



**AGC Inc.**

IR Day 2022 <Day 1> Automotive

June 13, 2022

## Event Summary

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<b>[Company Name]</b>	AGC Inc.	
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<b>[Event Name]</b>	IR Day 2022 <Day 1>	
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<b>[Date]</b>	June 13, 2022	
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<b>[Time]</b>	16:10 - 17:10	
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<b>[Participants]</b>		
<b>[Number of Speakers]</b>	2	
	Yoshio Takegawa	President of Automotive Company
	Chikako Ogawa	General Manager of Corporate Communications & Investor Relations Division

## Presentation

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**Ogawa:** Next, we have Yoshio Takegawa, President of Automotive Company to explain his business strategy.

Takegawa-san the floor is yours.

**Takegawa:** This is Takegawa, Automotive Company, and I would like to explain the overview of the Automotive business and our initiatives. Thank you very much for this opportunity today.

### Table of Contents



- **Business Overview**
- **Profit Improvement Measures**
- **Medium- and Long-term Measures**
- **The AGC Group's technological strength**

This slide shows today's agenda.

I will begin by explaining the general overview of our business and vision, mission, and key products. I would also like to explain what kind of societal values we can provide.

Then, I will go into the core business, the automotive glass, and profit improvement measures for the mid to long term.

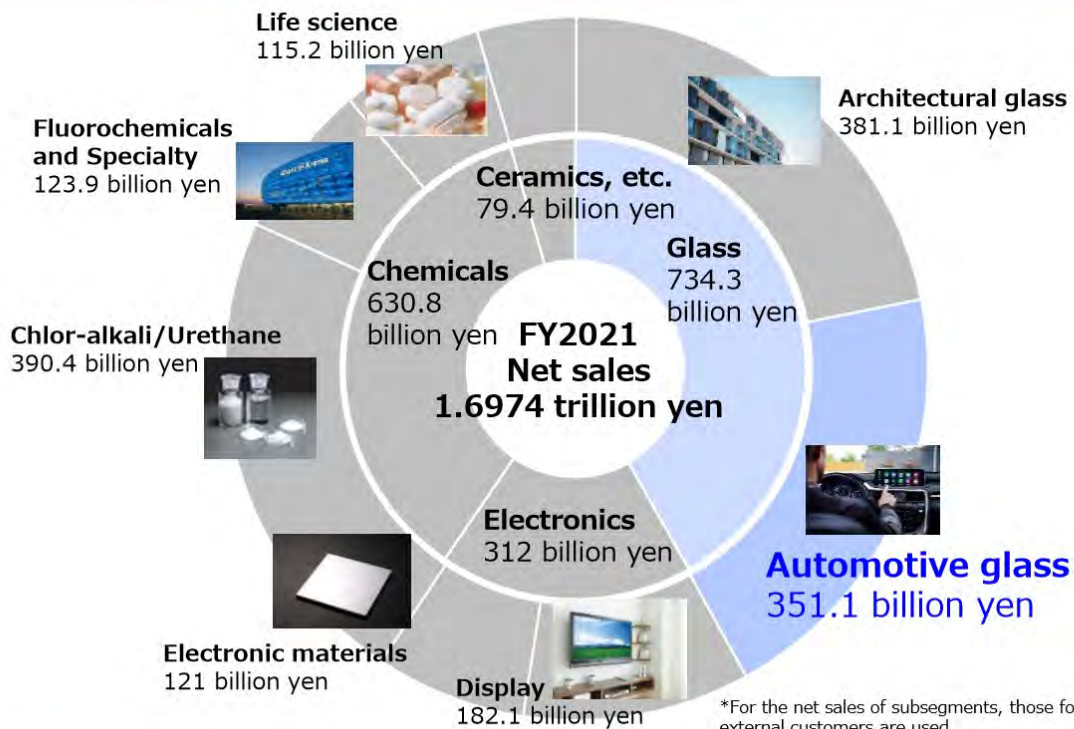
I will talk about the business strategy, strategic mobility business, and mid to long term initiatives for the CASE society.

Finally, I will go into AGC Group's technological strength, as some of the advanced functionality products.

I will not cover everything, but only a part of that.

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# Automotive glass business in the AGC Group



I'll begin with an overview of the automotive business.

Within AGC Group, automotive glass is part of the Glass business.

The mobility business, including the total net sales in December 2021, was approximately JPY350 billion, which accounts for approximately 20% of the net sales of the Group as a whole.

Compared to the pre-COVID-19 level, the net sales are much smaller.

### ■ 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, safety and sustainability**

### ■ Vision 2030

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

On the next slide, you can see the vision, mission, and also the 2030 vision for the automotive business.

We want to provide a whole variety of our societal values.

We can do that through the CASE society by leveraging our strengths, and by continuously providing new products, technologies, and services by developing and providing new businesses.

We should be able to achieve the Vision 2030.

The next couple of slides will talk about AGC's technological prowess.

Based on that, the kinds of advanced technologies and functionalities we have.

## Main products (1): Automotive glass (exterior glass)



- Total technological ability of coating and processing; lineup of high-value-added products
- Differentiate products with unique materials and solutions combining organic/inorganic material technologies and common basic technologies

<p><b>99% UV cut and IR cut glass</b></p>  <p>Realized 99% UV reduction and IR reduction with the world's first door glass by developing a high-function UV &amp; IR absorbent and high-quality coating technology.</p>	<p><b>Wind shield with a transparent conductive oxide film</b></p>  <p>Coat glass with a special material to melt snow and ice faster by energization. Reflect infrared rays as well to realize a comfortable in-vehicle environment in summer.</p>	<p><b>Smart glass</b></p>  <p>Insert a special film between two sheets of glass to control transmission of light freely. Realize in-vehicle space that a comfortable amount of light enters into.</p>	<p><b>Low-emissivity glass</b></p>  <p>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.</p>
<p><b>Sound insulation glass</b></p>  <p>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.</p>	<p><b>Glass for HUD</b></p>  <p>Project information of the speedometer, navigation information, etc. to the glass. Improve safety by reducing driver's eye movements while driving.</p>	<p><b>In-glass antenna</b></p>  <p>Integrate an antenna with glass. Improve the durability without compromising the vehicle design. Compatible with the <u>connected</u> mobility society.</p>	<p><b>Solar cell roof</b></p>  <p>Build a solar panel in curved glass with high transmissiveness. Supply electricity to the in-vehicle fan and the battery to drive them.</p>

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First of all, for the core business, exterior glass, these are the high-value-added products that are listed here.

I will not go into details about each case, each example, but because of the CASE arriving in the automotive industry, we expect them to grow even bigger.

We will focus on expanding the sales of these technologies and transforming our business portfolio so that we can improve the profitability over the midterm range.

Some of these products will be explained in greater detail later on.



## Main products (2): Cover glass for car-mounted display

- Track record of adoption: Delivered more than 25 million sheets for over 100 vehicle models since the start of production in 2013



- Major adoption cases (excerpts) are as follows

Company	Vehicle model	Announced date
Audi	Audi A8	September 14, 2017
Toyota	LEXUS RX	September 2, 2019
General Motors	Cadillac Escalade	September 10, 2020

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On this slide, you can see the mobility, and cover glass for common display. This is one of the key businesses. So, mass production for this started in 2013.

Since then, it has been used for more than, well, basically 25 million sheets. We provide high-end cover glass. We focus on the high end of this segment.

We have the reinforced glass. We provide a flat type, and also large-scale, and difficult or complicated shapes. So, we have the highest level of production technology.

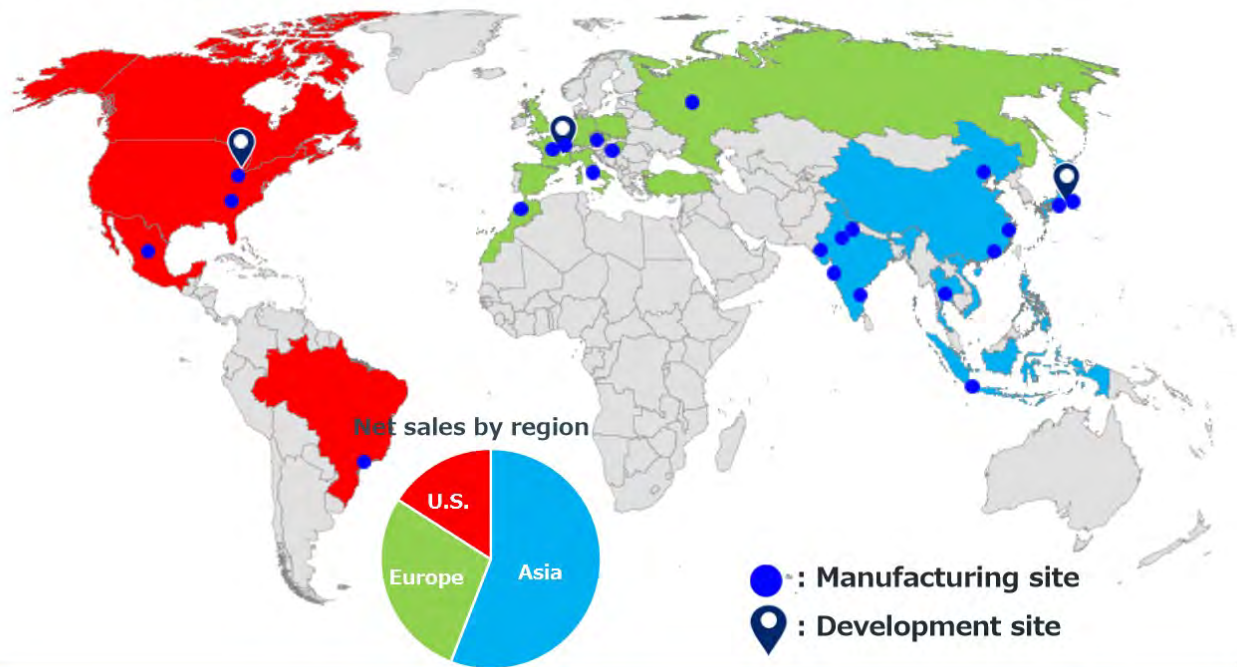
The high-end glass, and cover glass, already have the highest market share, and the high-end products will be even larger and of higher functionality in the future.

Demand will continue to grow from 2021 to 2025. The growth is expected to be twofold or higher.

In order to deal with this, in FY2022, from the beginning, we started mass production of the latest technology plant in China.

## Geographical coverage

- Global network that can provide high-quality products and services



The next slide shows the global geographical map of our sites.

The pie chart shows the breakdown of the region.

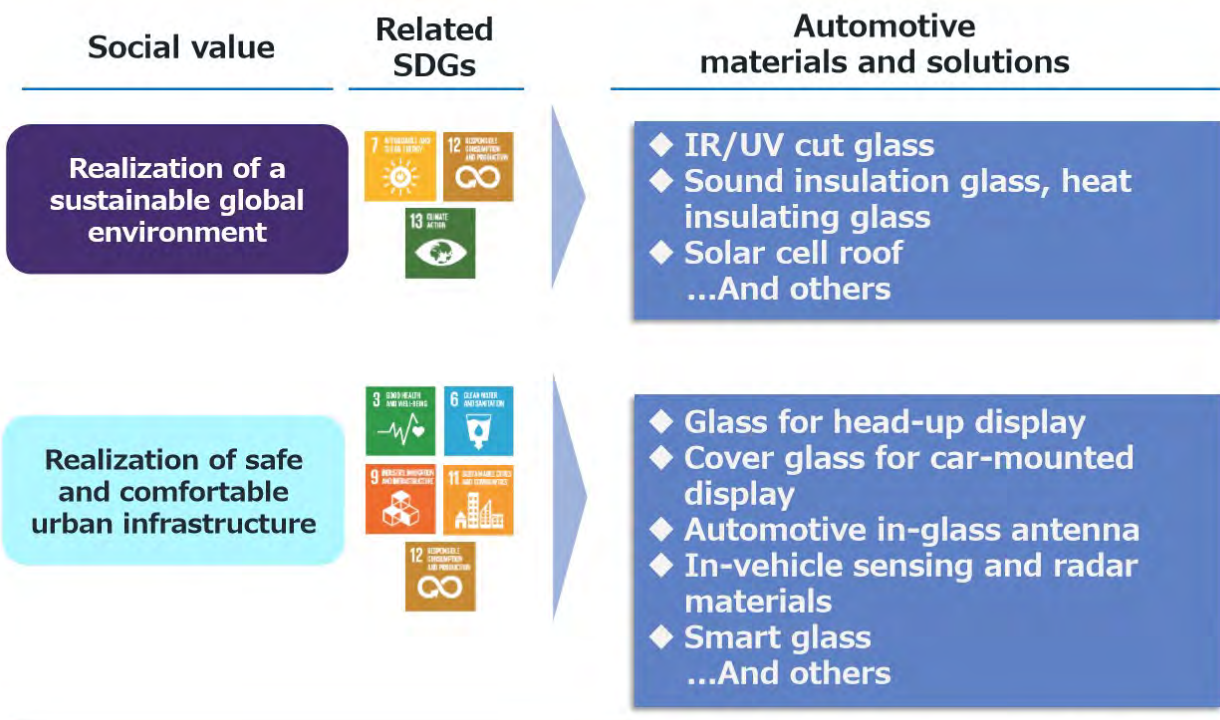
Asia, Europe, and the US, this is basically a 5:3:2 ratio.

These are not just manufacturing sites, but also, there are three development sites in three different regions.

The glass antenna is manufactured in three different regions as well. We have a global network, and we have this network contributes to a strong trust relationship with our OEMs and partners.

This is going to be the source of the development of new mobility businesses in the future.





Next, is sustainable products and technologies in the automotive segment.

For AGC Group, there are five societal values that we are focusing on. We are trying to address the societal issues.

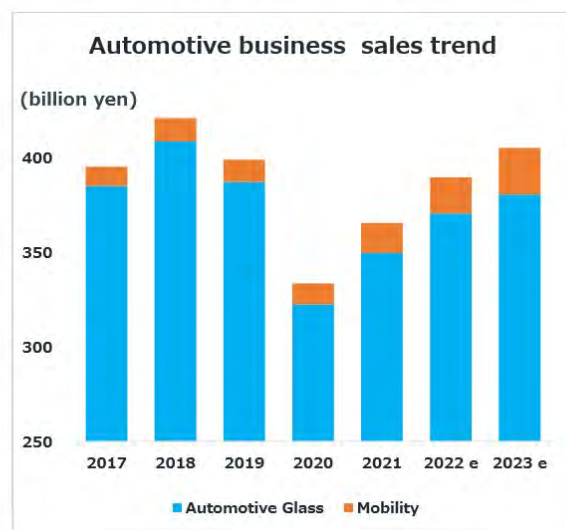
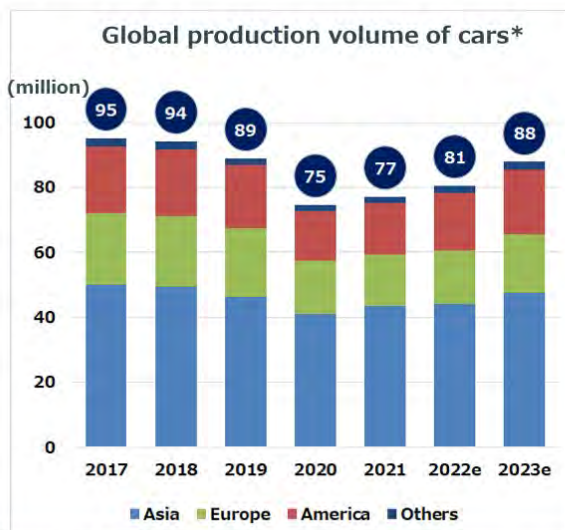
In the automotive business, we are specifically focused on the realization of a sustainable global environment and the realization of safe and comfortable urban infrastructure.

We have product services and technologies to address these.

We will continue to focus on high functionality products, and not only provide societal values but also provide economic values and expand profitability.

# Automotive production and sales trend of the automotive business

- Since 2020, the automobile production has decreased due to the impacts of COVID-19 and semiconductor shortages, etc. on the supply chain
- The automobile production is expected to return to pre-COVID level toward 2024, and automotive business' earning are expected to recover
- Mobility products (cover glass for car-mounted displays) are growing steadily



\*From data of IHS

On the next slide, you can see the overview of the business. This is the last slide of this section.

This shows the automotive production on the macro level and AGC's sales forecast.

To the left, you can see the global production volume of cars because of the semiconductor shortage and supply chain, which we are still struggling.

We believe that we will see a steady recovery, but we will have to wait until 2024 or later before the level goes back to the pre-COVID-19 level.

To the right, you can see the automotive business sales trend.

The blue part is automotive glass. This basically is linked to the car manufacturing volume. So, we expect some recovery, but we have to wait until 2024 or later to see this recover to the pre-COVID-19 level.

Orange is mobility. This is a strategic focus.

We have mostly cover glass and automotive mounted glass. This has not been impacted so much by the supply chain issues and is growing quite steadily.

Mass manufacturing will start from the China plant contributing to the growth of our net sales.

- Expand high-value-added products and improve the business portfolio
- Realize **continuous productivity improvements and cost reductions** and construct an optimal production system to **improve the profitability and asset efficiency** and reinforce the cash-generation ability



### Additional measures

- ✓ Review the sales price policy
- ✓ Reorganize the production system in Europe (Production capacity: About 30% reduction)

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Next, I would like to talk about our core business, the automotive glass business, and how to improve its profitability.

In the automotive glass, these two points that are highlighted here are the major challenges within the current mid-term plan.

The first is to expand high-value-added products. As I have explained earlier, high-functionality product sales have to be expanded, and efforts may be made toward that end.

For 2030, we want to increase this type of product twofold from the current level.

The second point is productivity and profitability improvement. We are trying to realize the profitability improvement and cost reductions in all of the different areas. Also, we are trying to reorganize our production capacity. This is steadily ongoing, but because of the shortage of semiconductors, there's been some supply chain confusion or chaos.

Also, there was an increase in raw materials and fuel, so productivity deteriorated. In the fourth quarter of 2021, we had to post impairment in Europe. And still, the business environment continues to be tough.

So, in the first quarter of this fiscal year, when we did the earnings announcement, we said that we have to revisit the pricing policy and also reorganized a production system in Europe, including a production capacity decrease. So, these additional measures are now unavoidable.

Based on this situation, toward the full-fledged improvement of profitability, we have now three pillars of revision of price policy, structural reform, and higher functionality.



For the short-term profitability improvement, we will revisit the pricing policy. This is needed so that we can regain the appropriate price level. For the short to midterm, we will continue to reorganize and optimize the manufacturing sites and closure of our Belgium plant, and other structural reforms in Europe would help cost reduction and productivity improvement.

Plant closure and headcount, this count is not something that can be done overnight. The closure of our Belgium plant will take until the end of 2023, which means that the impact will come a little bit later.

The third pillar, mid to long term, as I mentioned before, we will be focusing on the expansion of sales of higher functionality products in order to improve profitability.

However, this improvement, again, is not something that can be done overnight. We have to take advantage of the goal network, and step by step, we have to increase the ratio of high-functionality products.

As a result of everything, by 2025 for the automotive business, we want to achieve a ROCE of 10% or higher.

Now, I'd like to talk about the three pillars of the profitability improvement plan individually.

## Revise the pricing policy



- **The significant deterioration in the profit and expenditure situation is continuing** due to a sharp rise in fuel/raw material prices, COVID-19 and the stagnant production volume
- **We must review the sales price policy** in addition to improving the asset efficiency by reorganizing the production system, etc. to continue operations



- **Work hard to increase prices to an appropriate level**

First of all, the revision of the pricing policy.

I may be repeating myself, but with COVID-19 and the shortage of semiconductors, automotive production has been reduced. And also, raw materials cost has been increasing. So, we have been in a difficult situation in terms of profitability.

Structural reform, productivity, and cost improvements have been done, but we need to do additional measures.

In terms of immediate effect, they may not be sufficient. And especially, the profitability deterioration has been affected by the soaring raw material and fuel costs. So, we have to take immediate measures to have fast, highly-effective price policy revision is important for future profitability improvement.

We have been focusing on the pricing policy, but now we are going to refocus on increasing prices to an appropriate level, especially since we are starting with Europe for the negotiation for the price increase, where there is more impact.

But in other regions, we have already started negotiations as well.

## Structural reform initiatives



### Activities toward improvements in productivity and costs

- Continue and reinforce improvement activities on a global basis
- For North America, we are steadily implementing the improvement plan formulated in the event of an impairment loss (at the end of 2019)
- For Europe, we have been reducing personnel mainly in the head office of Europe and the plant in the Czech Republic since 2020  
Considering the current state, **we plan to close a plant in Belgium and an assembly site in Germany (by 2023)**
- Accelerate DX

### Activities toward the construction of the optimal production system

- Introduce high-efficiency equipment to expand high-value-added products  
**Streamline production by reducing old lines with low utilization rates and low productivity (Europe, North America, Asia)**
- For Europe, accelerate consolidation of production sites and production lines and **reduce the production capacity by about 30%\***

\*Compared with 2021

Next one, is the structural reform initiatives.

As you know, in North America, in 2019, we posted impairment loss and formulated an improvement plan back then, and we have been steadily implementing the plan. In this difficult situation, we are seeing some results.

For Europe, the demand has declined since 2020, rather, productivity improvement and cost reductions have been pursued and the Czech Republic plant has seen a reduction in the headcount.

In the first half of 2021, we have seen an improvement in profitability once. But then, the automotive production has declined since then. And because of fuel and raw material cost increases, we have seen a significant deterioration in profitability.

JPY18.7 billion impairment loss was posted at the end of 2021. And so, we have to take an additional profitability improvement plan.

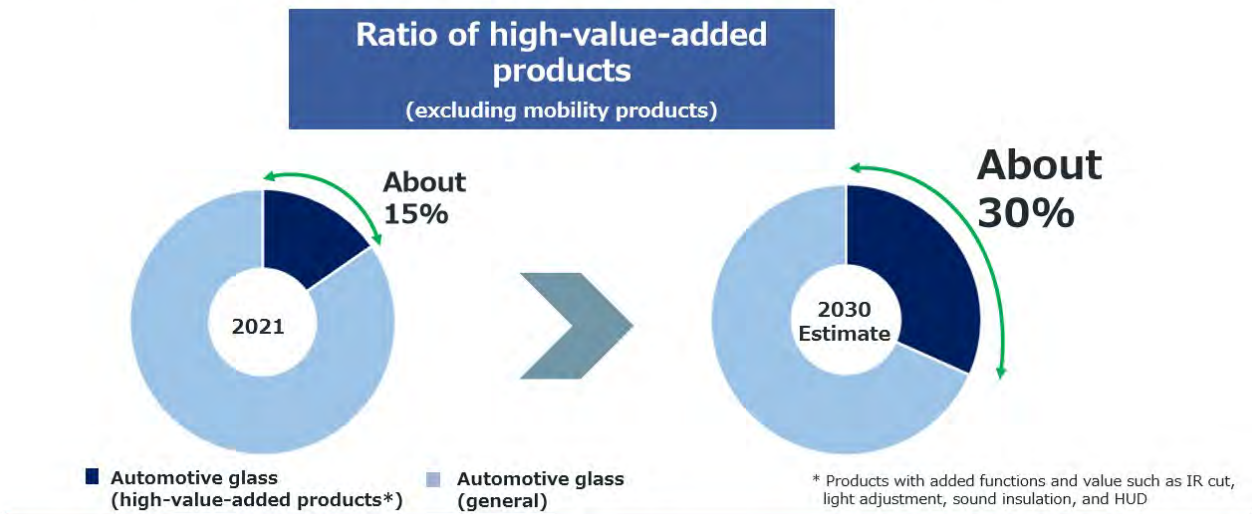


As we announced, the plant in Belgium and the assembly plant in Germany have been decided to be closed. But we are trying to establish a global network. We are going to introduce high-efficiency equipment, and at the same time, we would streamline the production and reduce the lines with low utilization rates.

Especially for Europe, we would add more closures of the production side to accelerate the consolidation of production sites, and we are going to reduce the production capacity by 30% approximately.

**Improve the operations portfolio by expanding high-value-added products** **AGC**  
Your Dreams. Our Challenge.

- Trusting relationship with global OEMs that keep evolving into ones with higher functionality
- Encourage development and deployment using the global network
- Improve profitability by improving the business portfolio



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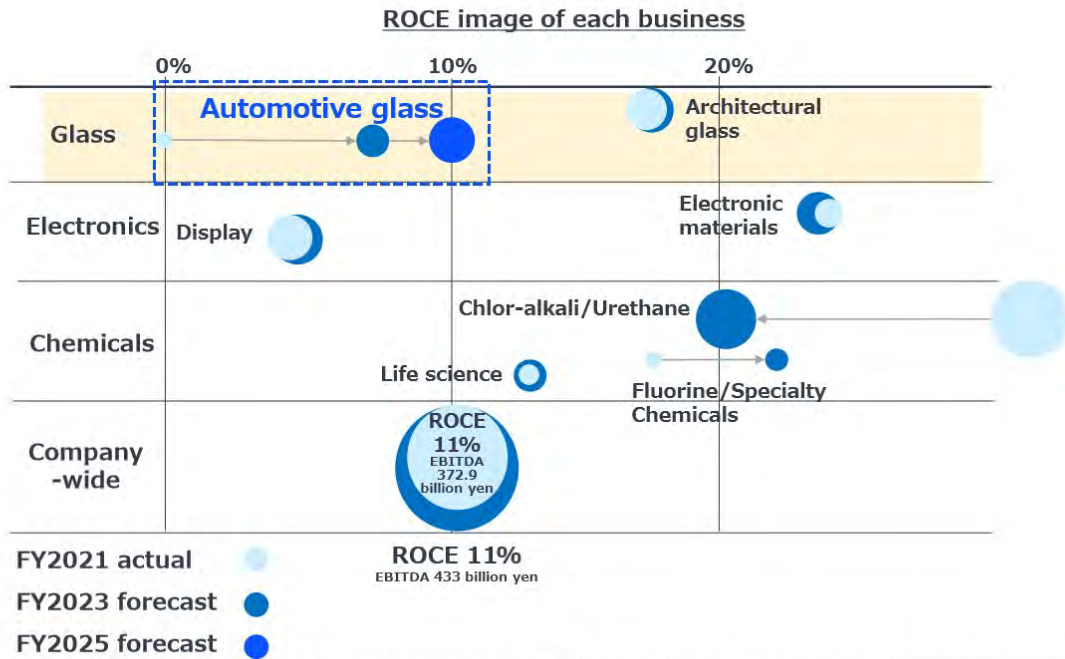
The third one is the improvement or expansion of high-value-added ducts.

In 2030, it is going to be doubled in terms of share of the mix so that profitability can be improved. But on the other hand, the volume increase of strategy would be revisited, and we should not go into the intensive or excessive price competition.

We are departing from low profitability, low value-added products. As I said, higher functionality products will be pursued, and global OEMs that will appreciate those products properly will have more relationships in terms of trust.

That will support our portfolio change to include more higher-functionality products.

# Asset efficiency of the automotive business



ROCE: (Estimated operating income of current period) / (Estimated operating asset balance at the end of current period). Company-wide operating income and the operation-specific operating income are after and before the common expense allocation, respectively.  
 Diameter of the circle (excluding company-wide): Size of EBITDA      \*: EBITDA = Operating income + Depreciation and amortization

Next is the asset efficiency of the automotive business for the AGC-wide portfolio operation.

As you know, business is a very difficult situation. The mobility, which we are counting on, is still being started up as a business. So, we're still in the stage of upfront investments. It is not contributing to asset efficiency improvement.

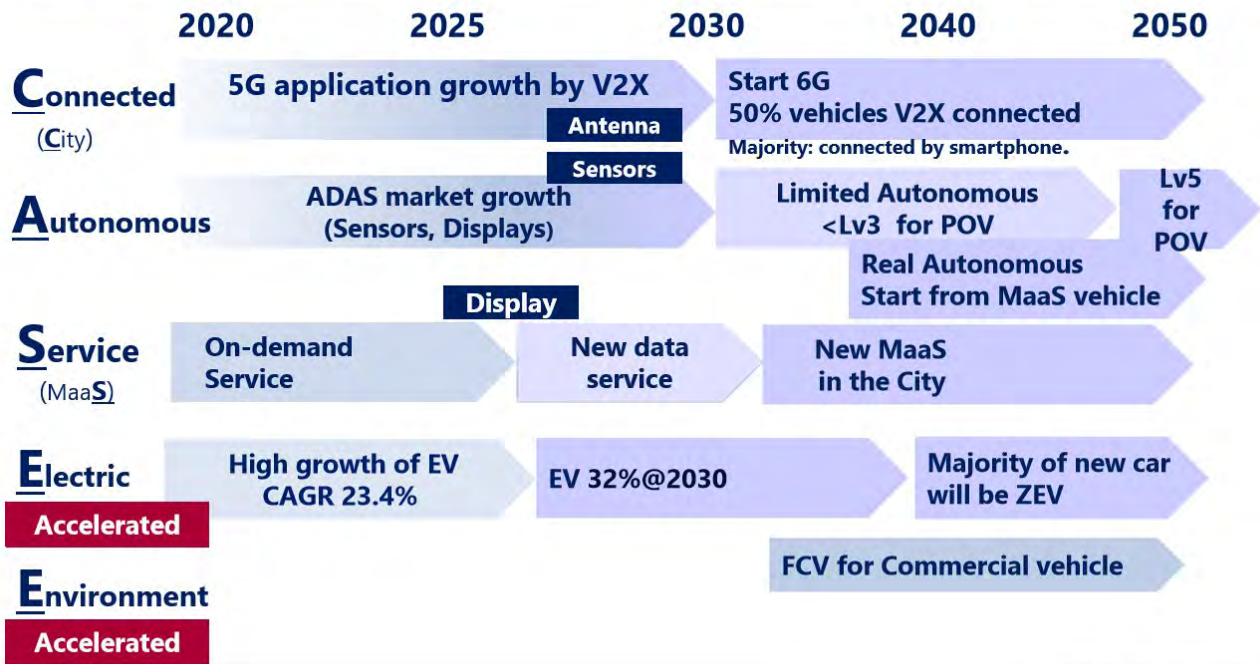
As I said, therefore, for the short to medium term, we need to take immediate action. For all improvement plans, we have already started implementation, and all of them are quite challenging.

The probability of realization is not that low in our gut feeling.

And so, through these measures, in 2025, we are going to target a ROCE of 10% or more.

# Coming of the CASE age

## Accelerating vehicle electrification and environmental measures



Next are the mid-to-long-term measures to realize the CASE era.

On this page, you can see the expansion and the progress in this CASE age. As I explained on the next page, in the automotive business, mobility, display, antenna, and sensors are the three pillars.

We're going to do the commercialization of these businesses.

The center of the display is car-mounted display cover glasses. They have been commercialized already, and the scale is increasing rapidly.

As for antenna production, of the CASE, C, connected, and A, autonomous, for these, are essential functions, and we are expecting more expansion in our business as well.

As for electrification of vehicles and environmental protection, they are accelerating much more than expected, as you know.

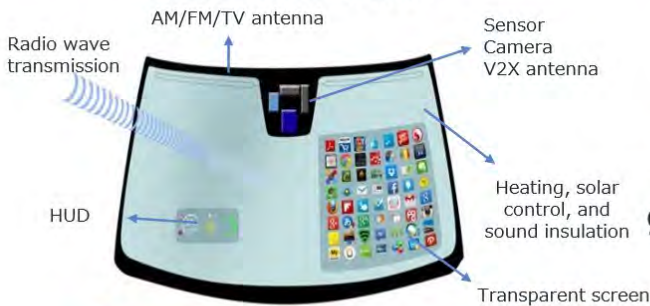
There are many opportunities for our business. With the electrification of vehicles, we have to capture the opportunity steadily, and we are taking action for that.

Sustainability-compatible products will be increased in sales, and we are going to also reduce GHG in order to be more environmentally friendly.



# Measures towards the mobility society and self-driving (three pillars of the mobility operations)

## Automotive glass



**Provide not only materials but also solutions by adding display and communication functions to glass, designing space for sensing devices, etc.**

### Display

#### In-vehicle display cover glass



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

### Antenna

#### Automotive in-glass antenna compatible with 5G



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

### Sensor

#### Cover glass for LiDAR Window design for sensing devices



Design-in safety and seamless integration with existing vehicle body design in installing LiDAR into a vehicle

Next one, please. On this page, you can see the mobility society and self-driving AGC initiatives toward them.

With the CASE expansion, glass, especially windshield glasses, the function could be higher. Why is glass in the first place? Especially in the front part at the upper side, there are glasses in the vehicle, and the nature of the glass, the transparency, and with our ability and durability and transparency.

In terms of these, they are quite perfect.

And also, in the laminated glass, inside the glass, you can have the opportunity to put in various functions so new businesses can be created for an automotive mobility strategy.

As you can see at the bottom, there are three pillars for AGC.

The in-vehicle display cover glasses have been commercialized already, and that is the display business, but antenna and sensors are the other two focal points.

As for antennas, and sensors for connected and automated driving, they are essential. The front glass and rear glasses are the most appropriate place where these can be inserted.

So, glass, and in-glass antenna design capacity, mass production capability, and a robust IT system will support us to expand the business.

In terms of profitability for display, a new plant in China has just launched this year. And as for antenna sensors, the market expansion still has to wait a bit more. So, the contribution to profitability in terms of mobility is not until 2025 or later.

The demand for **sunroofs using sound insulation glass, heat insulating glass, and smart glass** is expected to increase in addition to conventional high-value-added products\*

### 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.

### 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.

### Smart 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.

\* Products with added functions and value such as IR cut and HUD

Now, converting to EV.

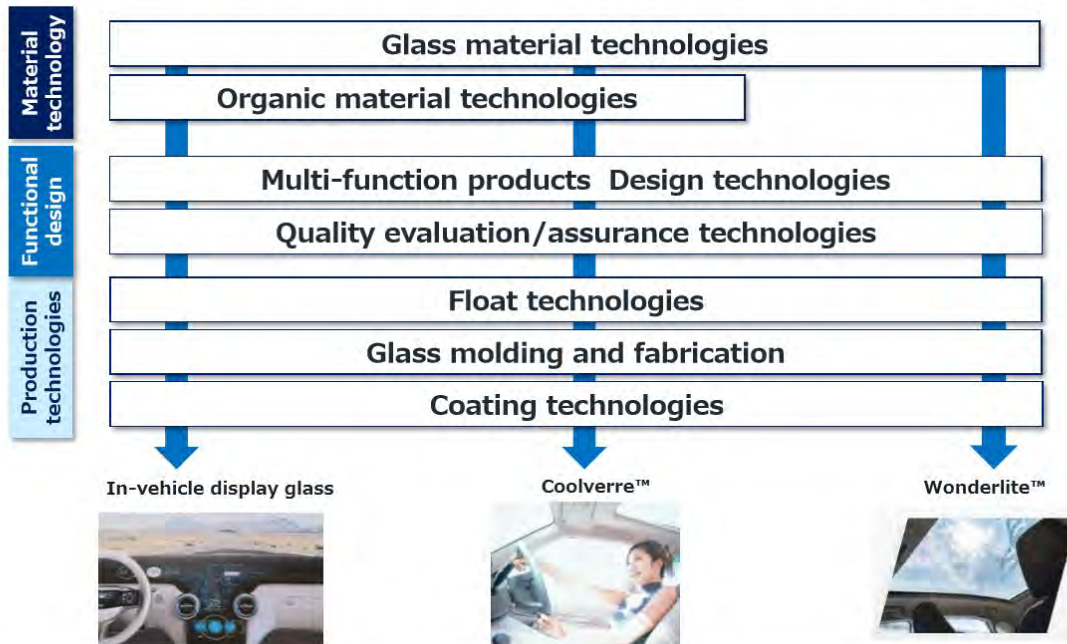
As we see the conversion EV, the sound insulation, low emissivity, and smart glasses are expected to be increased as higher function products.

There are inquiries from customers, especially the sunroof using heat insulation and smart glasses, are actually inquired more from the customers, so we can expect further expansion.



# Comprehensive technological capabilities

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



The last one is the automotive business strength AGC Group's technological strengths, which is the source for automotive business expansion.

I would like to also cite some examples of the products as well.

The strength of AGC is material technology, functional design, and production technologies. By combining all these, we can come up with differentiating products. The comprehensive capabilities where you see is not just glass material technologies, but organic materials, technologies together with inorganic material technologies and material technologies as a whole is the basic point.

In the automotive business, coating and functional membranes, and multifunction products, design technologies are used, and also quality, evaluation, and assurance technologies from covering from design to production can be also used to have functional design.

Also, stable production of high-quality products can be provided through production technologies. Also, mass production and unique production technologies have been polished.

By combining those three core technologies, we have been offering high-function technologies that have been required by the market.

So let me just explain three examples today.

**In-vehicle display cover glass**

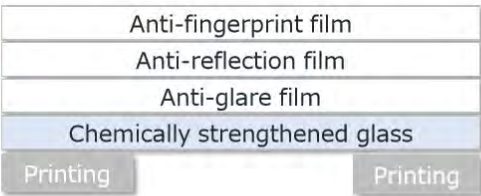
**Strong and Shiny**

**Add value to interior space in terms of safety, functionality and design!**

**In-vehicle display cover glass using chemically tempered glass that realizes unprecedented new value in vehicle interior parts with high strength and texture**

- It has higher strength and safety than conventional glass and contributes to the realization of a safe and comfortable environment.
- The high scratch resistance and the unique surface treatment technology keep the glass surface clean and glossy making the display easy on the eyes and easily viewable. The pleasant-to-the-touch surface also helps improve the operability by fingertip.

**Structure of general in-vehicle glass for display**



Next, please. The first is the in-vehicle display cover glass.

The in-vehicle display cover glass is a result of the combination of all technological capabilities where you see the hot bend technologies in the automotive business. You heat up, bend, and mold the glass. That's the technology, first.

Then, the glass chemically tempering technologies in Electronic Materials.

Also, organic chemical technologies that have been nurtured in the Chemicals business, are the coating technology, the multilayer coating technologies, and production technologies. That's the last one.

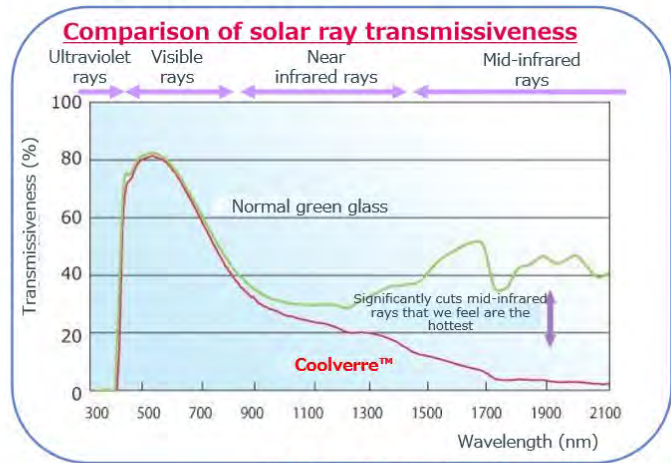
So, the display cover glass with large-scale and complex figures can only be produced by AGC, and in a more increasingly complex market, we can take advantage of the strengths of AGC further.

Coolverre™



Cuts both infrared rays and ultraviolet rays to improve comfort in the vehicle

- Efficiently cuts **mid-infrared rays**, which we feel are the hottest among solar rays, to reduce **sizzling heat** caused by direct sunlight.
- Prevents temperature rise in the vehicle to improve comfort and **fuel efficiency**.
- It also cuts ultraviolet rays, which cause aging of skin, by about 99%.
- It has radio wave transmissiveness.



Next is the infrared cut glass.

Between two sheets of glass, the infrared cut agent is inserted and the special membrane is attached to the surface. You can cut infrared and ultraviolet rays, but radio wave transmissiveness is still maintained.

You can reduce the temperature within the vehicle by 10 degrees to 15 degrees, so you can increase the efficiency of cooling. And so, the range of the EV can be extended as well.

By combining the three core technologies, we have been able to come up with this product as well.



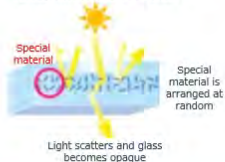
## Wonderlite™ Dx

Structure of laminated glass that sandwiches a special film  
The dimming mode (opaque state) mitigates the brightness of sunlight coming in, and the transmission mode (clear state) creates a sense of openness

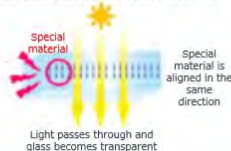
Realize a comfortable in-vehicle space according to the scene

- World's fastest switch control
- Cuts ultraviolet rays by 99% in both dimming and transmission modes
- Cuts ultraviolet rays to protect the skin of occupants, and contributes to reducing CO<sub>2</sub> emissions by reducing cooling loads

Since a special material is arranged at random, light from outside scatters and glass becomes opaque, which reduces brightness



If a voltage is applied in the film, a special material is aligned in the same direction and light from outside can pass through the glass, so glass becomes transparent and you can enjoy a space with a sense of openness



The next one, is the last slide for me.

More recently, we have been receiving more inquiries. The light control and smart glass with the sunroof, this has been used, and Wonderlite is the name of the product.

You can control the light effectively.

Between the two sheets of glass, a special film is inserted. So, this is a paired and laminated glass.

You can switch over between the clear and opaque mode. You can always enjoy a sense of openness and realize comfortable in-vehicle space.

You can actually cut 99% of the IR and UV in both modes, and you can also contribute to CO<sub>2</sub> emission reduction as well.

That's all from me.

We are in a very difficult position as an automotive business, but through the three improvement plans that I have explained, we are confident that we will be able to recover, and the mobility business can be expanded together with that so that we can transform our business to the business that can grow in the future.

Thank you for your attention.

[END]