



Your Dreams, Our Challenge

# IR DAY 2024

**Automotive  
Business**

**AGC Inc.**

June 3, 2024



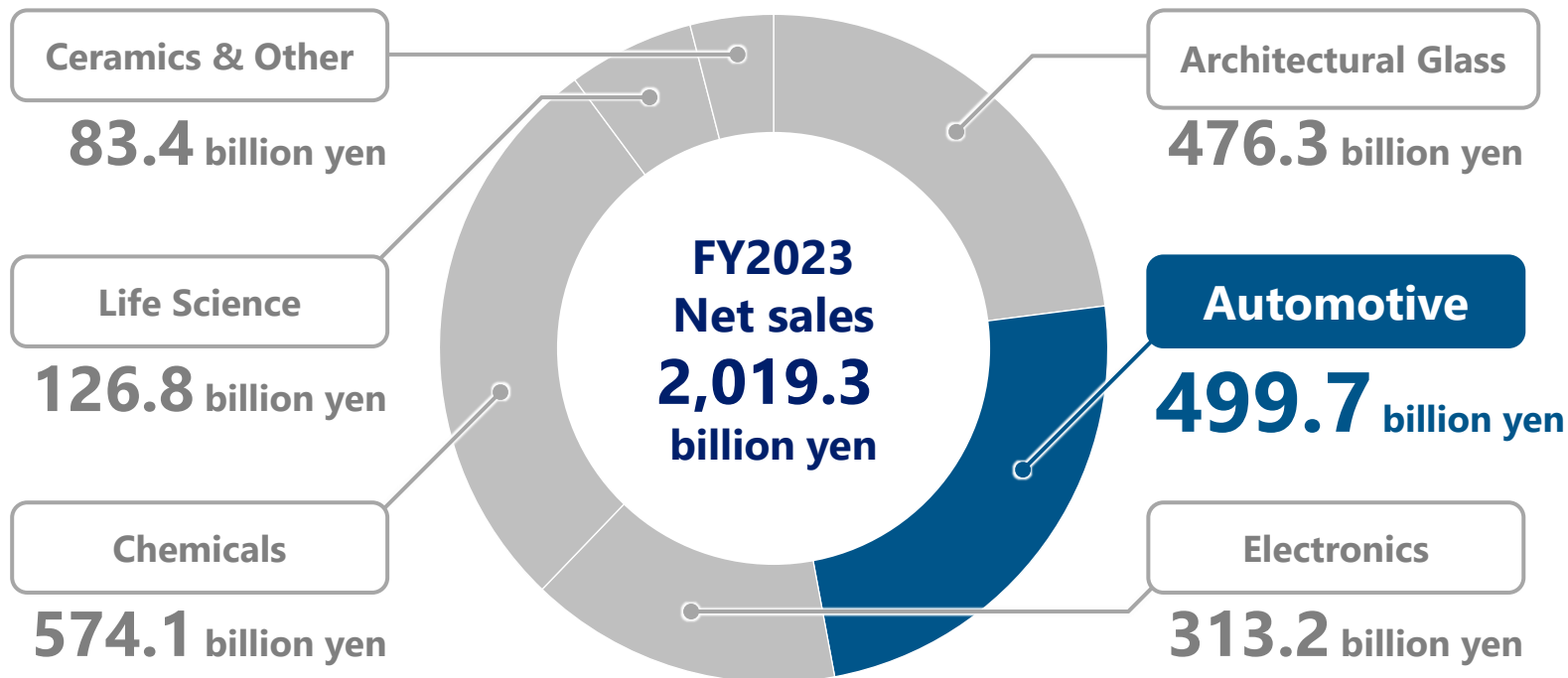


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# Automotive Business Overview



# 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.

# Main Products

- Lineup of high-value-added and high-performance products utilizing AGC's comprehensive technological capabilities in coatings and glass processing

## Main products

**99% UV cut and  
IR cut glass**



**Sound insulation  
glass**



**Glass for HUD**



**Heated wire  
windshield**



**Solar cell roof**



**Strategic  
business  
(Mobility)**

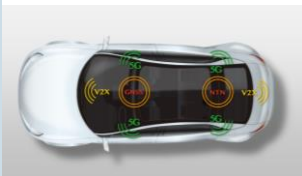
**Cover glass for car-  
mounted display**



**Sensor**



**Antenna**



**Low-E glass**

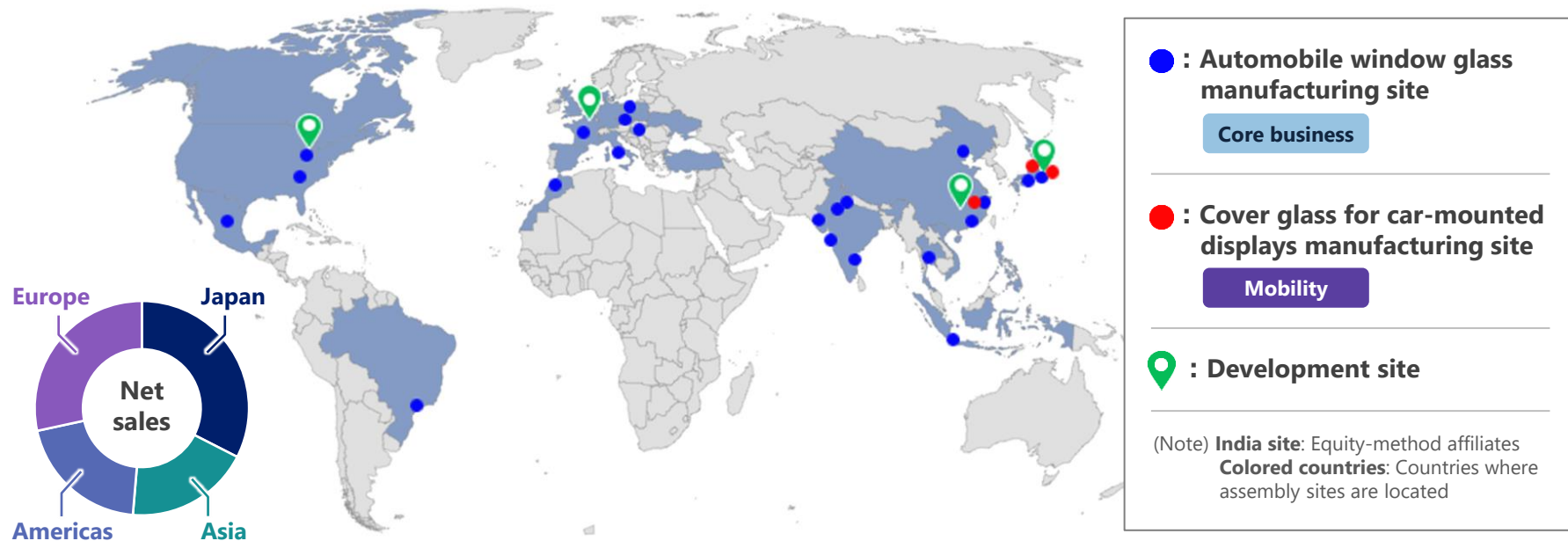


**Light control glass**



# Group site expansion

- Global network across Asia, Europe, and the Americas
- Pursuing market trends in the R&D sites in Japan, the US, and Europe as well as China



# Strengths of the Automotive business



**Distinguished customer base**

**Relationships built on trust with global OEMs leading the EV and mobility market**



**Global production, sales, and development system**

**Global network capable of providing high quality products and services**



**The collective technological capability of the AGC Group**

**Business development utilizing "materials technology," "functional design," and "production technology"**



**Synergies generated by automotive window glass + Mobility**

**Increase added value by combining Mobility products and technologies**

# Strategy





## Vision

**We will earn the trust of society by enabling a safe, comfortable and connected mobile community**

## Mission

**Continue to create new business (products, technologies and services) on the global scale for advancement of mobility community**

**COLLABORATIVE**

**INTELLIGENT**

**ENABLER**

Diverse people in different organizations, interacting and influencing each other, pooling their wisdom to create problem-solving methods and effective business solutions

## Vision 2030

**Continue to evolve and lead the way in realizing a sustainable mobility society (CASE) through differentiated components and solutions**

- Transformation in the automotive industry, as exemplified by CASE, is steadily under way

2020

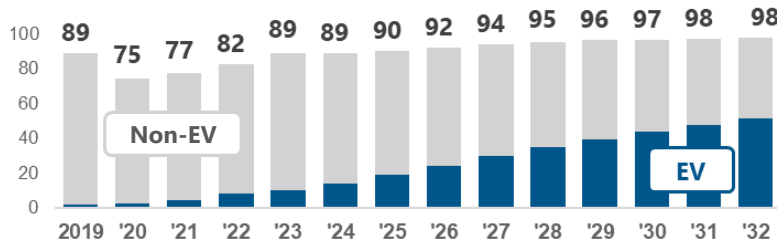
2030

## Electric and Environment

### EV ratio rising to 50% in 2030

- Global car production is not expected to increase going forward.
- Yet the shift to EVs is further accelerating, especially in advanced EV regions (Europe, China, and North America).

**Global  
production  
volume of cars**  
\* (million units)



## Connectivity

**Market ramp  
up is  
expected**

## Autonomous

**Market  
takeoff at  
Level 4-5 is  
expected  
mainly for  
MaaS  
vehicles**

# Background of Initiatives to Improve Earnings

- In the years leading to FY2023, a decline in auto production volume due to the pandemic and semiconductor supply shortages as well as soaring raw material and fuel costs affected the Automotive business. Impairment losses were booked and restructuring measures implemented.
- In FY2023, the company's performance returned to a recovery track due to an increase in shipments resulting from a rebound in automobile production and a review of selling prices, but improving profitability remains an issue.

	Business environment	Recording of impairment losses	Implementation of structural reforms
2018	<ul style="list-style-type: none"> <li>■ Slowdown in Europe &amp; US auto sales</li> </ul>	<ul style="list-style-type: none"> <li>■ North American automotive glass</li> </ul>	
2019			
2020	<ul style="list-style-type: none"> <li>■ Decline in auto production volume due to pandemic</li> </ul>	<ul style="list-style-type: none"> <li>■ European automotive glass</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduction of headcount in Europe and US headquarters and Czech plant, etc.</li> </ul>
2021			
2022	<ul style="list-style-type: none"> <li>■ Shortage of semiconductor supply</li> </ul>	<ul style="list-style-type: none"> <li>■ Automotive glass in Russia</li> <li>■ European automotive glass (Excluding Russia)</li> </ul>	<ul style="list-style-type: none"> <li>■ Start of production consolidation by introducing high-efficiency facilities</li> <li>■ Consolidation of assembly sites and reduction of old lines</li> </ul>
2023	<ul style="list-style-type: none"> <li>■ Prolonged Russia-Ukraine situation</li> </ul>		<ul style="list-style-type: none"> <li>■ Reduction of Belgian plant and German assembly site</li> </ul>

Total  
52.1 billion yen

- Further solidify the earnings base and achieve a stable ROCE of over 10%

## Volume to Value

### Future measures

#### Three pillars of earnings improvement

(1) Pricing policy

Continued pursuit of appropriate price levels

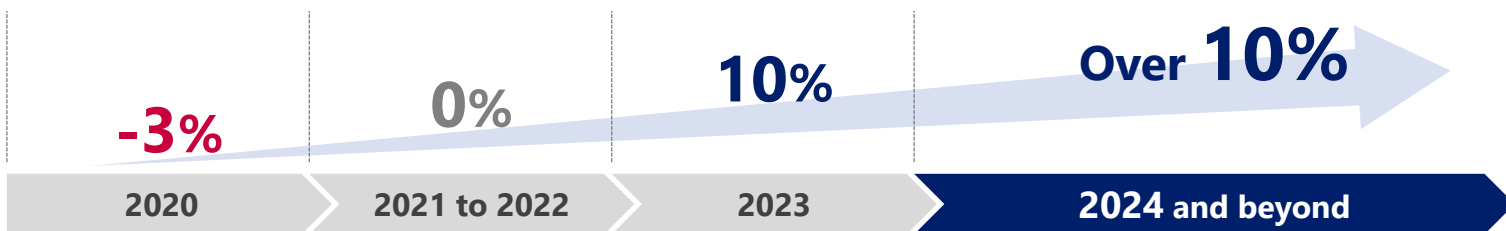
(2) Structural reform

Thorough productivity improvement, including introduction of high-efficiency equipment

(3) Higher functionality and high added value

Increase ratio of high value-added products in line with EV expansion, etc.

ROCE\*



\* ROCE : (OP before allocation of common expenses of the year) ÷ (Operating asset at the year-end)

# (1) Pricing Policy

Price increases in response **to higher costs due to soaring raw material and fuel prices and other cost increases**

Price increases in response to higher costs **due to rapid changes in automobile production plans**

**Review of price levels** in consideration of model profitability

**Continued pursuit of appropriate price levels**

## (2) Structural reform

### Implemented

### To come

#### Europe

- Reduction of Belgian plant and German assembly site
- Reduction of old lines and cuts to headquarters headcount

- Reduction of old lines and conversion to production lines for Mobility products

#### North America

- Reduction of old lines and streamlining of assembly sites

- Reduction of old lines and streamlining of assembly sites

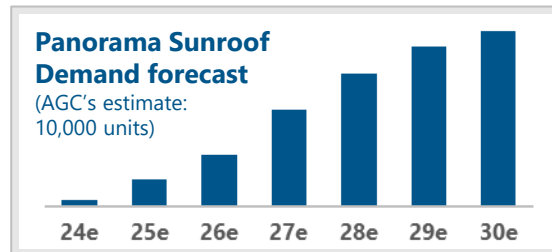
#### Global

- Global deployment and standardization of high-efficiency facility installation
- Consolidation and closure of low-utilization and low-productivity lines
- Review of production and supply systems in response to regional market trends

### (3) Higher Functionality and High Added Value:

## 1. Increase in Demand for Products Through EV Expansion

- With the expansion of EVs, demand for **sunroofs utilizing heat-insulating and light control glass and sound-insulation glass** is expected to grow in addition to existing high-value-added products\*.
- Demand for sunroofs is expected to grow, particularly in Europe and China



#### Low-emissivity glass



Apply special metal coating to glass to block solar radiation heat in summer and keep heat in winter. Also contribute to extending the travel distance of EV and reducing CO<sub>2</sub> emissions.

#### Light control glass



Insert a special film between two sheets of glass to control transmission of light so that the optimal amount of light falls into the car.

#### Sound insulation glass



Insert a special sound insulation membrane between two sheets of glass to reduce noise from outside vehicles. Realize a comfortable in-vehicle environment without increasing the weight (thickness) of glass.

### (3) Higher Functionality and High Added Value:

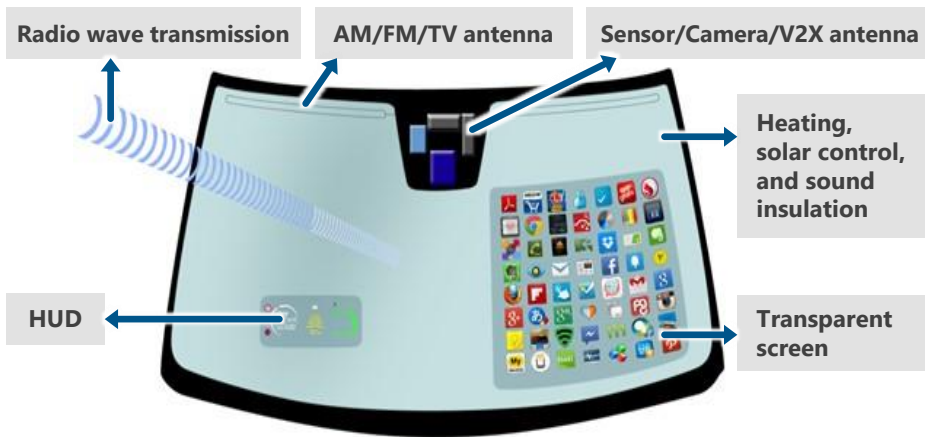
## 2. Expand Business Opportunities by Realizing CASE



- Focusing on market changes through CASE to **ensure that business opportunities are seized**
- **Cover glass for car-mounted displays** are used in over 100 models, mainly for European luxury cars

Providing not only materials but also solutions through the conversion of glass into displays and the addition of communication functionality

#### Automotive glass



#### Cover glass for car-mounted display



**World's top share** thanks to adoption for LEXUS RX released in 2019, etc

#### Glass antenna for next-generation automobiles



Succeeded in 5G communication with **glass-integrated 5G antenna**, jointly with NTT DoCoMo and Ericsson



- Expanding businesses on the strength of AGC's unique and comprehensive technological capabilities



: Glass



: Electronics



: Chemicals

## Synergies

### Display



- Automotive glass bending technology
- Multi-layer coating technology



- Design technology for electronic components



- Coating materials development

### Sensor

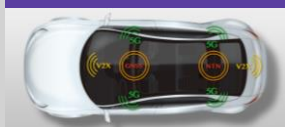


- Glass composition design with high near-infrared transmittance
- Value-added functional design through glass processing technology



- Coating material development and coating technology

### Antenna



- Antenna design and simulation technology adaptable to communications equipment and installation location



- Coating technology and connectivity are both achieved through FSS (frequency-selective surfaces) and reflection control technology according to frequency bands, etc.

# Target



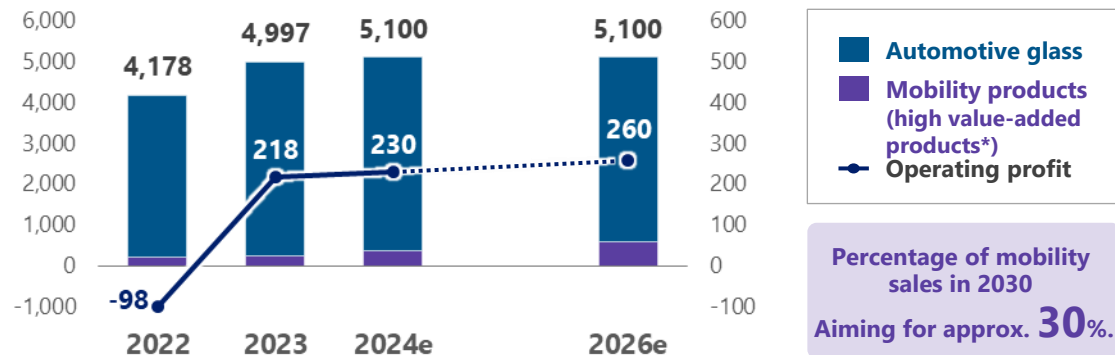
# Medium- and long-term earnings outlook

- Mobility products will capture market demand and expand in scale
- In automotive glass, pursue value, not volume (sales and scale)

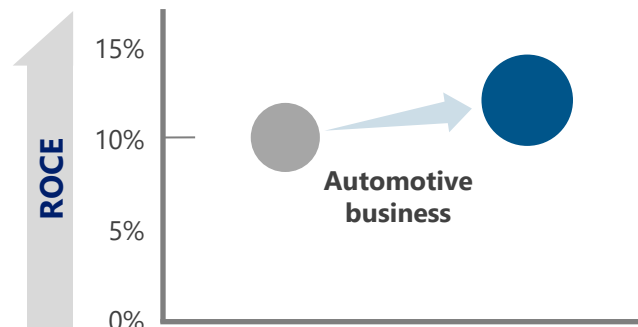
Achieve a **stable earnings structure** through the effects of various improvement measures and a better product mix

Aim to **maintain and further improve the current ROCE 10%**

## Automotive business Sales and Operating profit trend



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



# Appendix

# Automotive glass Introduction of main products

	General name		Description of the product
Basic glass	Laminated glass		Glass with high safety and crime-prevention functions whose fragments do not scatter when it is broken and unlikely to penetrate thanks to adhesion of two sheets of glass that sandwich a film
	Tempered glass		Glass with improved strength and high safety by heating and rapidly cooling glass. When it is broken, fragments are grained.
High-function glass	Comfort	99% UV cut glass	Glass with a function to cut ultraviolet rays by about 99% to reduce long-term damage to the skin such as burns
		IR cut glass	Solar control glass that greatly cuts the wavelength range that we feel is the hottest among solar rays and has radio wave transmissiveness by inserting a special film between two sheets of glass.
			Solar control glass that has a function to reflect mainly infrared rays by coating the inner surface of laminated glass with a special film.
		Privacy glass	Glass that secures privacy as well as has high solar control performance thanks to the addition of colored components.
		Sound insulation glass	Glass that contributes to greater silence during driving by improving the sound insulation performance of laminated glass.
		Laminated side window	Glass that improves theft-prevention performance and sound insulation performance by using laminated glass for side glass.
		Light Control Glass	A special film is placed between two sheets of glass to freely control light transmission. In transparent mode, the glass provides a sense of openness, while in dimming mode, it provides privacy and blocks sunlight.
		Low-E Glass	Special Low-E coating for automotive use blocks solar heat and provides a cool and comfortable cabin temperature in summer and a warm and comfortable cabin temperature in winter by preventing heat inside the car from escaping outside.
	Eyesight improvement	Water repellent door glass	Door glass that improves visibility in the rain with high water repellency and durability thanks to highly reactive fluorine and silicone coating.
		Snow-melting/ Ice-melting front glass	Glass that melts snow and ice through energization by printing conductive ink (heating element) on the front glass.
		Electro-thermal defogging glass	Glass that defogs through energization by printing conductive ink (heating element) on the rear glass.
	Information communication	Printed glass antenna	Automotive antenna with excellent design and durability by casting conductive ink with glass by printing.
		Embedded DTV glass antenna	Digital TV (DTV) glass with excellent design and durability with a seal-type antenna sealed in the front glass.
		Glass for head-up display	Front glass with a function to display the speedometer, etc. on glass.
	Design	Module assy window	Glass with resin parts cast around glass.

### (3) Higher Functionality and High Added Value:

## 1. Expansion of high value-added products through EV

### Low-E (Heat insulating glass)

High solar control and insulation properties  
reduce air conditioner load and improve fuel efficiency

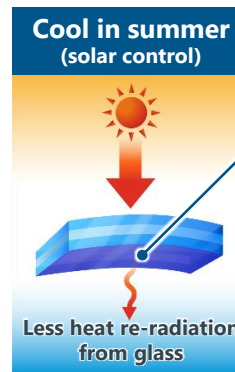
**In addition to improving comfort,  
contributes to extending the cruising  
range of EVs and reducing CO<sub>2</sub> emissions**



- Special Low-E coatings for in-vehicle applications developed **by leveraging AGC's materials, functional design, and production technologies**
- **In summer, it blocks the sun's heat to keep the cabin cool and comfortable, and in winter, it makes it difficult for heat inside the vehicle to escape to the outside to keep the cabin warm and comfortable**
- **Use in roof glass allows for a shade-less configuration also contributes to vehicle weight reduction and head clearance**

#### Use case

Light control panoramic roof with Low-E coating adopted in the LEXUS RZ, Toyota's **LEXUS' first dedicated BEV model**



Special metal coating

**Reduces radiant heat from heated glass to about 1/5\***

Special metal coating

**Reduces heat radiation to outside the vehicle from the glass to about 2/3\***



\*AGC research

### (3) Higher Functionality and High Added Value:

## 1. Expansion of high value-added products through EV

### Light control glass Digital Curtain®

Providing new value for panoramic sunroofs, which are enjoying growing demand due to the introduction of EVs

**Further improved comfort and openness and an advanced cabin**



- A special film is inserted between two sheets of glass and controlled by voltage to **instantly switch between "dimmed mode" and "transparent mode"**
- The "dimmed mode" **eases the heat and glare of sunlight, while the "transparent mode" allows occupants to enjoy a sense of openness**

#### Use case

#### Toyota's new model Harrier

- World's fastest **instantaneous control of flight transmission for automotive exterior glass**
- Adopted for the first time worldwide **in mass production vehicles**

#### Dimmed mode (opaque state, when switched off)



#### Transmissive mode (clear state, when switched on)



\*AGC research

### (3) Higher Functionality and High Added Value:

## 1. Expansion of high value-added products through EV

### Sound insulation glass

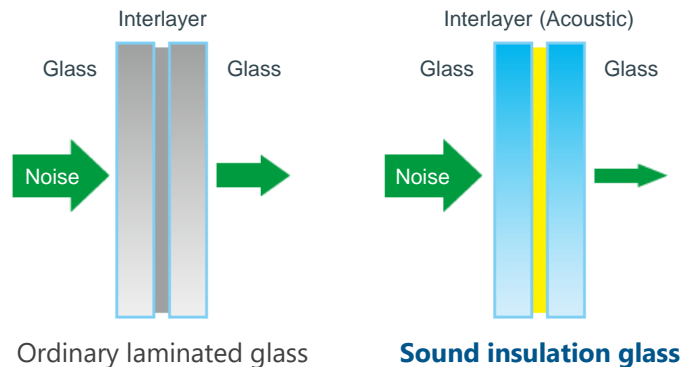
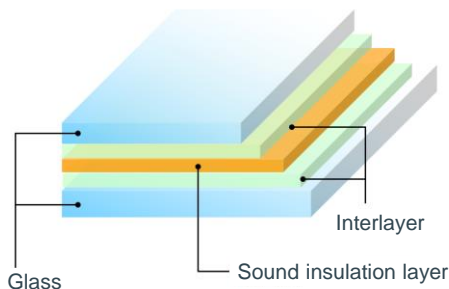
In addition to the windshield glass, the side window glass is laminated to further improve sound insulation.

**A quiet and comfortable cabin space is created in EVs, which are free of engine noise.**



#### Structure

- Laminated glass with special sound insulation membrane inserted between two sheets of glass





### (3) Higher Functionality and High Added Value:

## 2. Expand Business Opportunities by Realizing CASE

### Cover glass for car-mounted displays

Support for next-generation mobility with  
"mobile living spaces"  
"Large" displays to realize fun and comfort

### Development of 3D cover glass for pillar-to-pillar displays



- Adopts AGC's specialty glass for chemical strengthening "Dragontrail®". Achieves **high strength** and **"high safety"** required for interior materials
- **"High visibility"** and **"touch panel performance"** of the displays are ensured by utilizing anti-reflective film and anti-fingerprint film deposition technologies
- **"Outstanding design"** that enhances the sense of unity between the display and dashboard
- **Top global share\***

#### 3D curved cover glass



#### Structure of ordinary cover glass

Anti-fingerprint film		
Anti-reflection film		
Anti-glare film		
Chemically tempered glass		
Printing		Printing

\*AGC research

## (3) Higher Functionality and High Added Value: 2. Expand Business Opportunities by Realizing CASE

### In-vehicle glass for LiDAR Wideye™

#### Product lineup compatible with various types of LiDAR

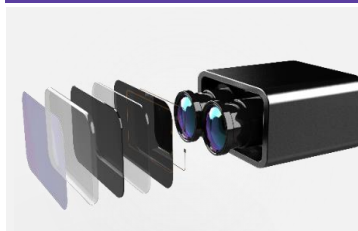
##### Body trim parts

(Ex glass + housing case) Seamless glass parts that match the car body design



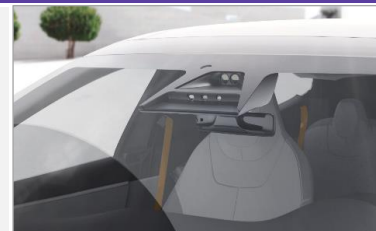
- AGC's glass composition design technology, glass processing technology, etc. are utilized to design new glass materials. **Maintaining high near-infrared transmittance for long-distance sensing**
- By installing the cover on the front of the LiDAR, it will **prevent damage due to scratches and shocks as well as degradation in detection accuracy due to raindrops and dirtying**
- **The addition of AGC's water repellent coating, AR coating, and a heating function** maximizes excellent optical performance in a variety of environments
- **Suitable for all automotive glass applications, including windshields**, with the ability to handle large areas and can be processed into exterior modules
- AGC can provide one-stop proposals **from design to process development, manufacturing, and quality assurance**

### Other product lineup



#### LiDAR module cover

Cover glass for in-vehicle LiDAR module



#### Glazing-integrated LiDAR

LiDAR protection with integrated-glazing such as windshields

### (3) Higher Functionality and High Added Value:

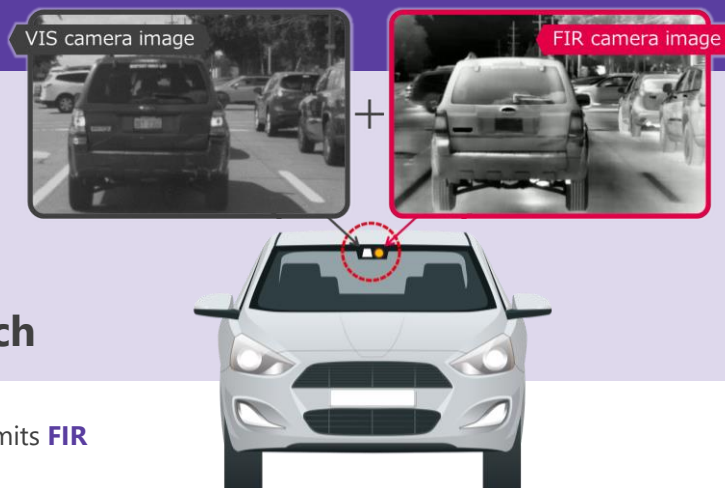
## 2. Expand Business Opportunities by Realizing CASE

### Windshield glass compatible with FIR cameras

Allows integrated installation of visible light cameras and FIR cameras inside the windshield

Accelerating development for 2027 market launch

- A portion of the windshield is specially processed and a special material that transmits **FIR (far-infrared ray) light is integrated into it**
- FIR cameras, which have been installed outside the vehicle, can now be installed high inside the windshield, reducing the parallax between the visible light and FIR cameras, **which is advantageous for sensor fusion. The wide field of view, early recognition of objects in the distance, and sensor protection significantly boost the effectiveness of ADAS at night, which has become an issue, and prevent pedestrian traffic accidents**
- This is also an effective solution to the new rule proposed by **the US National Highway Traffic Safety Administration (NHTSA) in May 2023, which will require** all new passenger vehicles to have nighttime pedestrian detection and collision avoidance capabilities



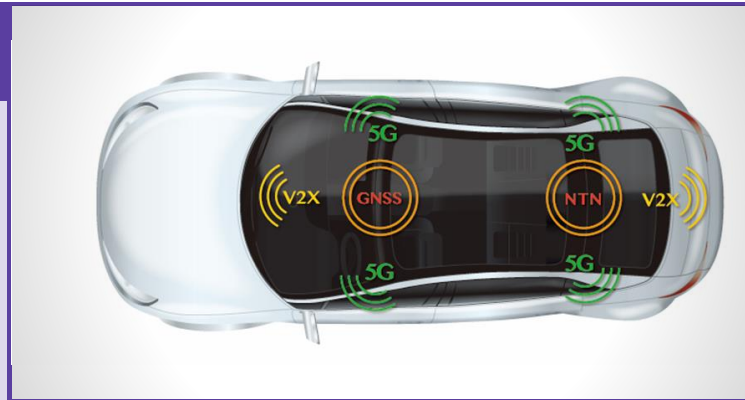
### Structure of FIR camera-compatible windshields



## (3) Higher Functionality and High Added Value: 2. Expand Business Opportunities by Realizing CASE

### 5G-sub6 ready glass antenna

**Distributed on-glass antenna system**  
**Achieves stable communication performance**



- The antenna system can be integrated and distributed in the windshield, side and rear windows, or **in the roof glass, which is the trend with EVs**
- **Stable communication performance is achieved without compromising the design beauty of the vehicle**
- In addition to antenna design technology, reflective control technology prevents conductive, heat-reflective coatings from interfering with radio wave transmission, thus **achieving both connectivity and comfort**
- Lineup includes "substrate type" that can be concealed within the black enamel of glass and "transparent type" that can be applied to visible areas of glass

# Examples of Social Value provided by Automotive business

## Blue planet



Heated wire  
windshield



Solar cell roof



Cover glass for  
car-mounted  
display



Interior glass



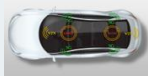
Mobility display  
window



Automotive glass  
for LiDAR  
applications



Windshield glass  
compatible with  
FIR cameras



5G-sub6 ready  
glass antenna



IR cut glass



Light control  
glass



Low-E glass heat-  
insulating glass



Sound  
insulation glass



Glass for HUD



Water-  
repellent glass



UV-cut glass

## Innovation

## Well-being

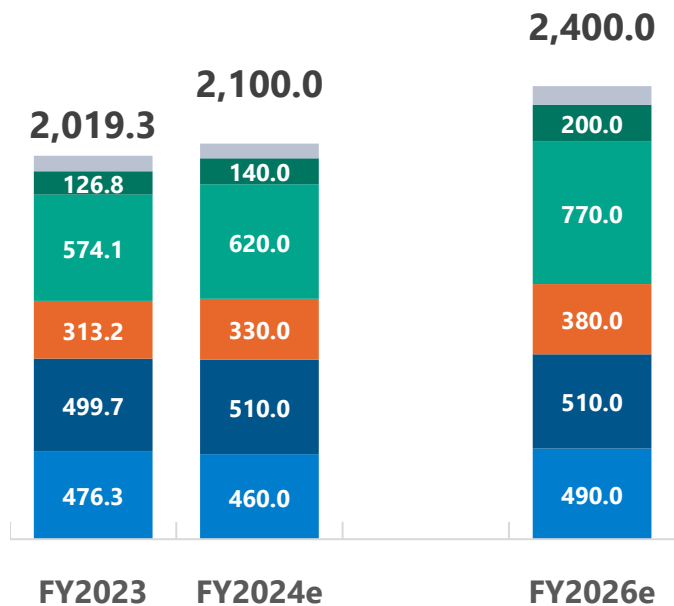
# Comprehensive Technological Capabilities of the AGC Group

- Differentiate products with unique materials and solutions combining organic/inorganic material technologies and common basic technologies

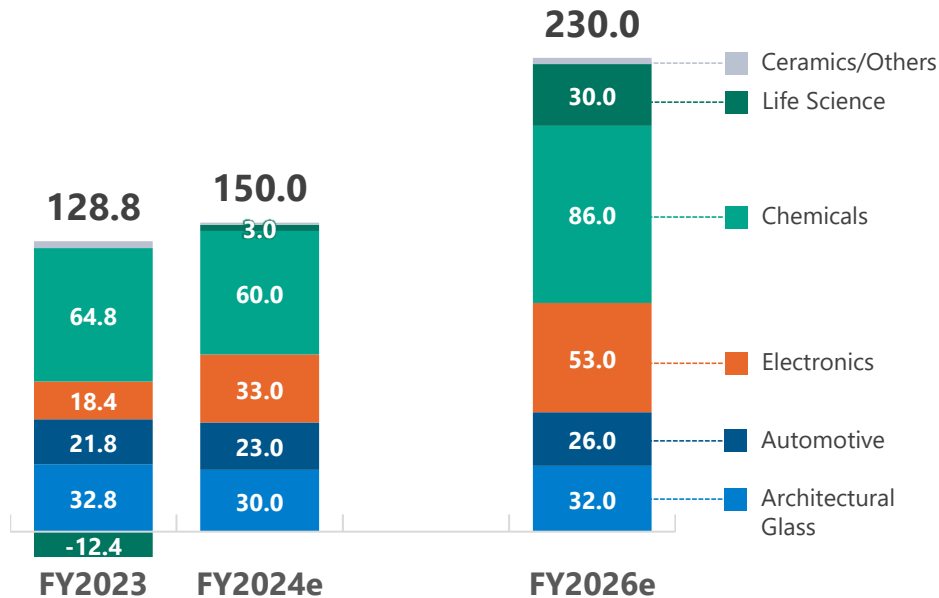


# Image of Performance by Segment

## Net sales (Billion yen)

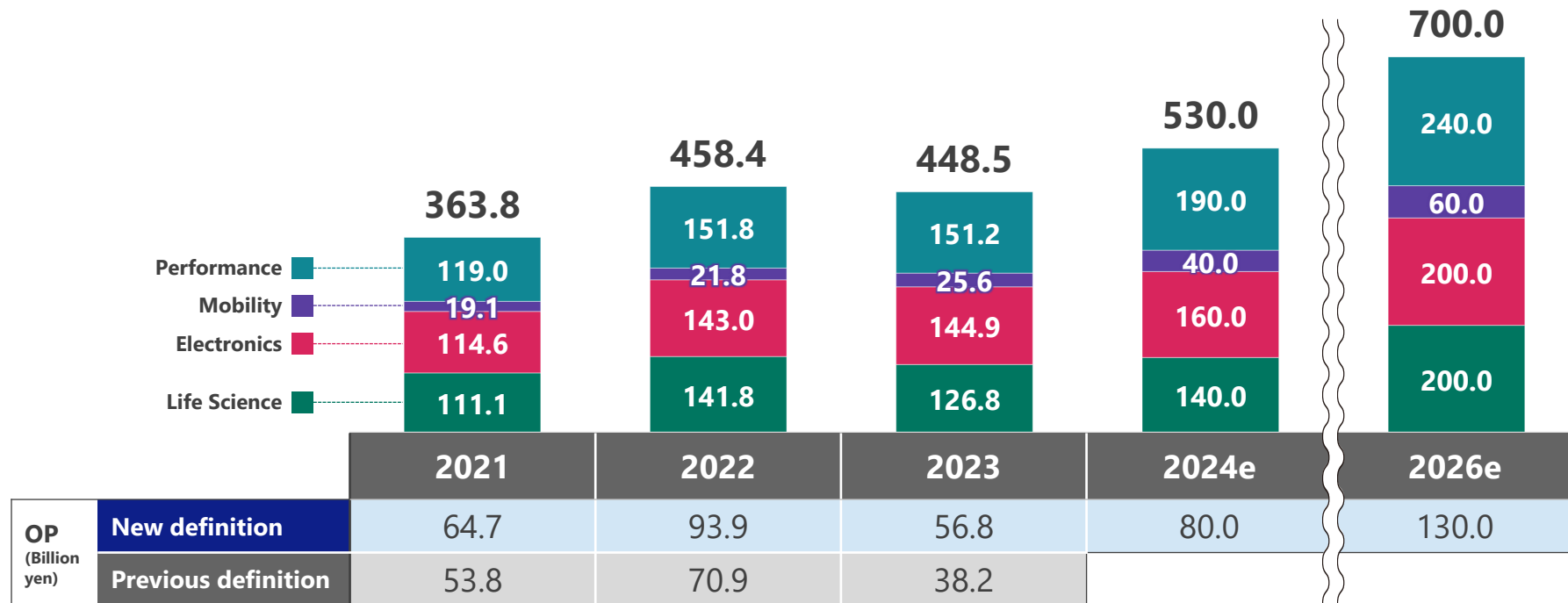


## OP (Billion yen)



# Strategic Business Performance Image

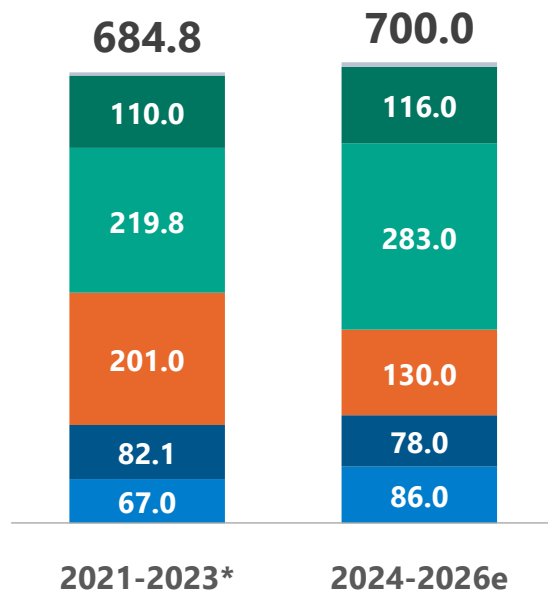
## Strategic business net sales (Billion yen)



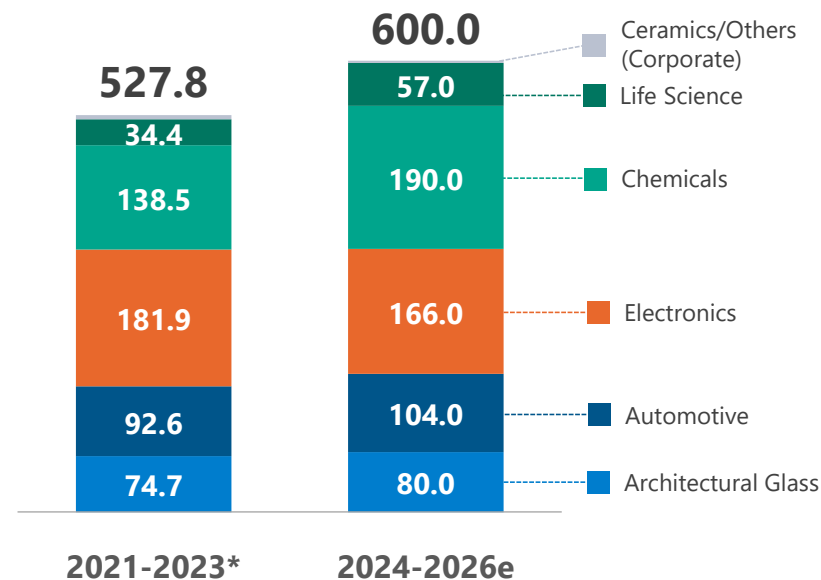


# AGC plus-2026 CAPEX and Depreciation & Amortization

## CAPEX (Billion yen)



## Depreciation & amortization (Billion yen)

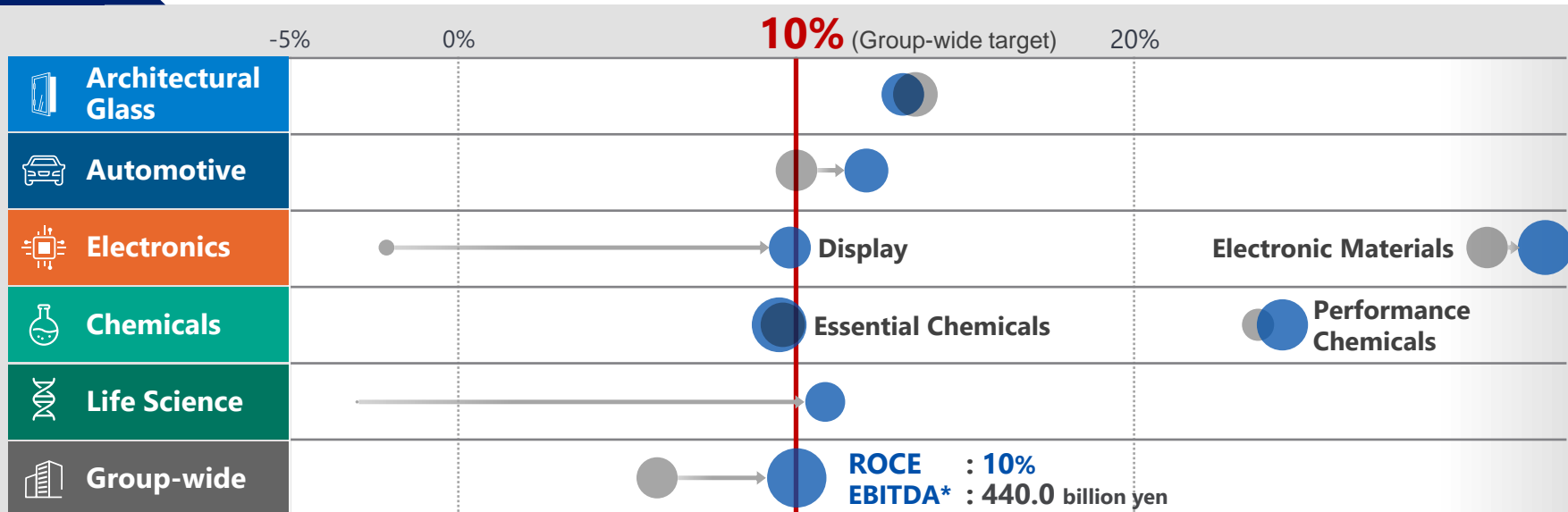


# ROCE of Each Business

- 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



Your Dreams, Our Challenge

**END**

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