



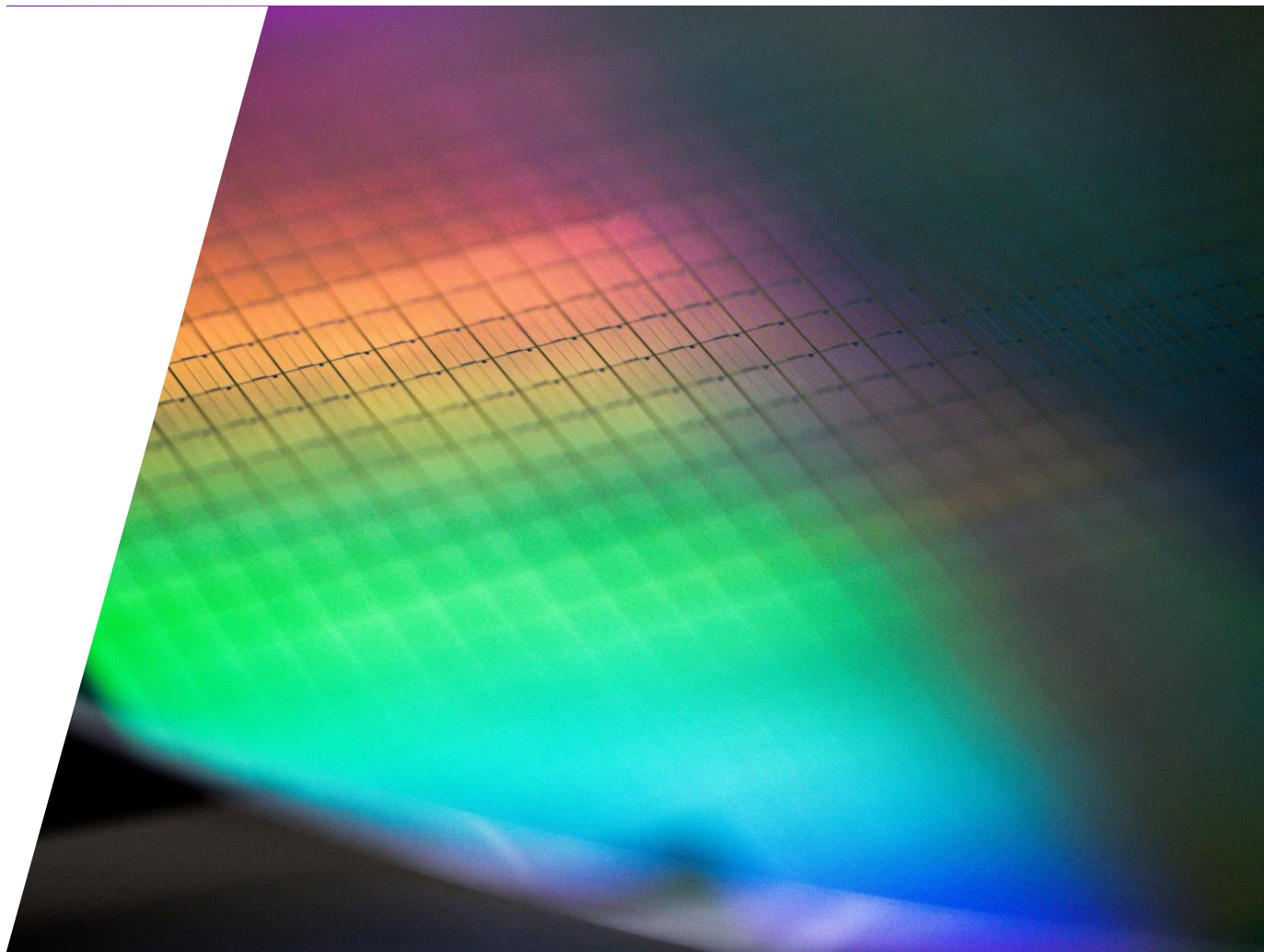
Your Dreams, Our Challenge

# IR DAY 2024

**Electronics**

**AGC Inc.**

**June 4, 2024**



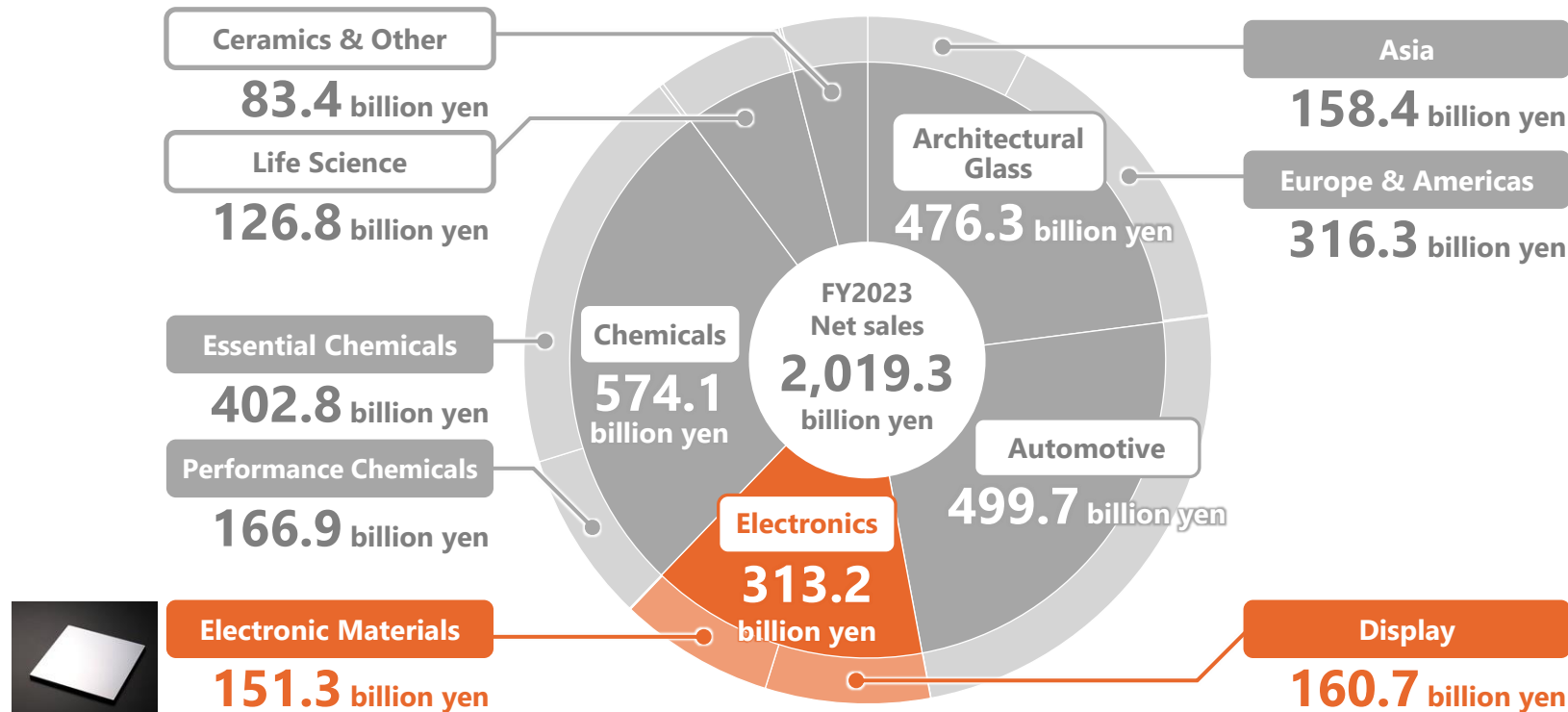


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2. Display: Issues and Strategies	P.8
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# 1. Electronics Business Overview

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# Position in the AGC Group



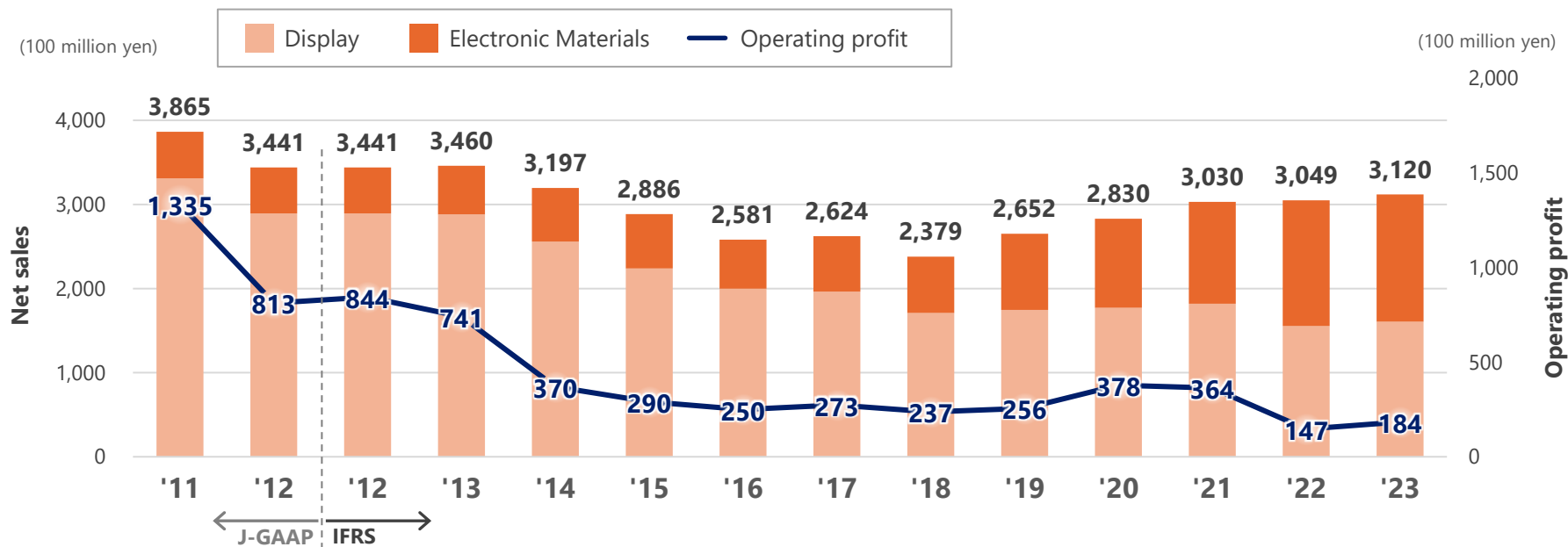
\* As net sales by business are figures before eliminations of intersegment sales, the sum of net sales by business does not equal Companywide net sales. Sub-segment sales figures are based on sales to external customers.

The background of the slide is an aerial photograph of a city, likely Tokyo, with a prominent highway and a river. Overlaid on this image is a large, glowing blue globe. Scattered across the globe and the city image are numerous hexagonal icons, each containing a white symbol representing a Sustainable Development Goal (SDG). These icons include symbols for clean water, energy, industry, infrastructure, cities, life on land, life below water, and climate action. Additionally, there are several numerical data points floating in the air, such as 561.84, 193.94, 710.10, 753.95, 856.49, 536.85, 462.93, 219.98, 743.06, and 753.99.

**Under the division policy “Stay in front with SDGs”,  
we will continue to contribute to a sustainable society as a  
leading supplier of differentiated material solutions.**

# Electronics Company Earnings

- Electronic Materials are expanding steadily
- Display is struggling due to the reversion of stay-at-home demand seen during the pandemic



# Geographical Coverage

## The United States

- AGC Electronics America
- AGC Multi-Material (United States)

## South Korea

- AGC Fine Techno Korea
- AGC Display Glass Ochang
- AMMK

## Japan

- Kansai Plant
- AGC Electronics
- AGC Seimi Chemical
- AGC Techno Glass
- AGC Micro Glass
- AGC Polycarbonate
- Optical Coatings Japan

## China

- AGC Display Glass (Kunshan, Shenzhen, Huizhou)
- AGC Advanced Electronics Display Glass
- AGC Precision Glass

## Thailand

- AGC Micro Glass Thailand
- AGC Techno Glass Thailand

## Singapore

- AGC Multi-Material (Singapore)

## Indonesia

- Iwaki Glass Indonesia

## Taiwan

- AGC Electronics Taiwan
- AGC Display Glass Taiwan

● : Electronic Materials    ● : Display



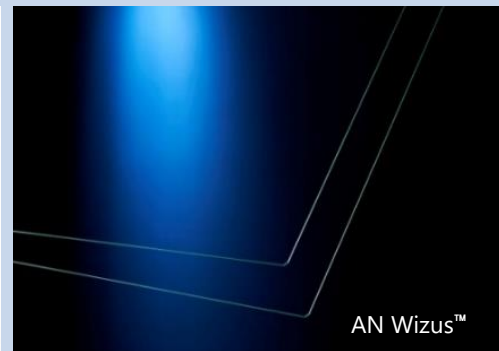
## 2. Display: Issues and Strategies

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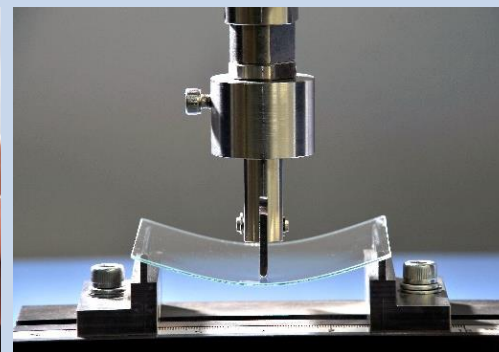
# Main Products: Display

**Glass substrates for  
TFT liquid crystal /  
organic EL Display**



AN100, AN  
Wizu™, AN  
Rezosta™

**Specialty glass for  
chemical  
strengthening**



Dragontrail™  
series, AS2

# Display Business Strategy: Toward the Achievement of 10% ROCE

- Sales are sluggish due to the reversion of stay-at-home demand seen during the pandemic. In addition, higher raw materials and fuel prices and the yen's depreciation have worsened profitability, resulting in an impairment loss of more than 70 billion yen in FY2022.
- We aim to achieve 10% ROCE by steadily implementing measures to improve profitability during the current medium-term management plan period, thereby generating stable cash flow.

## Earnings improvement measures

**Revise  
pricing policy**

**Strengthen  
competitiveness  
through technological  
innovation**

**Promote structural  
reforms to focus on  
large-sized display  
panel glass substrates**

## Revise pricing policy

- Significant increases in production costs have continued over the long term due to high raw materials and fuel prices and the appreciation of Asian currencies



**Implemented price revision  
last year  
Continue to request customers  
to review prices**

## Strengthen competitiveness through technological innovation

- Mass production of the competitive new product AN Rezosta™ and deployment of equipment with high combustion efficiency
- Technology development has already been completed and is being progressively rolled out since the beginning of the year
- Expected to contribute to earnings in stages starting in 2024



## Promote structural reforms to focus on large-sized display panel glass substrates

Completed

- Partial withdrawal from low-profit sizes
- Suspended operation of LCD glass substrate production line at Takasago plant

Progress

**Accelerate production capacity optimization, aiming for about 20% reduction from the 2022 level by the end of 2024.**

Continue to closely monitor the business environment and consider additional measures

**Accelerate profit improvement measures**

### Structural Reform Project

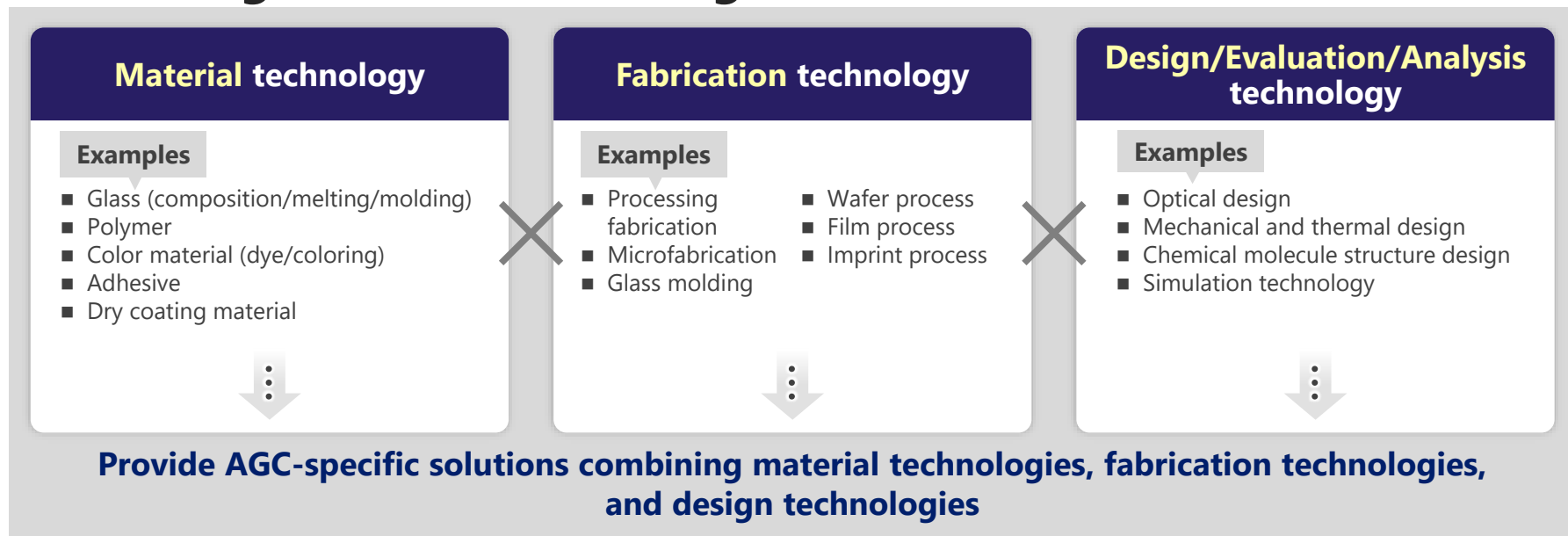
Top management takes the lead to accelerate structural reform measures

# 3. Electronic Materials: Business Strategy

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# Strengths of the Electronic Materials business

## Three technologies developed based on “organic materials + inorganic materials” of glass, chemicals, and ceramics



**Contribute to the development of the semiconductor and optoelectronics industries**

## Semiconductor-related Materials

### EUV mask blanks

High-quality photomask blanks for cutting-edge lithography

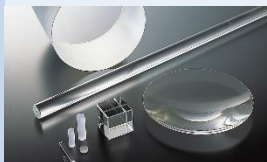


### CMP slurry

One of the top manufacturers in the ceria slurry market



Synthetic quartz lens materials



Copper clad laminates



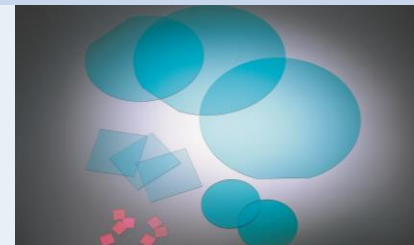
SiC thermal treatment jigs



## Optoelectronic Materials

### IR-cut filter

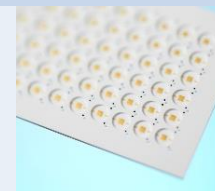
Industry leader in high-performance IR absorbing glass filters



DOE (diffractive optical element)  
Diffusers



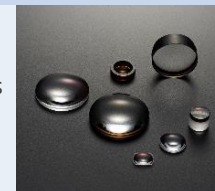
Glass ceramic substrates



High refractive glass



Aspherical glass mold lenses





## Market environment

- The semiconductor market, AGC's target market, showed negative growth in 2023 compared to 2022, but the medium-term growth trend remains unchanged.
- Demand and AGC product shipments are expected to remain strong over the medium term, as leading-edge major semiconductor manufacturers continue to invest at high levels.

## Semiconductor market

### Growth drivers toward 2030

- Expansion of AI-related technologies
- Growing demand for in-vehicle applications



# Semiconductor-related Materials: EUV Mask Blanks



## Strengths

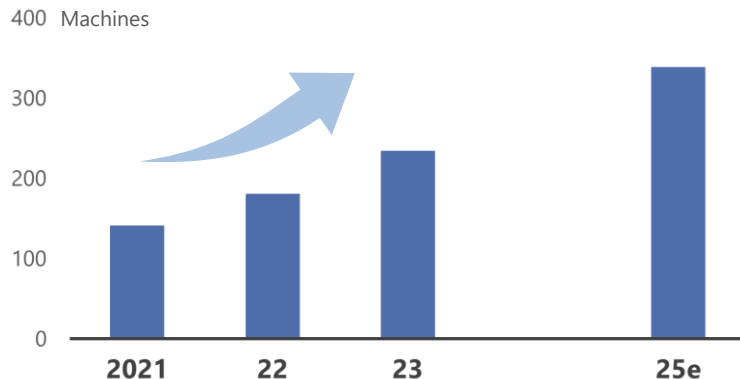
- The sole blanks manufacturer in the world that covers the whole production process from glass materials to polishing and deposition
- Strengths include flexibility to customer requests, technical proposals and support to customers



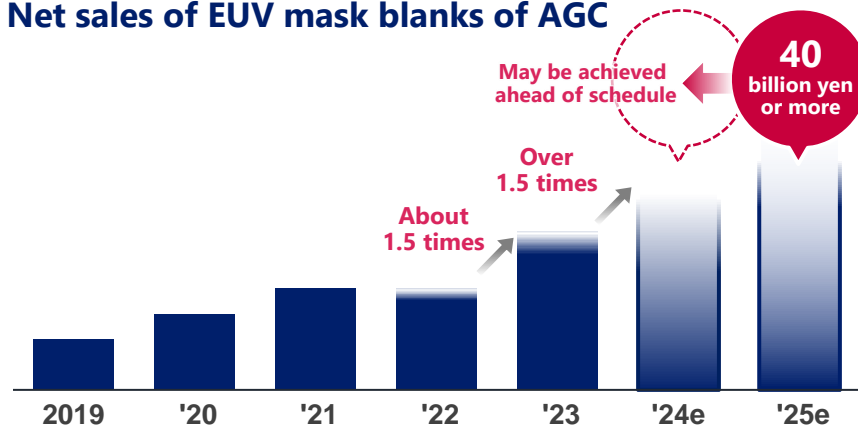
## Strategy

- Continue to invest intensively in line with market growth
- Securing competitive advantage in the next generation area with AGC's high technological capabilities

## Cumulative number of EUV lithography equipment\*



## Net sales of EUV mask blanks of AGC



# Semiconductor-related Materials: CMP Slurry



## Strengths

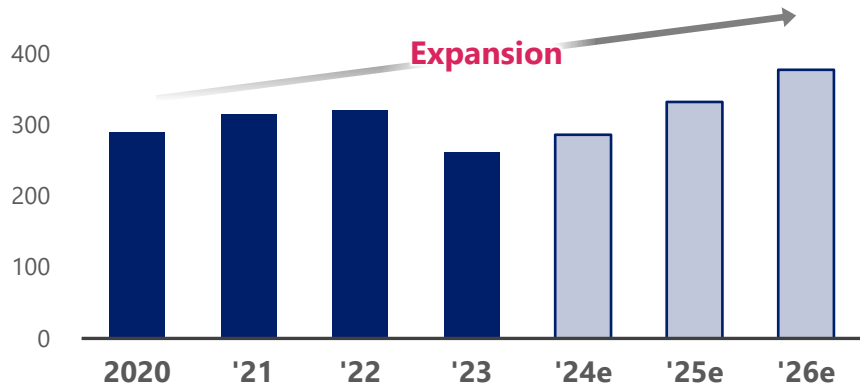
- Technological development capabilities that enable integrated production from raw material abrasive powder to slurry
- Providing high-quality slurry and solutions to meet customers' design rules and processes



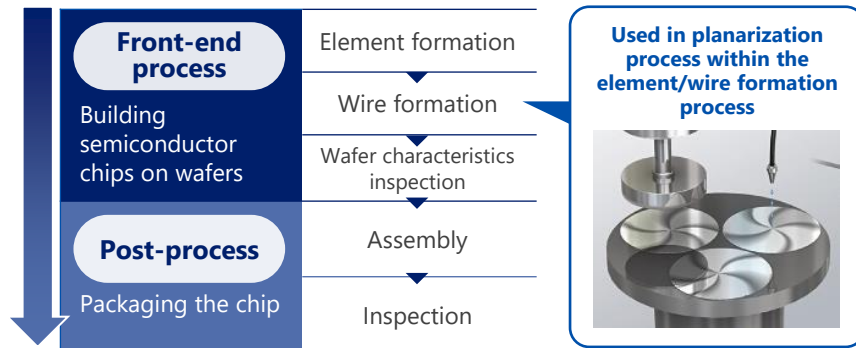
## Strategy

- Maintains leading position in ceria slurry
- Expanding sales to new applications (3D mounting, etc.)

## Business environment: Ceria slurry market



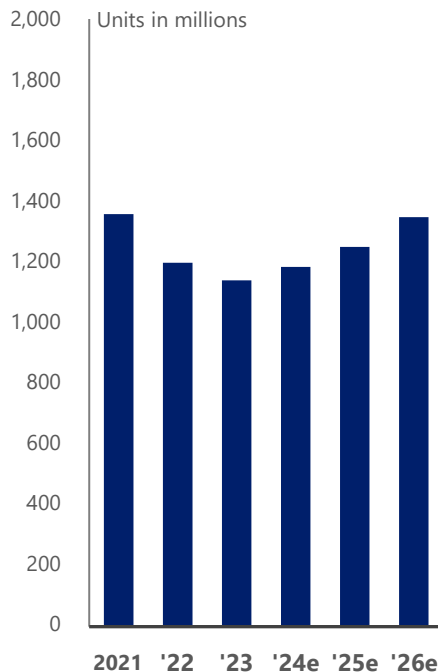
## Use case of CMP slurry in semiconductor manufacturing process



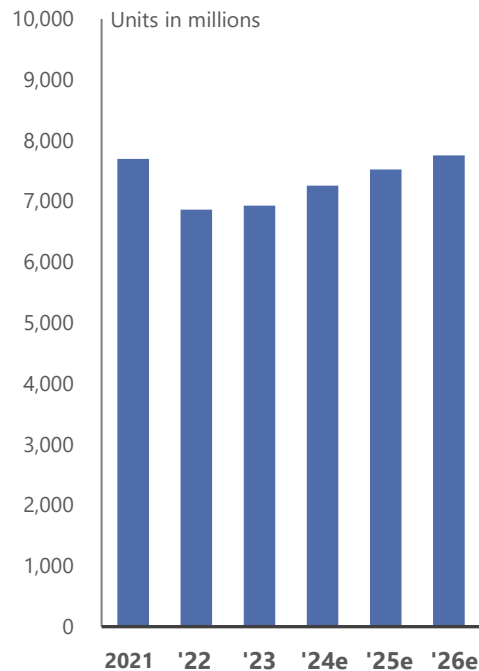
## Market environment

- The smartphone market, the target for AGC's main product, IR-cut filters, showed negative growth in 2022-2023 due to the economic slowdown.
- However, this market is projected to grow again in 2024 and beyond.

## Smartphone shipments



## Number of image sensors for cameras





## Strengths

- Realize spectral characteristics that are challenging to achieve by combining glass, disposition and optical design technologies, contributing to a better image quality for cameras

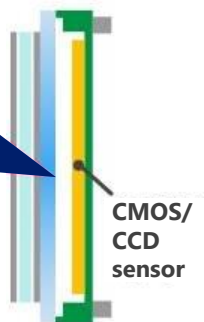
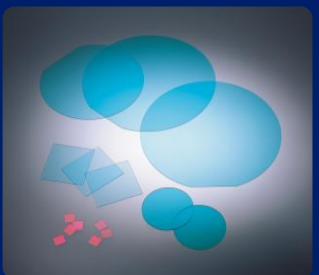


## Strategy

- Build strong partnerships with influential customers by leveraging our advanced technological capabilities
- Aiming for even higher added value as mobile camera units become more advanced

## Glass filter to match image sensor sensitivity to human visual sensitivity

**IR-cut filter  
for the  
CMOS/CCD  
sensor**



## Product use cases



Cameras for  
smartphones



SLR cameras



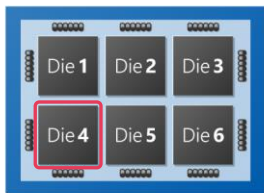
In-vehicle cameras

# New Business Creation Initiatives

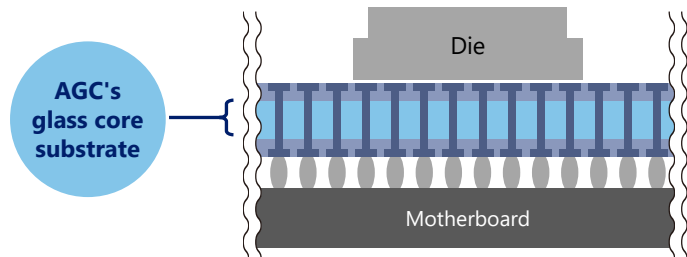
## Semiconductor-related materials

Full-scale development of glass core substrates for next-generation semiconductor packaging

Image of next-generation semiconductor packaging



Cross-section of next-generation semiconductor packaging

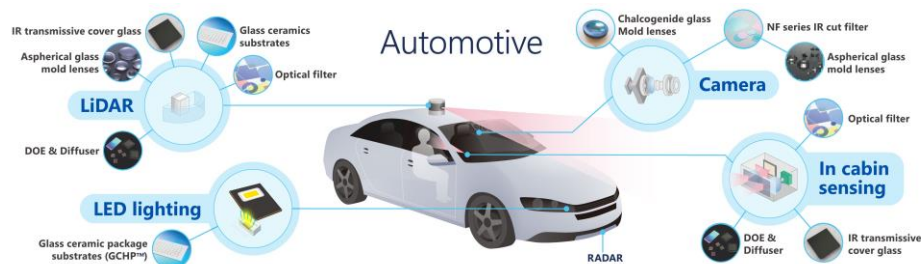


## Optoelectronic materials

Provision of AR/MR glass and other high-performance, high-value-added products



Providing optoelectronic materials necessary for the spread of ADAS and automated driving



# Target

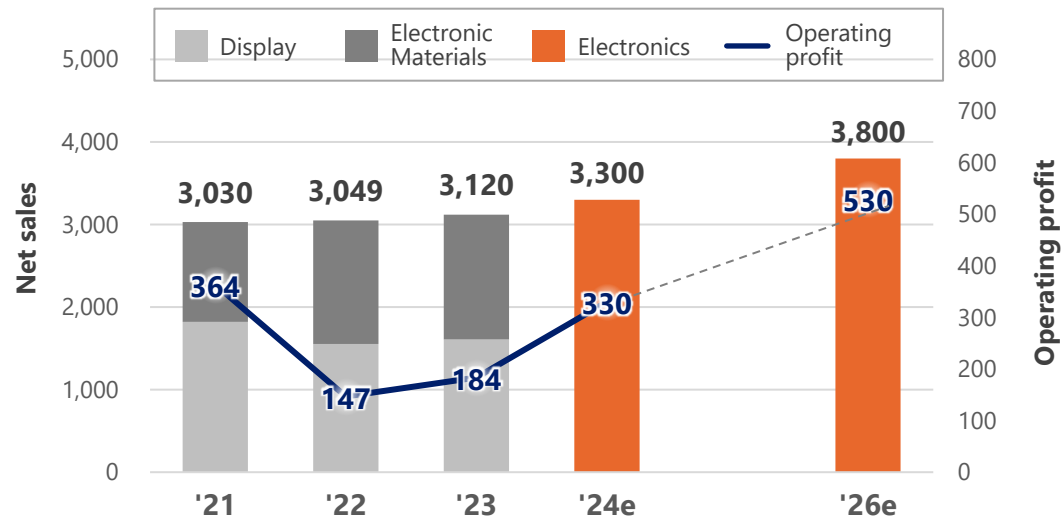




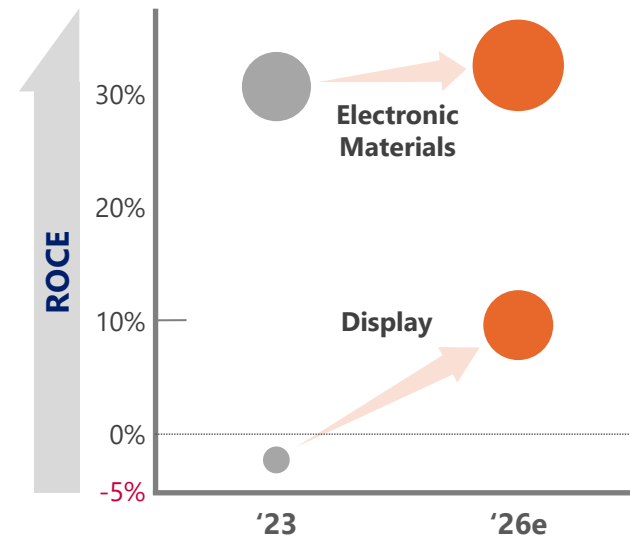
# Medium- to Long-Term Performance Image

- In Display, we aim to achieve a 10% ROCE toward 2026 by improving profitability through the three pillar measures while reducing operating assets
- In Electronic Materials, we aim to maintain the 2023 ROCE level by expanding the business centered on semiconductor-related products

## Net sales, Operating profit (100 million yen)



## ROCE (Diameter of each circle : the size of EBITDA)

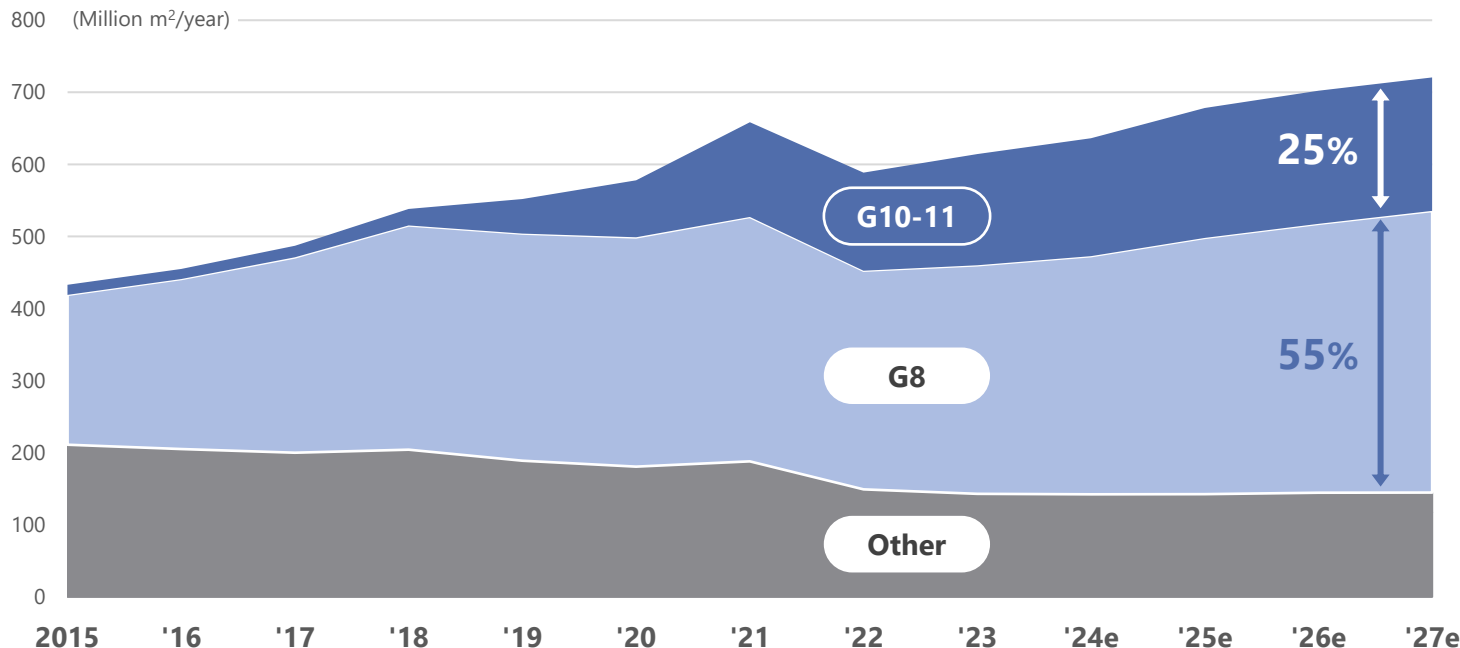


# Appendix

# Display: Business Environment

- Area based glass demand is expected to maintain annual growth of several percent.

## Demand for liquid crystal display glass (generation-specific)



# Semiconductor-related Materials: Business Expansion



## Synthetic quartz

High-purity/high-quality/high-function glass for semiconductor processes

- Manufactured based on the technologies and research and development of fine glass, fine chemicals, and fine ceramics developed by AGC for a long period of time
- Suitable for optical parts of semiconductor processes of exposure devices, etc. and adopted for various optical materials, etc.



## SiC thermal treatment jigs

High-purity/high-strength/low-thermal-expansion ceramics

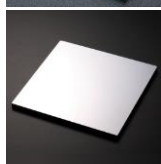
- Track record of 30 or more years mainly as part of semiconductor manufacturing equipment used at a high temperature
- Also adopted for bodies of EUV exposure machines and SiC power devices thanks to excellent thermal resistance



## CMP slurry

"High-quality slurry" customized for customers' design rules and processes

- Optimize and supply slurry that realizes a very flat, multi-layer structure and for various purposes such as oxidized films and wiring materials
- Adoption for memory processes mainly for cutting-edge logic



## EUV mask blanks

High-quality photo mask blanks compatible with cutting-edge exposure

- Supply products by comprehensive production from glass materials to disposition for cutting-edge EUV exposure processes
- Realized ultra-low defects, ultra flatness, and high-function membranes



## Copper clad laminates

The base material for a myriad of circuits and printed circuit boards

- Possessing a wide-ranging product lineup from digital to RF domain
- AGC is expanding into high-speed communications, automotive, and aerospace applications. Utilizing material development, polymer coating, and electrical characteristics evaluation technologies centered on low-dielectric-loss polymer systems.

## The sole blanks manufacturer in the world that covers the whole production process from glass materials to polishing and deposition

Started development in 2003 and realized technologies that can meet the strict quality standard

### Inorganic materials

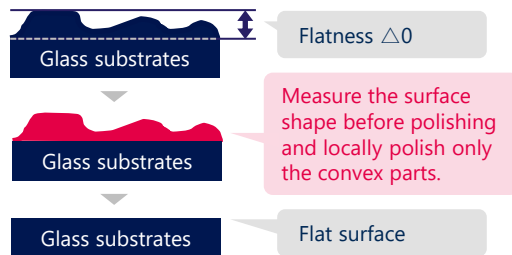
#### Low-expansion glass substrates

Started the development of synthetic quartz production technologies in 1982 and produces highly pure substrates using technologies and knowledge developed for many years



#### Polishing

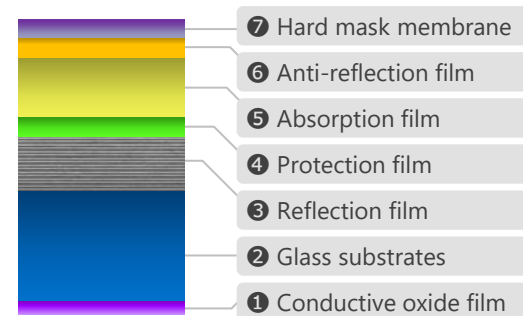
Developed a special polishing method to meet the required quality level (substrate flatness) unique to EUV blanks  
Realize ultra-high flatness with comprehensive production of substrates + polishing



### Inorganic materials

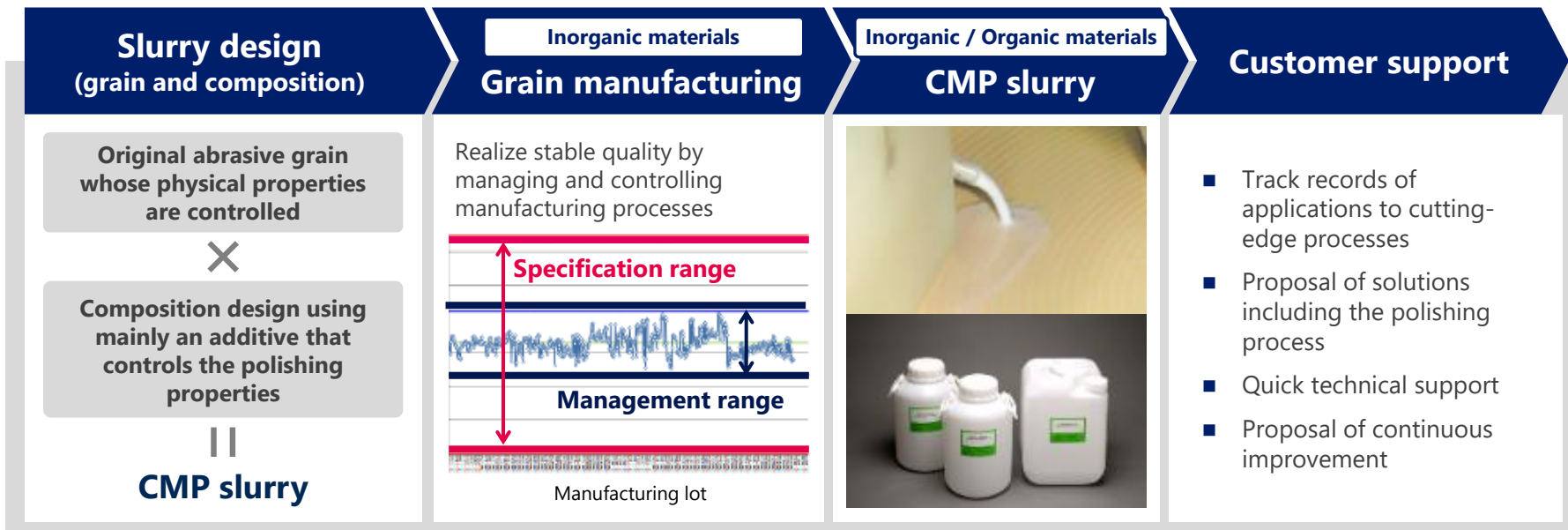
#### Deposition

Meet the needs of customers with optimal membrane design capabilities in response to shift to high definition and deposition technologies that reduce defects



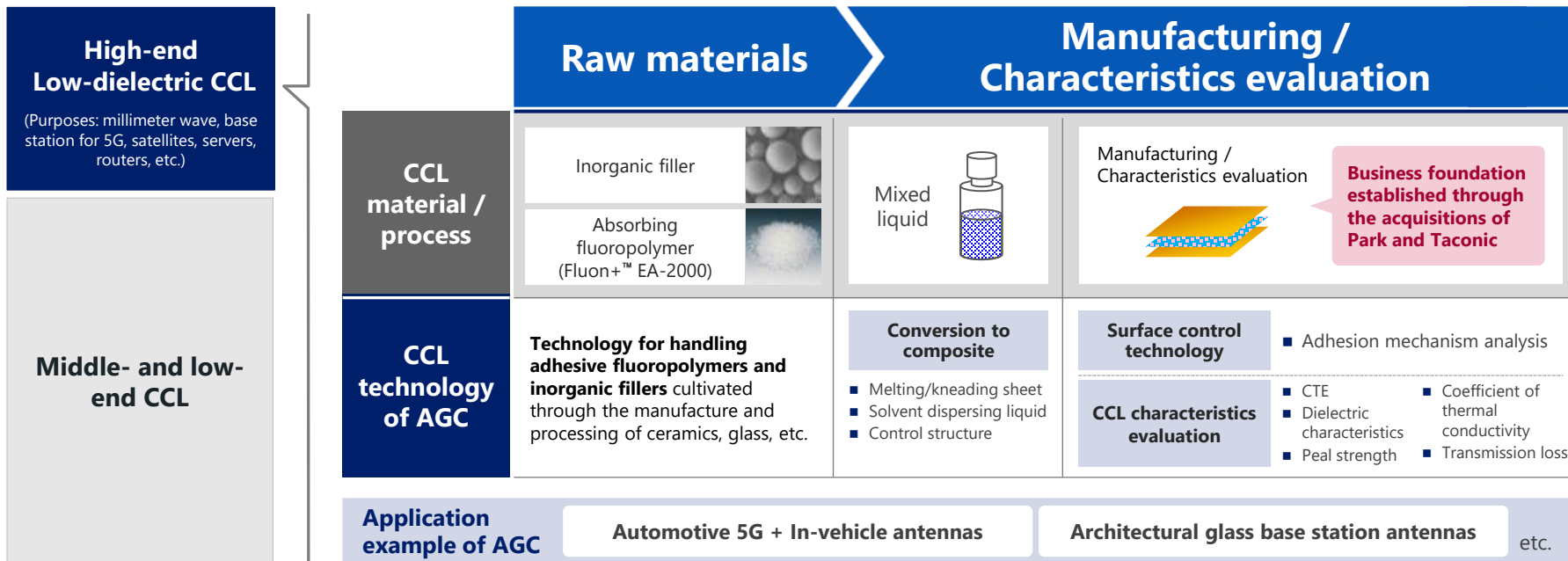
## Slurry solution manufacturer that has entire production capability from abrasive grain to slurry

Provide “high-quality slurry” + “solutions” customized for customers’ design rules and processes



# Copper Clad Laminates

- Providing solutions to customers at the **high-end = low-dielectric CCL (copper clad laminate)**, which is essential for next-generation high-speed communications.





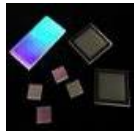
# Optoelectronic Materials: Product lineup



## Infrared cut filter

Glass filter that realizes spectral characteristics that are difficult to realize

- Lead the industry of high-performance glass filters to adjust the sensitivities of image sensors called CCD and CMOS used for digital cameras such as cameras of cell phones, monitoring cameras, and in-vehicle cameras in the visible range of light



## DOE/Diffuser

Glass micro-optical elements that realize high performance, high reliability, and high light stability

- Diffractive optical elements used for 3D sensing, Lidar, face authentication, etc. (DOE) + glass diffuser
- Propose proprietary optical design, microfabrication technologies, and mass production technologies developed through elements for light pickup and communication



## Highly refractive glass

Glass substrates used for next-generation displays

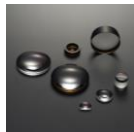
- Propose a wide range of new high-refractive and high-transmission glass substrates with used for AR (Augmented Reality) glass and MR (Mixed Reality) glass, smart glass, etc.



## Glass ceramics substrates

Contribute to the brightness of LED and semiconductor laser and power improvement

- Realize high reliability regarding heat dissipation and discoloration and contribute to power improvement and durability improvement of LED products of a wide range of wavelengths
- Contribute to brightness improvement because the reflectance is about 20% that of an aluminum substrate in the visible light area



## Glass mold lens

Aspherical glass lens that improves the performance of optical equipment

- Aspherical glass manufactured by precise glass molding technologies greatly improves the performance of optical equipment



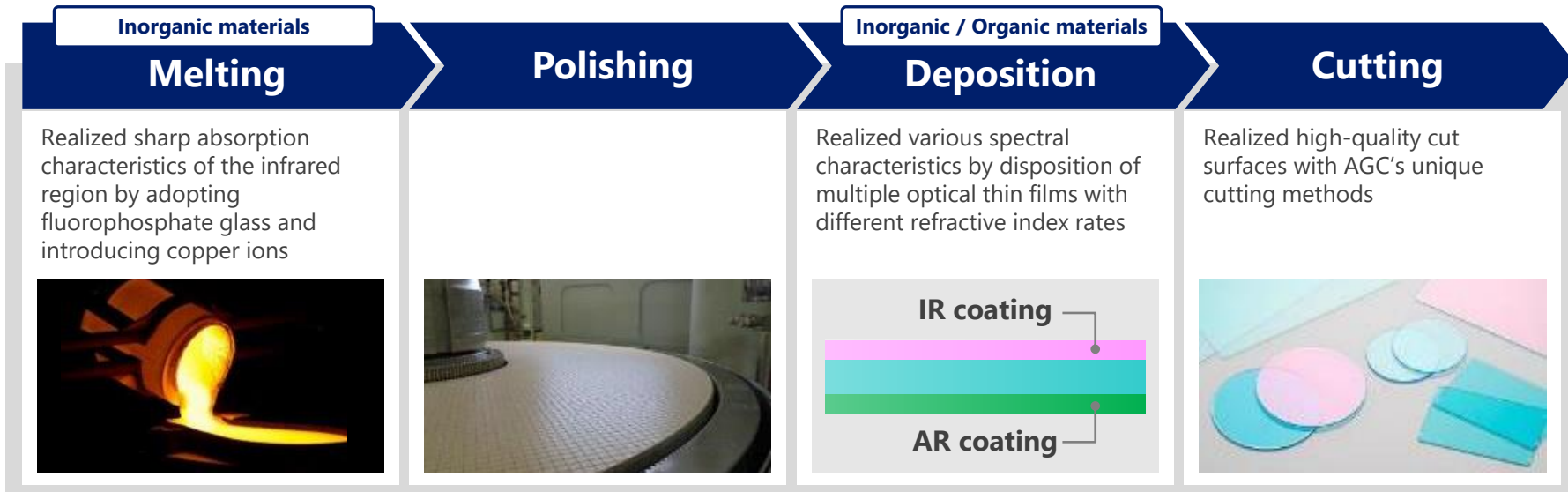
## Optical membranes

Optical membranes compatible with a wide range of wavelengths from UV to IR

- Supply a wide range of optical membranes that can demonstrate their functions and performance in various fields such as medicine, measurement, videos, exposure, industrial equipment, space/astronomy, bio products, home appliances, and lighting

## Filter manufacturer that covers the whole production process from glass melting to molding and fabrication

Realized spectral characteristics that are difficult to realize by combining glass, disposition and optical design technologies, contributing to a better image quality for cameras



# Examples of Social Value provided by Electronics Business

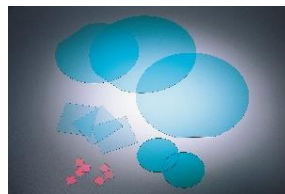
## Innovation



**Specialty glass**  
(Silica glass /  
lenses, etc.)



**Semiconductor-  
related materials**



**Optoelectronic  
materials**



**High-speed  
communication  
materials**

**Next-  
generation  
areas**

**Information  
communication**



**TFT LCD glass**

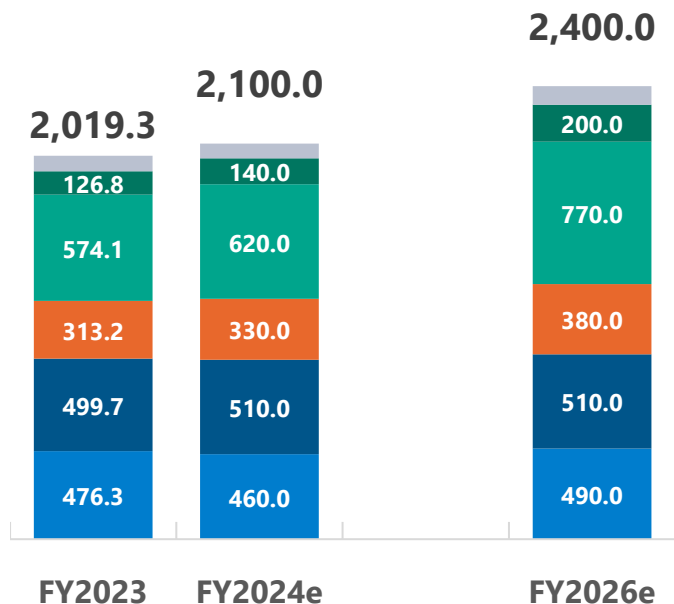


**Specialty glass for  
chemical strengthening**

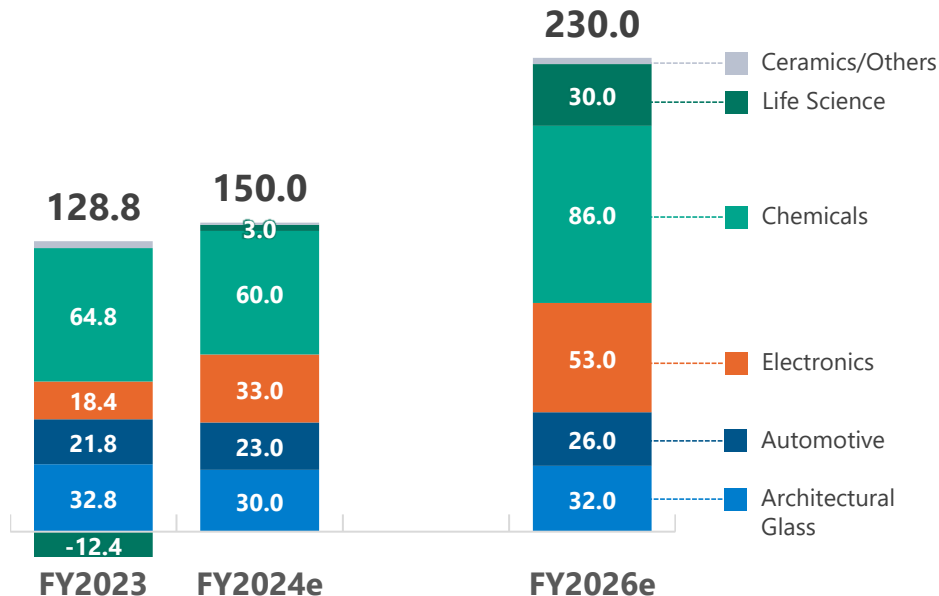
**Well-being**

# Image of Performance by Segment

## Net sales (Billion yen)

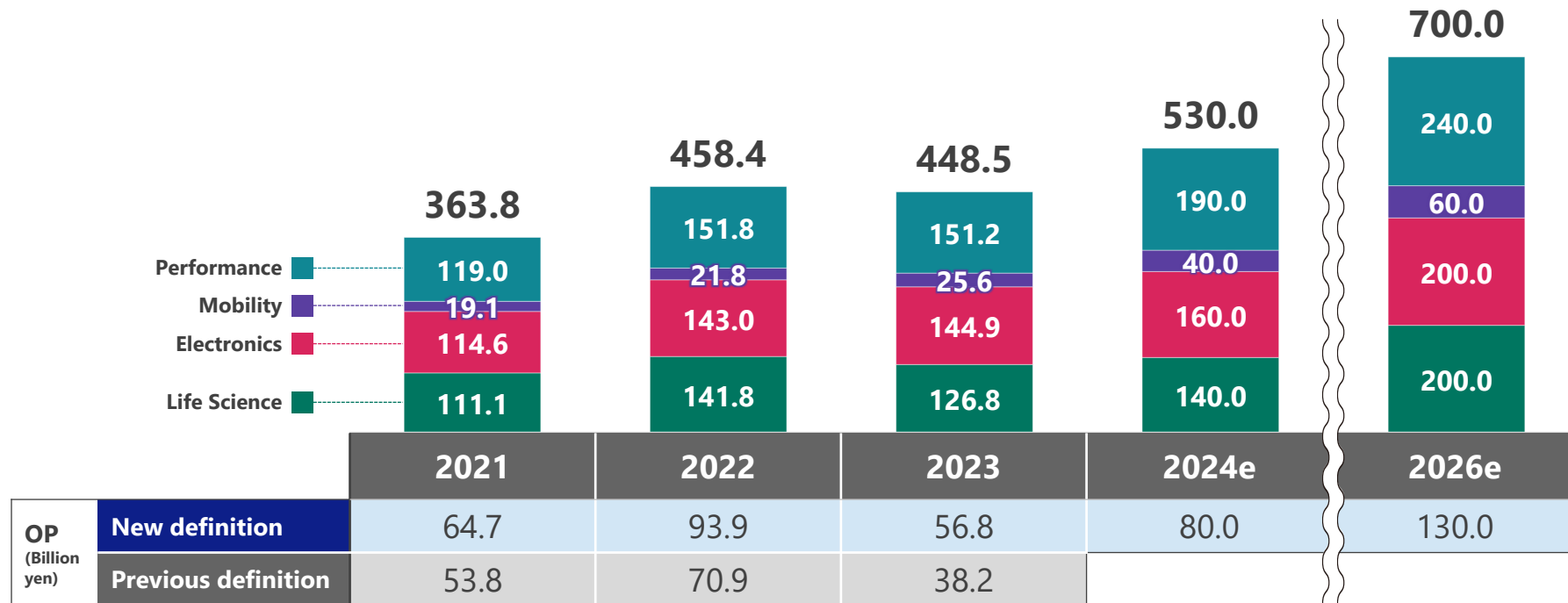


## OP (Billion yen)



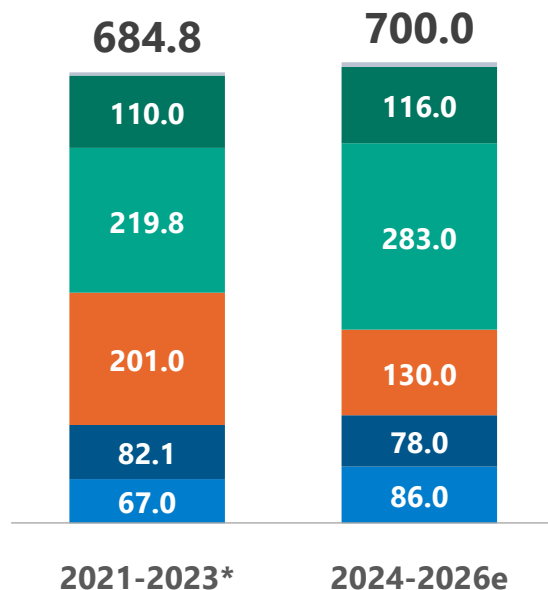
# Strategic Business Performance Image

## Strategic business net sales (Billion yen)

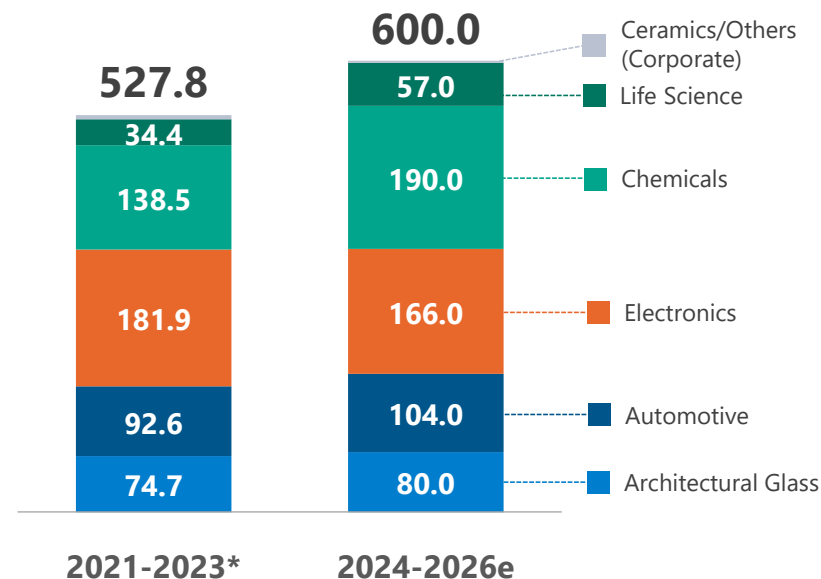


# AGC plus-2026 CAPEX and Depreciation & Amortization

## CAPEX (Billion yen)



## Depreciation & amortization (Billion yen)

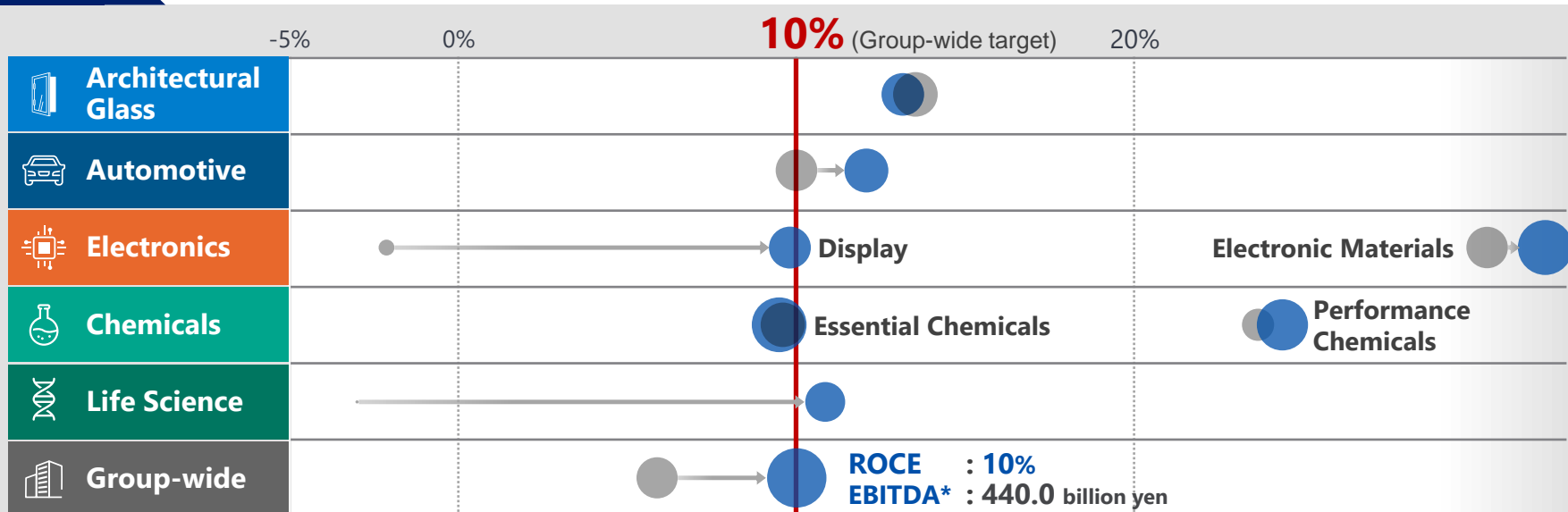


# ROCE of Each Business

- We will continue to aim for a Group-wide ROCE of **10% or higher**

ROCE

● 2023 Actual vs ● FY2026 Projection



**ROCE** : (OP forecast of the year) ÷ (Operating asset forecast at the year-end),

Group-wide OP by business is after allocation of common expenses; OP for each business is before allocation of common expenses

**Diameter of each circle (excluding those of the group-wide section)** : the size of EBITDA \* **EBITDA** = Operating profit + Depreciation



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