addition, we are rapidly researching and developing next-generation battery components such as sodium-ion battery-related products, high-performance additives, and all-solid-state battery-related products, and through these efforts, we intend to focus on contributing to the environment.

In the Applied Chemicals business, manufacture and sell HFO products, functional material products, etc.

Business Profile

Hydrofluoroolefin (HFO) products

- Material with low GWP with excellent environmental and safety performance
- Reduces GHG emissions and contributes to carbon neutrality



Aerospace equipment
(Precision cleaner)

(C)JAXA



Medical equipment
(Coating solvent)



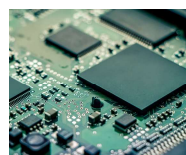
High-performance heat insulation for ZEB
(Blowing agents for heat insulation)

Functional material products

- Functional materials utilizing the properties of fluorine (heat resistance, chemical resistance, electrical properties, physiological activity, flame resistance, etc.)



Automotive applications
(Cross-linking agents for fuel hoses, etc.)



Electronic materials
(Raw materials for photoacid generators, etc.)



Agrochemical APIs and intermediates

Next, I will explain the Applied Chemicals business.

We are one of the few companies in Japan that produce hydrofluoric acid from fluorite. In the Applied Chemicals business, we manufacture HFO products and functional material products using hydrofluoric acid as a key material and fluorine technology as its core technology, and sell these products in a wide range of fields.

HFO products are used in the precision cleaning of rockets, solvents used in the coating process of painless needles, and blowing agents used to produce insulation that enhances the energy-saving performance of buildings. It has an extremely low GWP and is expected to reduce GHG emissions.

In the area of functional material products, we have developed a lineup of products that take advantage of the unique properties of fluorine. It is used as a cross-linking agent for automobile fuel hoses, as a raw material for electronic materials, and as a raw material and intermediate for agrochemicals. By incorporating the properties of fluorine, such as heat resistance, chemical resistance, and physiological activity, into end products, it contributes to higher functionality in a wide range of industries.

Expansion of next-generation high-performance products through enhancement of fluorine technology

As of 2024

Market environment

- HFO products
 - Dependent on buildings demand (major shifts in demand)
- Functional material products
 - PFAS regulations
 - Intensifying competition with companies from emerging countries

2030 Vision

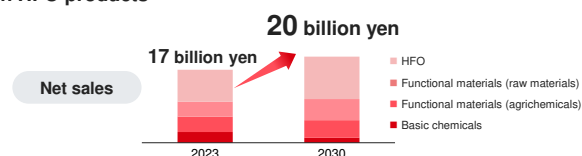
Expand sales of HFO products

- Capture needs for mandatory energy saving standards (all buildings in Japan by 2025)
- Market HFO solvents worldwide
- Launch new solvents (complement HFO solvents)

Develop functional material products and expand net sales

- Promote development of new products such as PFAS-free products
- Optimize production system

Net sales of 20 billion yen, mainly driven by growth in HFO products



Toward the year 2030, we will promote “expansion of next-generation high-performance products through enhancement of fluorine technology.” As explained in the previous slide, we are currently developing our business in two categories, HFO and functional material products, both of which face challenges such as fluctuating construction demand and future developments in PFAS regulations, as well as intensifying competition from companies in emerging countries.

As for our vision for 2030, we will continue to capture growing domestic needs for blowing agents, propelled by the tailwind of the energy-saving standards that will become mandatory for all buildings in Japan in 2025. As for solvents, we plan to globally market HFO solvents and new solvents that complement the performance of HFO solvents. Meanwhile, in the area of functional material products, in order to respond to the risk of future regulation under PFAS regulations and intensifying competition with companies in emerging countries (China and India), we will continue to closely monitor the PFAS regulations and submit public comments to the authorities as necessary, while promoting the development of new PFAS-free products at the same time. I would like to add that PFAS currently regulated in Japan are only some chemicals such as PFOS and PFOA, and that we have no track record in manufacturing or selling them. In addition, in order to become more globally competitive, we intend to optimize our production system by taking advantage of our affiliated companies’ production bases in China and other measures, aiming for sales of 20 billion yen by 2030.

In the Fertilizer business, manufacture and sell chemical fertilizers and coated fertilizers.

Business Profile

Chemical fertilizers

- Fertilizers using mainly ammonium chloride, ammonium phosphate and potassium chloride as raw materials

Advanced
chemical

Cera-coat R



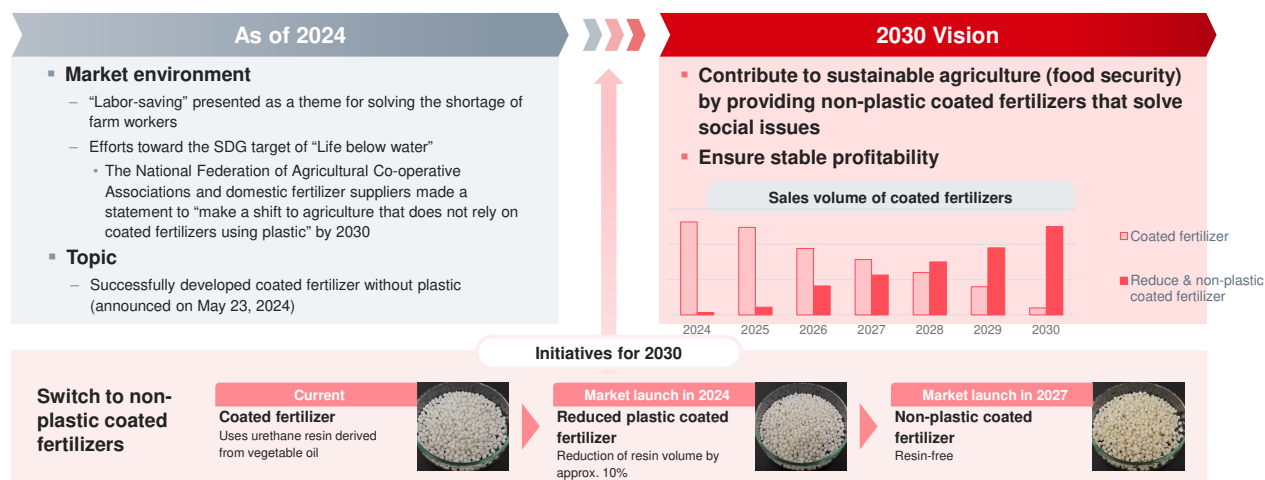
Coated fertilizers

- Coated urea fertilizer
- Fertilization according to crop growth

Next, I will move on to an explanation of the Fertilizers business.

Currently, we manufacture and sell chemical fertilizers and coated fertilizers. Chemical fertilizers are fertilizers using mainly ammonium chloride, ammonium phosphate and potassium chloride as raw materials, while coated fertilizers are fertilizers that coat the surface of urea and show fertilizing effects that match the growth of the crop, mainly supporting Japan's rice production.

“ Solving social issues in agriculture through environmentally friendly coated fertilizers ”



Our vision for the Fertilizers business in 2030 is “solving social issues in agriculture through environmentally friendly coated fertilizers.”

There are two major social issues in agriculture. The first is a shortage of agricultural workers. Also, the key word in the solution is “labor-saving.” The second issue is “life below water,” which is also a target in the SDGs. The National Federation of Agricultural Co-operative Associations and domestic fertilizer suppliers made a statement to “make a shift to agriculture that does not rely on coated fertilizer using plastic” by 2030.

We have been working on the development of a coated fertilizer that can solve these two problems, and have now succeeded in developing a coated fertilizer that does not use plastic or resin components at all, and publicly announced it on May 23.

The history of our coated fertilizers has always given consideration to the environment. The first products were vegetable oil-based, and the current grade also uses urethane based on components derived from vegetable oil. However, due to using urethane bonding, the material falls under the category of plastic. Therefore, we will be replacing it with a completely non-plastic coated fertilizer in a two-step process in the future. First, a reduced plastic-coated fertilizer with a reduction of resin volume by approximately 10% will be introduced to the market this fiscal year. In addition, we have established a plan to bring a non-plastic coated fertilizer to market in 2027. In this way, we will continue to contribute to sustainable agriculture and food security.

In the Glass business, manufacture and sell glass materials that are safe and secure, targeting the domestic construction and automotive industries.

Business Profile

Architectural glass

- Eco-Glass, disaster-resistant safety laminated glass, tempered glass, mirror products, etc.



Eco-Glass



Disaster-resistant safety laminated glass



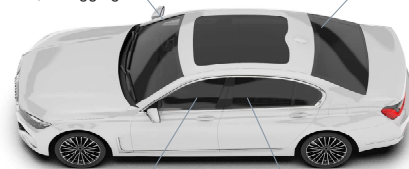
Anti-fogging mirrors

Automotive glass

- Windshields, door windows, rear windshields, etc.

Thermal and acoustic insulation glass
ADAS^{*1} /HUD^{*2}, defogging glass

Glass antenna
Defogging glass



Water repellent glass
UV/IR cut glass

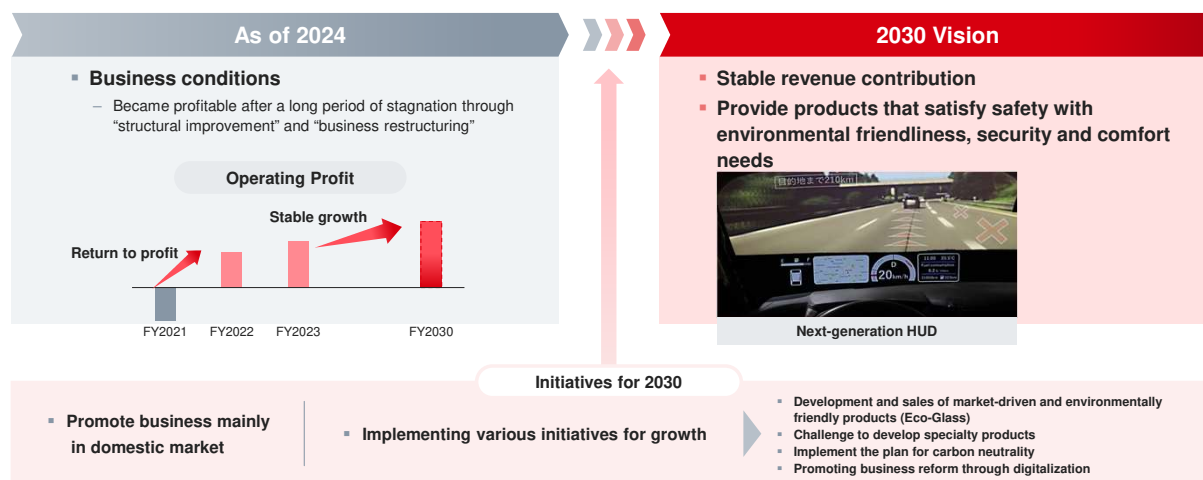
Privacy glass

^{*1} ADAS: Advanced Driver Assistance System
^{*2} HUD : Head-up Display

Next, I will explain the Glass Business. In the Glass Business, we manufacture and sell architectural glass used in buildings and homes and automotive glass. This slide shows typical use cases. In architectural glass, we manufacture not only window glass but also Eco-Glass, disaster-resistant safety laminated glass, tempered glass, and mirror products, etc. In automotive glass, we produce thermal and acoustic insulation glass for front windshields, door windows, and rear windshields, ADAS, HUD, defogging glass, water repellent glass, UV/IR cut glass, privacy glass, glass antenna, etc.



Focus on stable revenue contribution



Our vision for the Glass Business is "stable revenue contribution."

Until recently, the Glass Business had been struggling for many years due to changes in the business environment. However, the transfer of our glass operations in Europe and the U.S. and the implementation of fundamental structural reforms in our domestic architectural glass business, specifically the consolidation of architectural glass sales offices and processing facilities, the shutdown of our figured glass furnace and Sakai float glass furnace, and the implementation of measures to correct unprofitable transactions and price revisions, have resulted in a significant improvement in earning power and a return to profitability in FY2022.

Subsequently, we integrated our domestic architectural glass and automotive glass businesses, and in April 2023, we started new business operations as Central Glass Products Co., Ltd. The Glass Business has been transformed into a business that can be expected to generate a certain level of revenue for the Group, with significant growth in performance in FY2023. We will continue to strengthen our management base and achieve stable revenue contribution.

Meanwhile, because the environment surrounding the Glass Business is extremely severe due to soaring raw materials and fuel costs, logistics costs, and labor costs, and it is unlikely that domestic demand will expand in the future, we intend to take on the challenges of developing specialty products that leverage our strengths and realizing new business models. Since the Glass Business currently accounts for the majority of the Central Glass Group's total GHG emissions, we will implement plans to achieve carbon neutrality such as by switching to non-fossil fuels, promoting the use of renewable energy, and implementing various energy-saving measures.

In the Glass Fiber business, manufacture and sell glass fiber, a material that combines the heat resistance, nonflammability, and durability of glass with the flexibility of fiber and is used in a variety of applications.

Business Profile

■ Glass fiber

- Composite reinforcement
- Milled fiber
(electronic material applications)
- Glass cord for rubber
reinforcement
(Timing belt applications)



Precision equipment
(Smartphones and PCs)



Timing belts

■ Glass wool

- Soundproofing and thermal
insulation materials
(High market share in the area of sound-
absorbing materials for automobiles)



**Under hood soundproofing and
thermal insulation materials**

Next, I will explain the Glass Fiber business.

This business consists of two divisions: the glass fiber business, which handles glass fiber used as a reinforcing material for composite materials, and the glass wool business, which handles glass wool used mainly as a soundproofing and heat insulation material for vehicles, each targeting a wide range of fields including automobiles, IT, housing, and the environment by developing glass fiber products with unique and superior characteristics to meet the needs and demands of the world.



Increasing business value by improving profitability

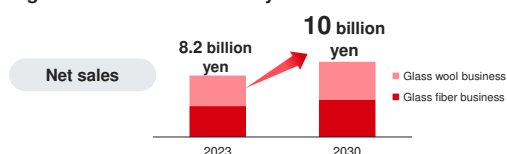


As of 2024

- **Glass fiber business**
 - Slowing and stagnation of products for resin reinforcement, infrastructure, etc.
 - Steady acquisition in demand for rubber coated glass cord for reinforcing rubber belts used in automobiles, semiconductor manufacturing equipment, etc.
- **Glass wool business**
 - Strong demand for sound-absorbing materials due to recovery of automobile production
- **Responding to rising energy costs**

2030 Vision

- **Double earnings**
 - Glass fiber: Increase the ratio of high-value-added products
 - Glass wool: Develop new applications
- **Establish an environmentally friendly system from raw materials to manufacturing in an integrated manner**
 - Reduce CO₂ and other emissions through fuel conversion
 - Enhance recycling
 - Automate facilities, promote DX
- **Target net sales of 10 billion yen**



Our vision for the Glass Fiber business in 2030 is to “increasing business value by improving profitability.” In the glass fiber business, demand continues to be sluggish due to a lack of recovery in major applications such as plastic reinforcement, infrastructure, and electronic materials, but we are maintaining profitability by focusing on developing various new products and strengthening the supply system for glass cord for rubber reinforcement, a priority product for automobiles and equipment.

In the glass wool business, we are working to ensure stable business operations into the future by introducing new products that respond to the spread of EVs and establishing recycling technology, while focusing on capturing the growing need for soundproofing materials for automobiles in response to stricter regulations on exterior noise emissions. In addition, as part of our ESG-related efforts, we have worked to improve yield and promote energy conservation, and also to reduce GHG emissions by switching from heavy fuel oil to LNG and LPG as fuels used in glass furnaces, and improving combustion efficiency by introducing oxygen combustion and electric melting.

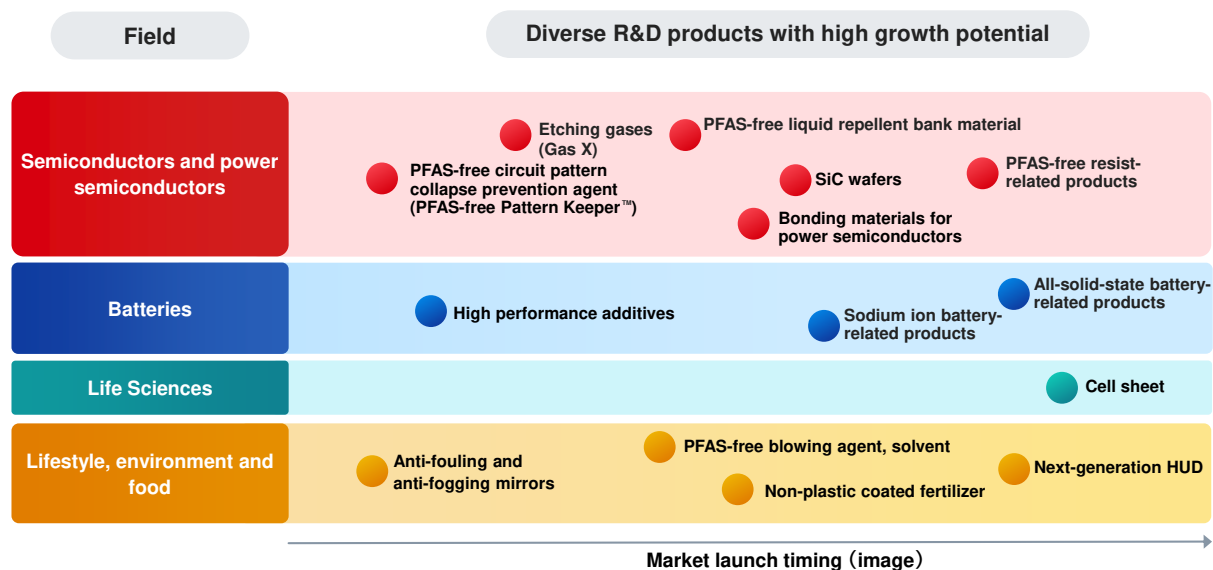
Aiming for 2030, we will continue to increase the ratio of high-value-added products in glass fiber and develop new applications for glass wool, while introducing melting technology that contributes to further GHG reduction and energy efficiency improvement, as well as promoting the establishment of recycling technology to contribute to an environmentally friendly, recycling-oriented society.

AGENDA

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Now I will move on to “Research and Development Initiatives.”

4 Research and Development Initiatives (1) Main R&D Products



As an R&D-oriented company, we aim to expand our earnings and solve social issues by 2030, and have a lineup of a variety of R&D targets with high growth potential in the four fields shown here. Since the details of development are highly confidential, only some of the themes that should be conveyed are shown in the figure to give an idea of the timing of market launch.

In “semiconductors and power semiconductors,” we are proceeding to develop a new etching agent Gas X, and PFAS-free collapse prevention agents, liquid repellent bank materials, resist materials, and other materials for SiC and power semiconductors. In “batteries,” in addition to high-performance additives for current lithium-ion batteries, we are focusing on research and development of future products related to sodium-ion batteries and all-solid-state battery-related products. In addition, as a new initiative in “life sciences,” we are focusing on research and development of cell sheets for development related to regenerative medicine. Other fields of focus in “Lifestyle, environment and food” include research and development of anti-fouling and anti-fogging mirrors, PFAS-free blowing agents and solvents, non-plastic coated fertilizers, and next-generation HUDs for automotive glass.

Today, I will delve into three of these fields: (i) etching gases, (ii) SiC wafers, and (iii) PFAS-free circuit pattern collapse prevention agent.

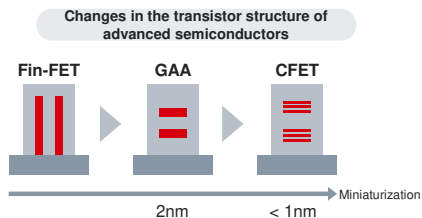
4 Research and Development Initiatives (2) R&D Topics (i) Etching Gas

Semiconductors and power semiconductors

Developed etching gases (2nm node and beyond) that can be used in cutting-edge semiconductor manufacturing.

Necessary Elements for Next-Generation Etching Materials

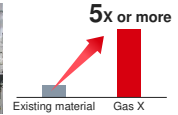
- Improvement of etching accuracy (selectively removing only the material to be processed)
- Improvement of etching process throughput (processing speed)
- Low GWP and PFAS-free materials
- Materials targeting transistors (GAA, CFET) for miniaturization and integration of semiconductors



Development of Next-Generation Etching Material (Gas X)

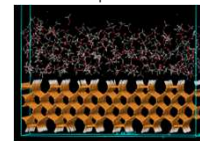
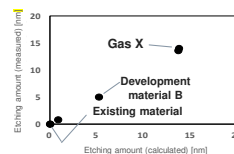
Development system

- Rapid evaluation system established to evaluate developed materials with in-house equipment
- Etching accuracy is **improved more than 5 times** compared to existing materials



Advanced simulation technology

- Predicts material performance and improves development efficiency
- Inferring reaction models and verifying mechanisms of functional expression



The first is etching gas. The structures of cutting-edge semiconductor devices are changing to achieve higher density, especially in the 2nm node and beyond, which requires more complex structures such as GAA and CFET. In addition, etching materials are required to have higher etching accuracy and throughput, as well as having low GWP and being PFAS-free. We have succeeded in developing a next-generation etching gas, Gas X, that meets these requirements.

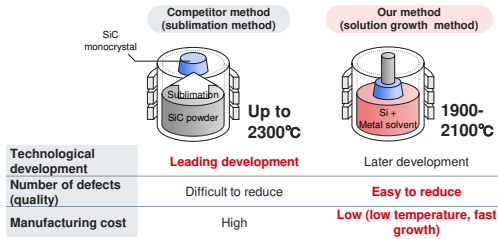
Our development system, including for Gas X, is designed to swiftly conduct research and development by building equipment capable of evaluating material properties in-house. Gas X improves etching accuracy by a factor of five compared to existing materials. Development is also supported by computational science. In the development of Gas X, we predict the etching characteristics of various materials to promote efficient material selection, and perform verification using in-house evaluation equipment. The actual etching characteristics obtained are verified by simulation analysis to verify the mechanism of function expression and fed back to the prediction of etching characteristics to improve their accuracy.

In summary, Gas X is an environmentally friendly high-performance etching gas developed through an “original evaluation system” and “utilization of computational science.”

Established “solution growth method,” which is a new manufacturing technology, and entered the SiC wafer business for power semiconductors.

Features of Our Manufacturing Technology (Solution Growth Method)

Low defects and low cost compared to other companies' manufacturing methods



6-inch prototype crystal using the solution growth method



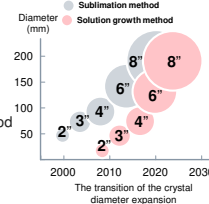
Research and Development Policy and Progress

R&D policy

- Enhancement of the original solution growth method technology
 - Achieving both high quality and low cost
 - Large diameter technology (8 inches)
- Development of mass production technology using computational science
 - Determination of optimal conditions using machine learning
 - Process automation
- Demonstration of devices using SiC wafers based on the solution growth method
 - Standardization of SiC wafers based on the solution method
 - Utilization of NEDO Green Innovation Fund

Progress

- Made rapid progress in crystal diameter expansion
- Demonstrated low defects (high quality)
- Moving to demonstration of devices using wafers based on the solution growth method
- Manufacturing process optimization using machine learning
- Adopted by NEDO Green Innovation Fund



Next, I will explain SiC wafers. As we aim to enter the SiC business for power semiconductors, we plan to be the first in the world to practically implement a new manufacturing technology called the “solution growth method.” All SiC currently on the market is manufactured by a method called sublimation, but balancing quality and cost is still an issue. In contrast, our solution growth method is a crystal production method boasting low defects and low cost, and it is expected to have a highly competitive advantage if put into practical use.

As shown in the figure, the solution growth method is a production method in which SiC single crystals are grown in a silicon melt in which carbon is dissolved. This is the same production method from the liquid phase that is used to produce single-crystal silicon widely available today, but the difference is that silicon and carbon must be grown regularly and with high quality, which makes the technology difficult to develop. The solution growth method has many more process parameters than the sublimation method. While this has the disadvantage of making it difficult to find optimal conditions, it also has the advantage of enabling control according to objectives such as diameter expansion and lengthening as understanding of these conditions' advances. In addition to a decade of accumulated technology and know-how, we were able to achieve diameter expansion in a short period of time by utilizing computational science to derive optimal conditions.

We are currently proceeding with the development of 6-inch and 8-inch SiC and are accelerating development such as being selected as a NEDO Green Innovation Fund Project in 2022. Going forward, we intend to further enhance our technology and promote the development of mass production technology utilizing computational science to contribute to the realization of a carbon-neutral society.

4 Research and Development Initiatives (2) R&D Topics (iii) Circuit Pattern Collapse Prevention Agent

Semiconductors and power semiconductors

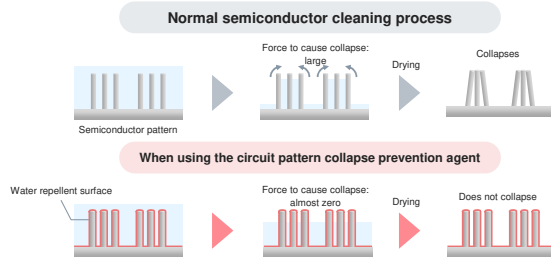
Developed a revolutionary circuit pattern collapse prevention agent (PK agent) for semiconductor-wafer cleaning processes, and adopted by many logic and memory manufacturers.

Promoting development of PFAS-free Pattern Keeper™ for cutting-edge semiconductors.

Features of the Circuit Pattern Collapse Prevention Agent

■ Developed through a fusion of the chemical and glass technologies we have accumulated

- Combining the ultra-high purification technology (chemistry) required for semiconductor materials with surface treatment technology to make the circuit pattern surface water-repellent, aim to prevent circuit pattern collapse during the drying process

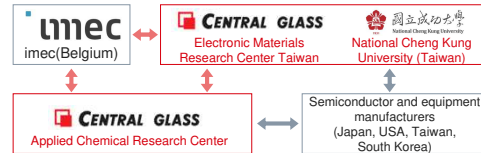


Research and Development Policy and Progress

■ R&D policy

- Finding new Pattern Keepers™ through collaboration with cutting-edge research institutions and customers
 - Higher performance: Ultrafine structure, 3D structure
 - Versatile: Different substrate materials

■ Cooperation system



■ Progress

- Develop PFAS-free products with the same performance as current products

Third, I will explain circuit pattern collapse prevention agent.

As circuit patterns in leading-edge semiconductors become increasingly miniaturized, the problem of pattern collapse due to the surface tension of the cleaning solution during the drying process after pattern cleaning is becoming more pronounced. Focusing on the fact that pattern collapse can be prevented by treating the pattern surface to make it water repellent, we have developed a pattern collapse prevention agent with excellent water repellency by combining our technologies in glass, where we specialize in SiO₂ for water repellency treatment of glass, and in chemicals, where we specialize in high-purity production and precision analysis. This product is currently used by many semiconductor manufacturers. Also, we have recently succeeded in developing a PFAS-free Pattern Keeper™ that does not contain PFAS. As shown on the slide, these developments are the result of collaboration between our research institute in Japan and a research team in Taiwan, in cooperation with imec in Belgium and National Cheng Kung University in Taiwan, as well as with semiconductor manufacturers and semiconductor equipment manufacturers.

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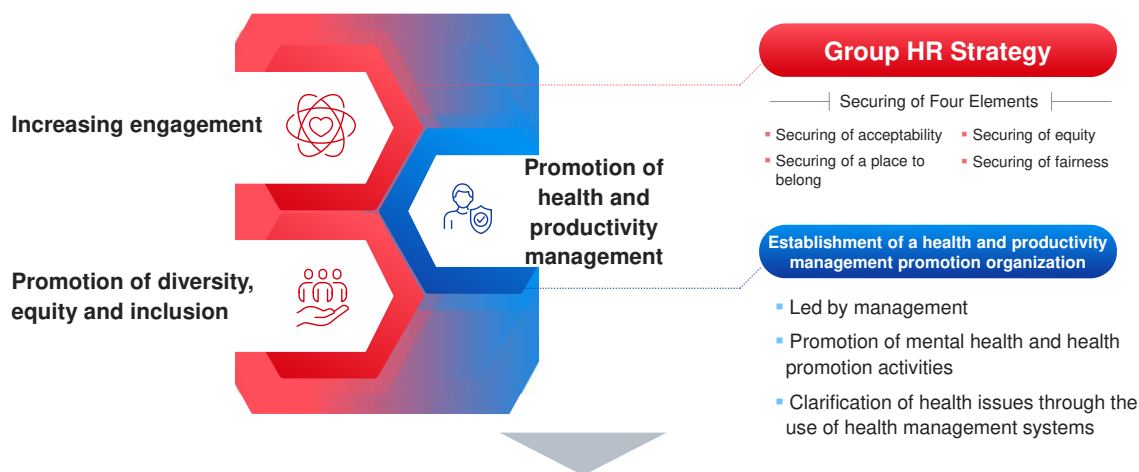
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From here, I would like to explain “promotion of human capital management” and “response to environmental issues” as part of strengthening the foundation of “ESG management,” which is a priority for Central Glass.

I will begin with “promotion of human capital management.”

5 Promotion of Human Capital Management

Supporting our human resources from three perspectives to enhance our corporate value over the medium to long term



Promotion of human capital management that supports the activities of the Group Members who support manufacturing and continues to enhance value

Our corporate philosophy is “Creating a Better Future Through *Monozukuri*.” Based on the recognition that *monozukuri* is supported by our employees (Group members), we aim to maximize the value of the members, who are our “human assets,” from the three perspectives of “increasing engagement,” “promotion of diversity, equity, and inclusion,” and “promotion of health and productivity management,” and aim to enhance our corporate value over the medium to long term. In other words, as a group HR strategy, with the slogan of securing the four elements of “acceptability,” “a place to belong,” “equity” and “fairness,” we would like to ensure the psychological safety of our employees. In the area of “promotion of health and productivity management,” we have established an organization to strongly promote health and productivity management so that all employees can work with a “smile” and be physically and mentally active. With this organization as the driving force, and with deep involvement by management, we will promote various initiatives to ensure that our employees are always healthy, both physically and mentally.

We will support the improvement of employees’ “well-being” and promote initiatives to enable the Group members, who support *monozukuri*, to work with a high level of motivation and job satisfaction.

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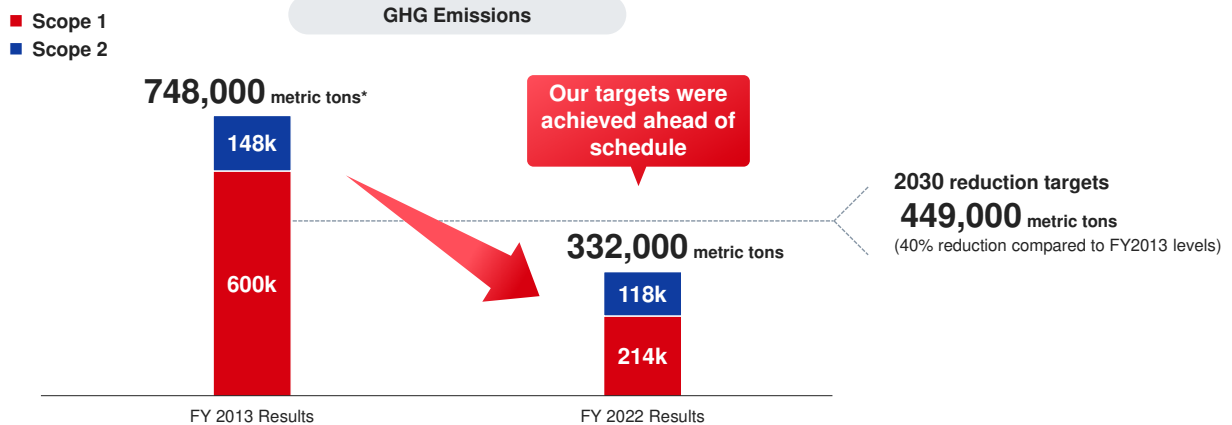
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Next, I will explain the second aspect of strengthening the foundation of “ESG management,” which is our “response to environmental issues.”

6 Response to Environmental Issues (1) Initiatives Aimed at Carbon Neutrality

Achieved GHG emissions milestone reduction targets for FY2030 ahead of schedule through structural improvements in the domestic glass business.

Reduction targets for FY2035 are being formulated.



*Structure-adjusted base year emissions (GHG emissions minus GHG emissions in the base year of the transferred European and U.S. automotive glass operations, etc.)

First, as for our efforts aimed at carbon neutrality, we have already achieved our GHG reduction target for 2030 of 449,000 metric tons for Scope 1 and Scope 2 combined, or a 40% reduction from the FY2013 result of 748,000 metric tons, ahead of schedule in FY2022. Therefore, we are currently formulating new emission reduction targets through 2035.

In order to prevent global warming, our Group, including domestic and overseas affiliates, will continue to make efforts to reduce our environmental impact such as by promoting initiatives to reduce GHG emissions.

6 Response to Environmental Issues (2) CDP Score

Obtained a “B-” rating in the areas of “Climate Change” and “Water Security” from CDP, an international non-profit organization that evaluates environmental initiatives

About CDP

Overview

- Established in the UK in 2000
- An international non-profit organization that evaluates environmental initiatives

Evaluation methods

- Working with more than 740 investors holding over USD136 trillion in assets
- Questions are presented to companies and local governments regarding business strategies, GHG emissions, and management of water intake and wastewater discharge, etc.
- 8 levels (A, A-, B, B-, C, C-, D, D-) of scores are assigned using proprietary scoring criteria

Evaluation of Central Glass

Factors in the FY2023 rating

- Due to setting specific targets for environmental initiatives and establishing a system to reduce GHG emissions, water usage, etc.

Future initiatives

- Promote efforts to reduce environmental impact in the environmental field by responding to the requests of diverse stakeholders in a consistent and transparent manner



Next, I would like to explain our score from CDP, a non-profit organization that evaluates our responses to environmental issues and initiatives to address them. In FY2023, we have reorganized the mechanisms and details of our efforts to reduce our GHG emissions and water consumption, which had been underway for some time. In recognition of these efforts, the company received a score of “B minus” from the CDP, a significant increase from our previous score.

I would like to reiterate that we will continue to promote efforts to reduce our environmental impact in the future.

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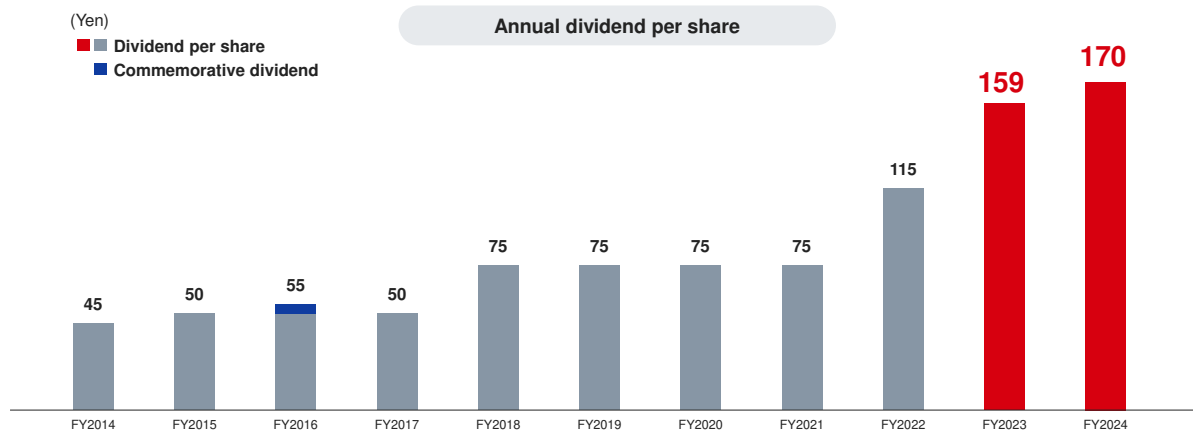
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Finally, I would like to explain our approach to shareholder returns.

7 Shareholder Returns

Maintain a total payout ratio of 30% or more and DOE of 3.6% during the current Medium-Term Management Plan (until FY2024).

Consider expansion during the next Medium-Term Management Plan.



* Due to the reverse stock split of 5 shares into 1 share performed on October 1, 2017, dividend amounts prior to that date have been adjusted to reflect the reverse stock split.
* A commemorative dividend of 5 yen per share was paid in FY2016.

We have continued to pay stable dividends, and significantly increased the annual dividend to 159 yen per share for the fiscal year ended March 31, 2024 from 115 yen per share in the previous year.

For the fiscal year ending March 31, 2025, we plan to pay a dividend of 170 yen per share, in order to reach the target index of DOE of 3.6% under the current Medium-Term Management Plan as we did in the previous fiscal year, and we aim to further increase the dividend.

We will consider our policy for shareholder returns beyond that in the next Medium-Term Management Plan, which is scheduled to be announced in May of next year.

This concludes the presentation of the Management Overview Briefing.

[Q&A Summary]

Q1: What is your strategy for energy materials that have seen a drop in demand?

A: Our direction of supplying high-performance electrolytes combined with our proprietary additives remains unchanged. We would like to meet our customers' needs for increasing battery performance.

Q2: Is the fact that competitive concentrates are sourced from China a bottleneck in advancing the electrolyte business in the U.S.?

A: The Inflation Reduction Act could have an impact. In light of this situation, we are considering alternative procurement routes and supply chains. The U.S. market is large, and considering the target volume for 2030, we believe that the sales composition will be centered on the U.S., Europe, Japan, and South Korea.

Q3: What percentage of the energy-related sales target of 100 billion yen in 2030 is accounted for by next-generation battery components?

A: Considering the timing of the market launch of next-generation products, we believe that the percentage will not yet be significant.

Q4: Looking at the Fertilizers business to date, there doesn't appear to be any potential for development. Will non-plastic fertilizers make the business profitable by 2030?

A: Fertilizers are important products for agriculture, but it is difficult to raise prices and increase profits significantly in some respects. After launching the newly developed non-plastic coated fertilizer, we will first aim to increase our market share in Japan, and will also consider overseas expansion.

Q5: What are the strengths of the SiC wafers in development and what is your view of future strategy and contribution to profits?

A: SiC wafers are being developed using the solution growth method, a process that has not been commercialized by other companies. Compared to the common manufacturing method (sublimation method), we believe it produces fewer defects and offers cost advantages due to the characteristics of the manufacturing method, and first we plan to launch 6-inch products as power semiconductor materials in 2027. Due to a combination of capital investment and other factors, we do not expect to see a full-scale increase in volume until after that.

Q6: How different are the cost and quality aspects of products produced by the solution growth method compared to existing products?

A: I would like to discuss more detailed information and data once research has progressed a little further.

Q7: Will specialty gases and resists for semiconductors grow a little more?

A: Semiconductors are entering a phase in which their structure itself will undergo major changes, and we see this as a great opportunity for our company. The target for 2030 is a 2.4-fold increase, and we expect further expansion after 2030.

Q8: What new product groups do you have in the Electronic Materials business?

A: Products that meet the needs for PFAS-free and environmentally friendly materials that contribute to GHG reduction are in demand, and we would like to offer products that meet those needs.

Q9: What are the essential products in the Chemicals segment? What measures are you taking to strengthen the profitability of these?

A: We believe that HFO 1233E, a blowing agent, is one example that falls into that category. We will work to increase our market share, and at the same time, we are considering transitioning to products with specialty characteristics through research and development.