IR DAY 2022

(Automotive)

AGC Inc.

June 13, 2022

Your Dreams, Our Challenge

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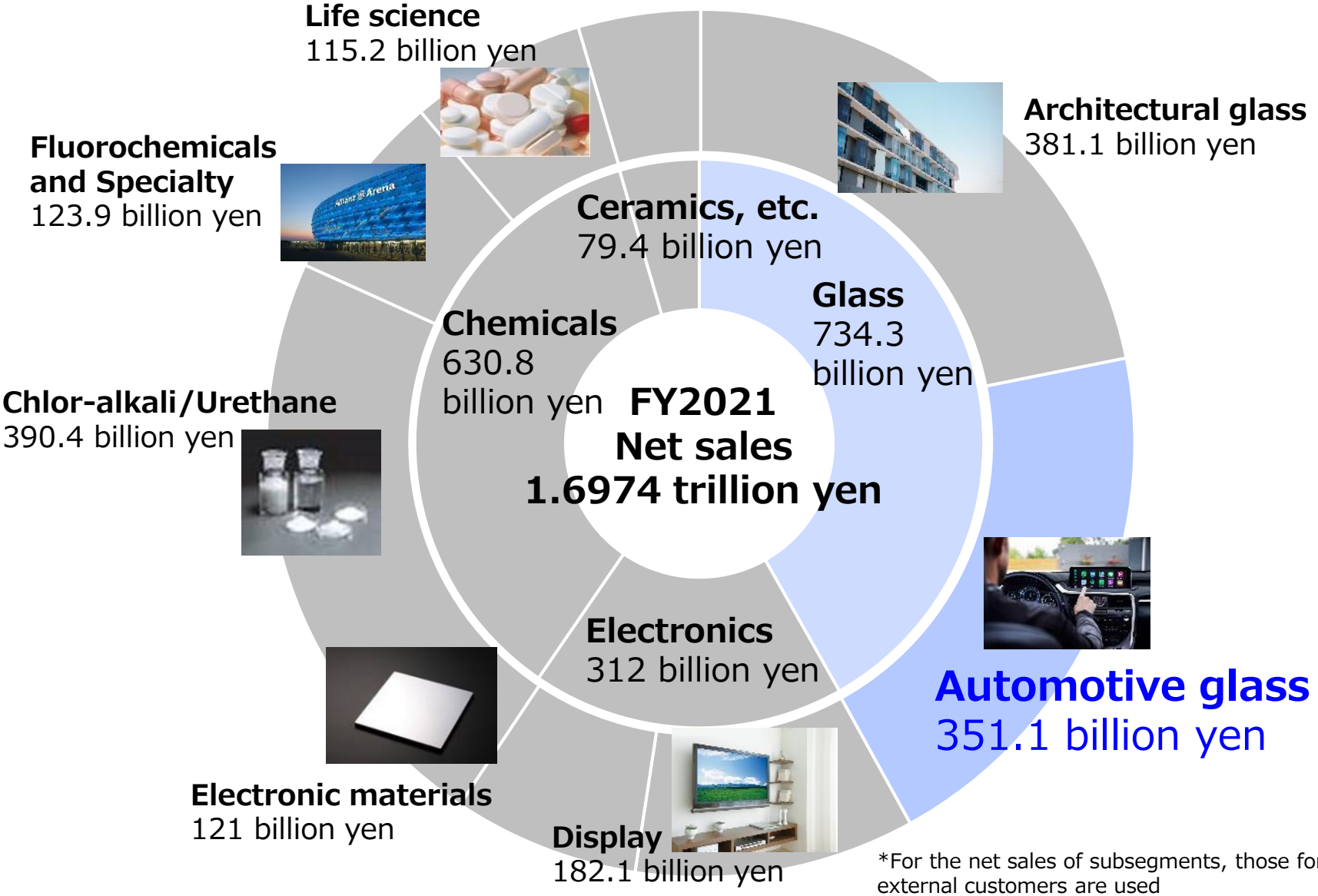
Automotive glass business in the AGC Group



*For the net sales of subsegments, those for external customers are used

Vision, Mission, Goal

■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

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

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- 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 technologiesl

99% UV cut and IR cut glass

Realized 99% UV reduction and IR reduction with the world's first door glass by developing a high-function UV & IR absorbent and high-quality coating technology.

Wind shield with a transparent conductive oxide film

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.

Smart glass

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.

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_2 emissions.

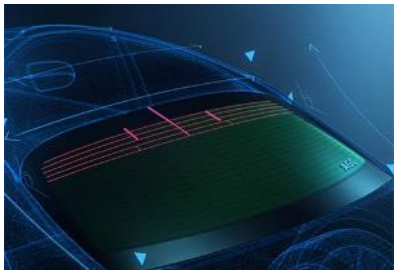
Sound insulation glass

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.

Glass for HUD

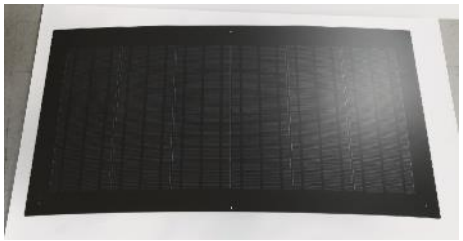
Project information of the speedometer, navigation information, etc. to the glass. Improve safety by reducing driver's eye movements while driving.

In-glass antenna



Integrate an antenna with glass. Improve the durability without compromising the vehicle design. Compatible with the connected mobility society.

Solar cell roof



Build a solar panel in curved glass with high transmissiveness. Supply electricity to the in-vehicle fan and the battery to drive them.

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

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- **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

Geographical coverage

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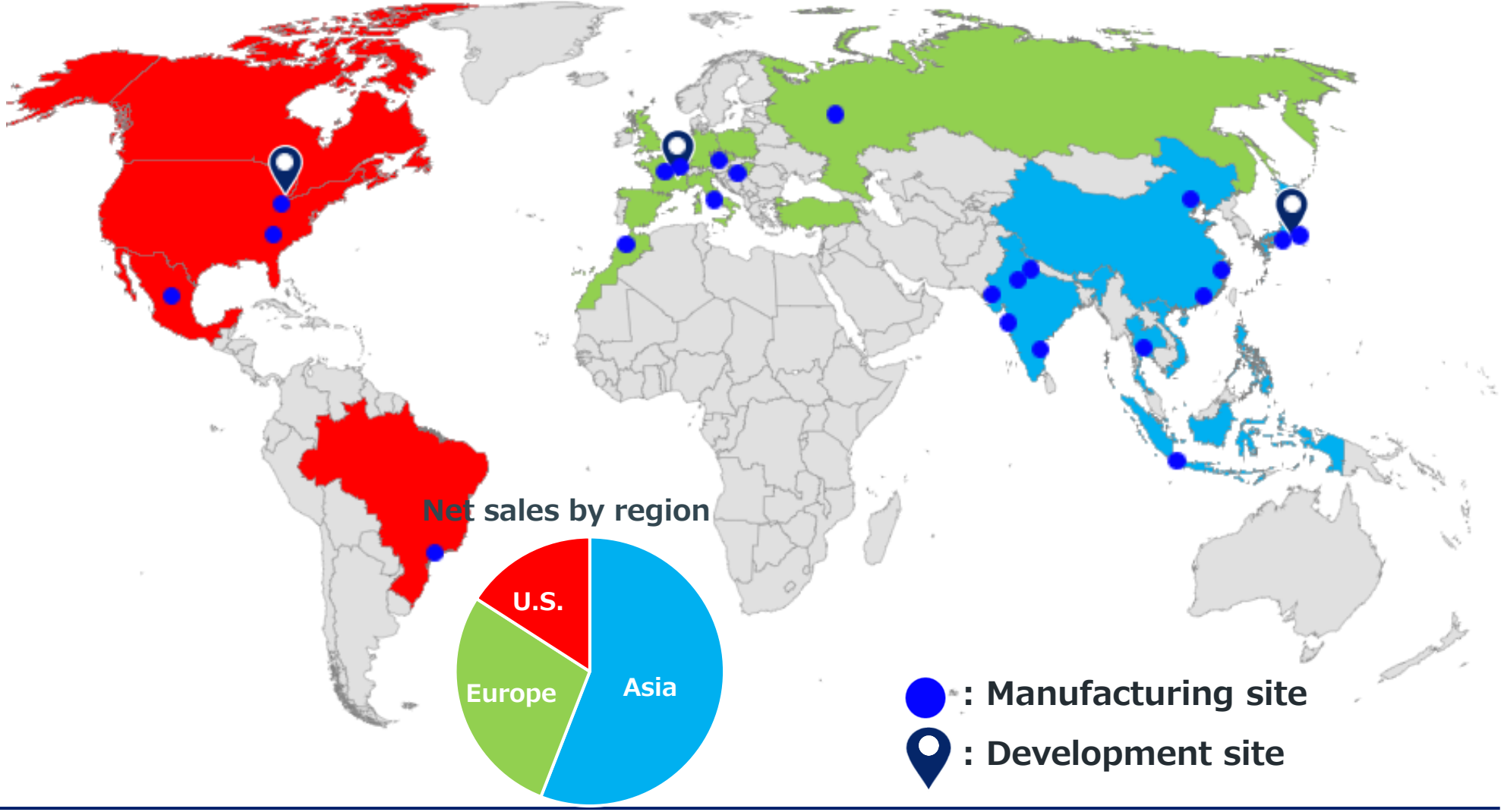
■ Global network that can provide high-quality products and services

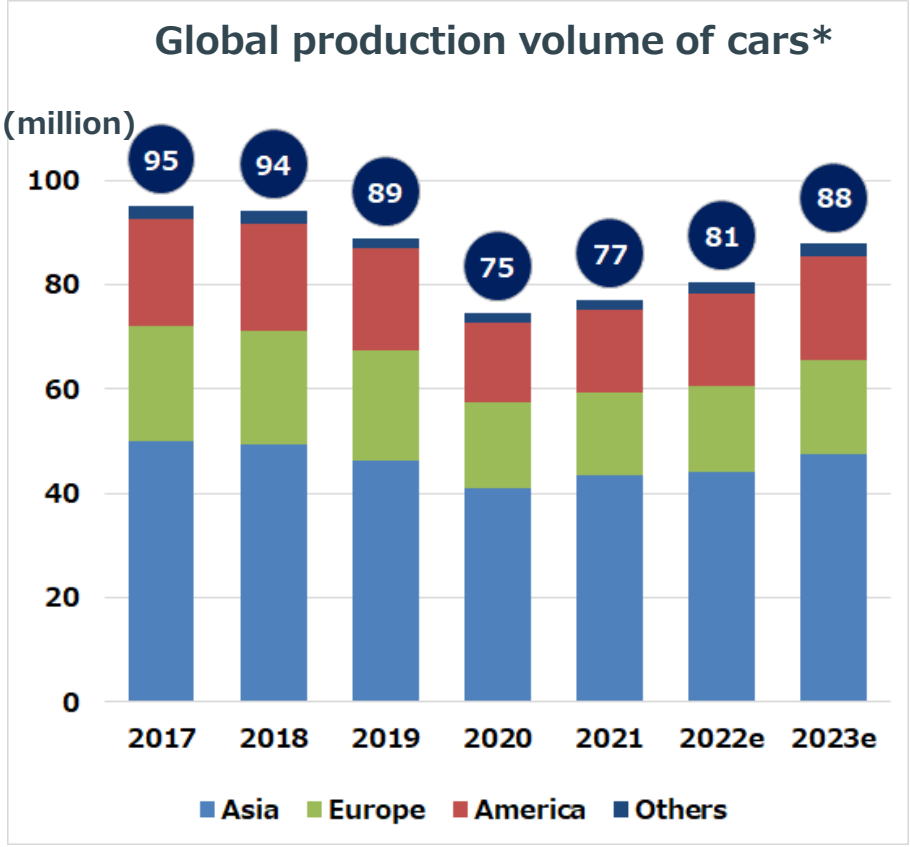


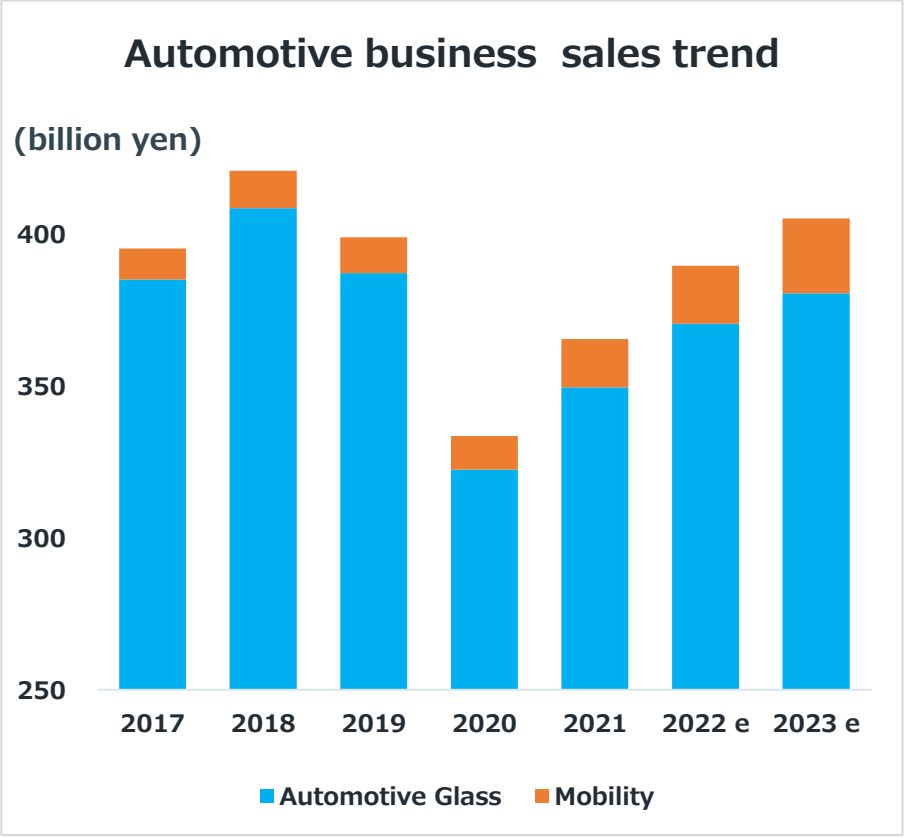
Social value generated from business

Social value	Related SDGs	Automotive materials and solutions
Realization of a sustainable global environment		◆ IR/UV cut glass ◆ Sound insulation glass, heat insulating glass ◆ Solar cell roof …And others
Realization of safe and comfortable urban infrastructure		◆ Glass for head-up display ◆ Cover glass for car-mounted display ◆ Automotive in-glass antenna ◆ In-vehicle sensing and radar materials ◆ Smart glass …And others

Automotive prodiction 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

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Main issues facing the automotive business

- 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

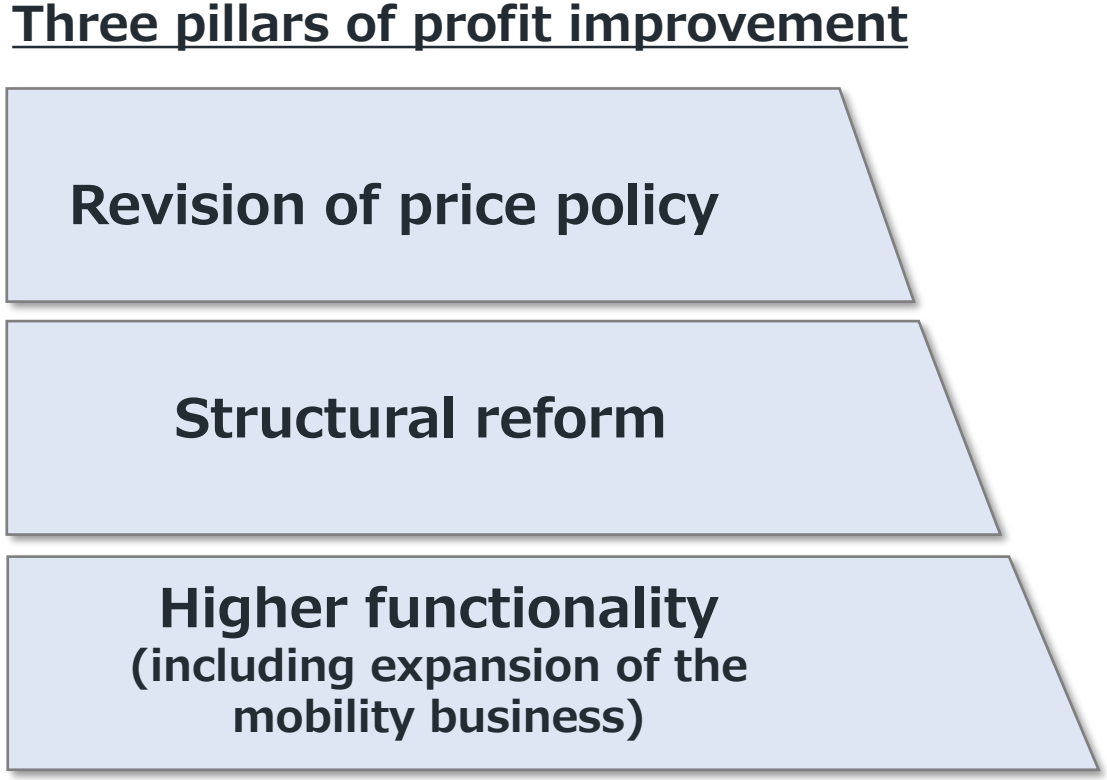
Additional measures

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

Profit-improvement measures for the automotive business

- Thoroughly and globally revise the price policy of the automotive glass business
- Promote profit-improvement measures including structural reform
- Focus on high-function/high-value-added products without aiming to expand the sales volume

Three pillars of profit improvement



Achieve ROCE of 10% or more in 2025

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**

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

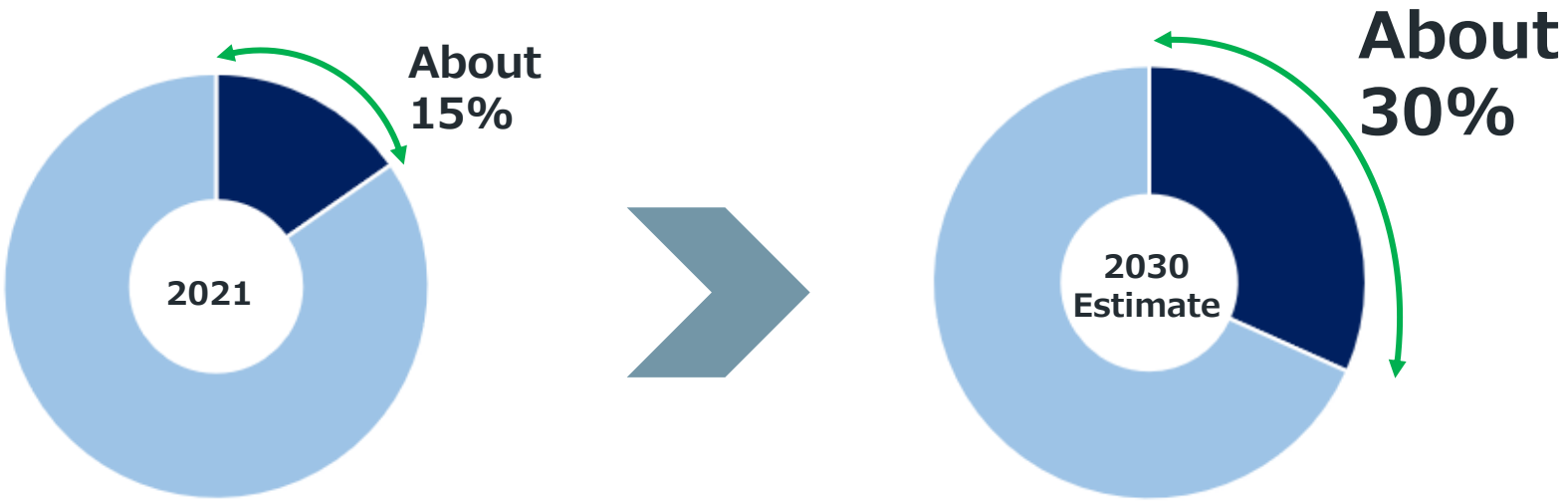
- **Introduce high-efficiency equipment** to expand high-value-added products
  Streamline production by reducing old lines with low utilization rates and low productivity (Europe, North America, Asia)
- For Europe, accelerate consolidation of production sites and production lines and reduce **the production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

*Compared with 2021

Improve the operations portfolio by expanding high-value-added products

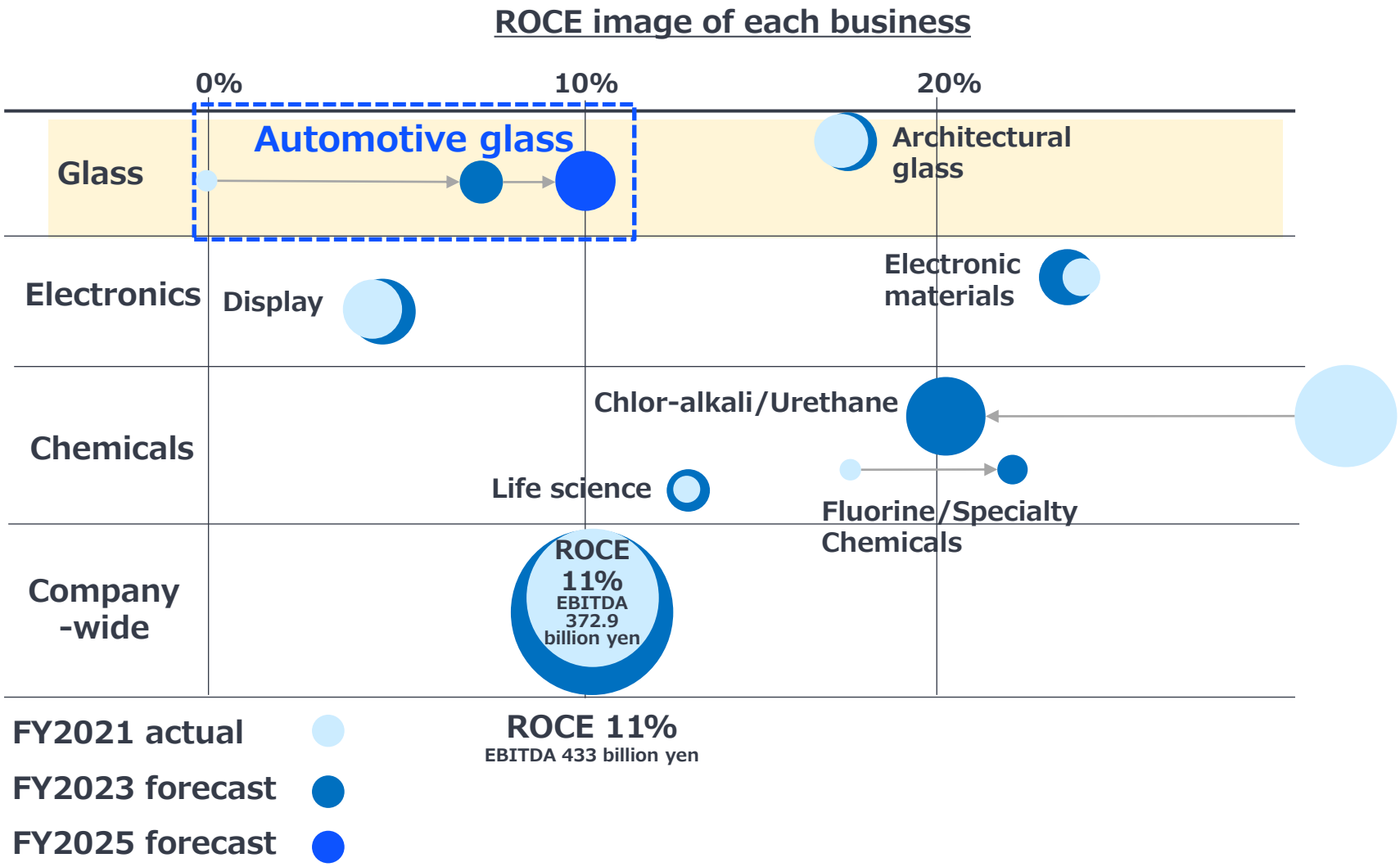
- Trusting relationship with global OEMs that keep evolving into ones with higher functionality
- Encourage development and deployment using the global network
- Improve profitability by improving the business portfolio

Ratio of high-value-added products
(excluding mobility products)



* Products with added functions and value such as IR cut, light adjustment, sound insulation, and HUD

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

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Coming of the CASE age

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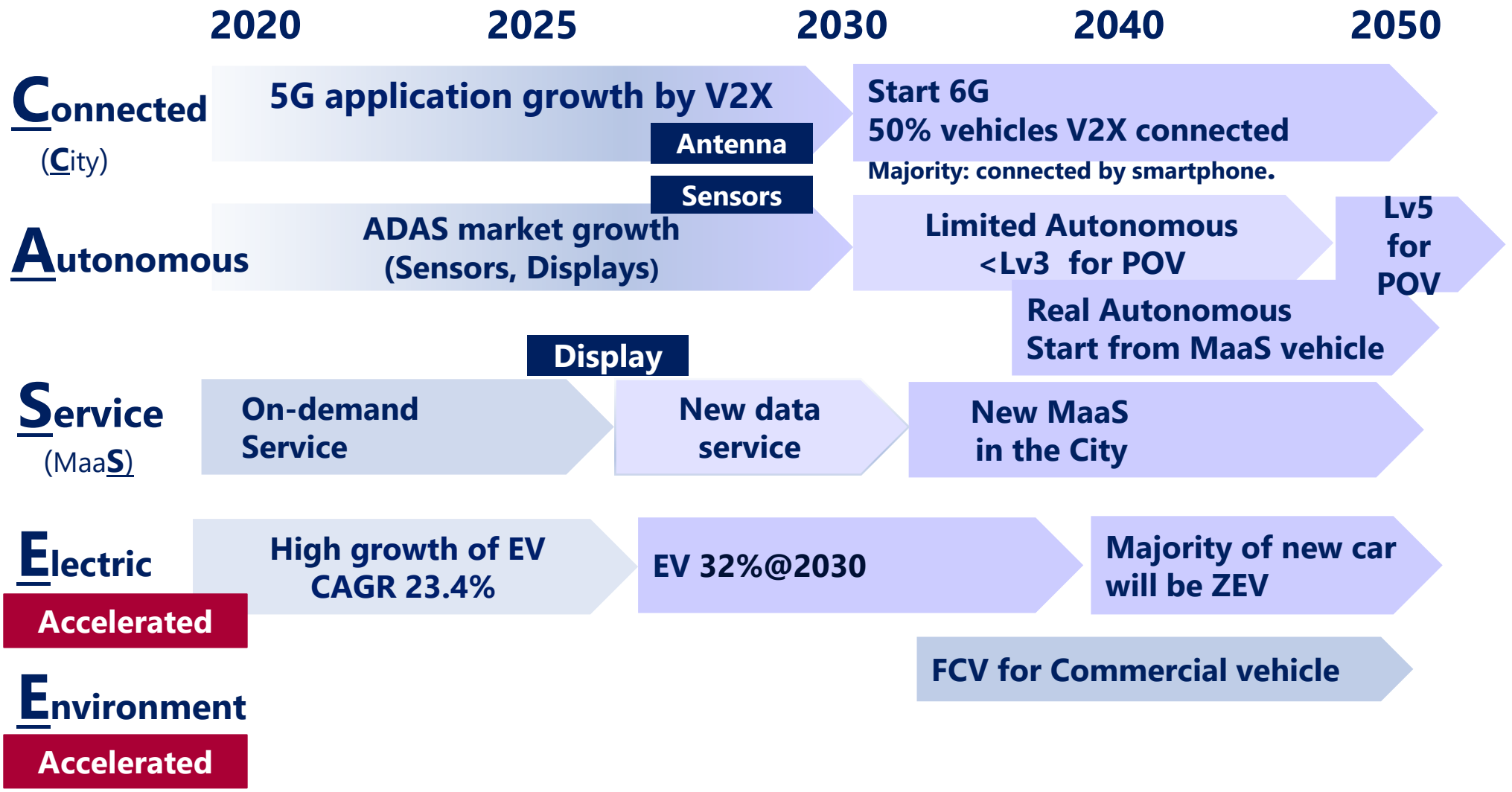
Accelerating vehicle electrification and environmental measures



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

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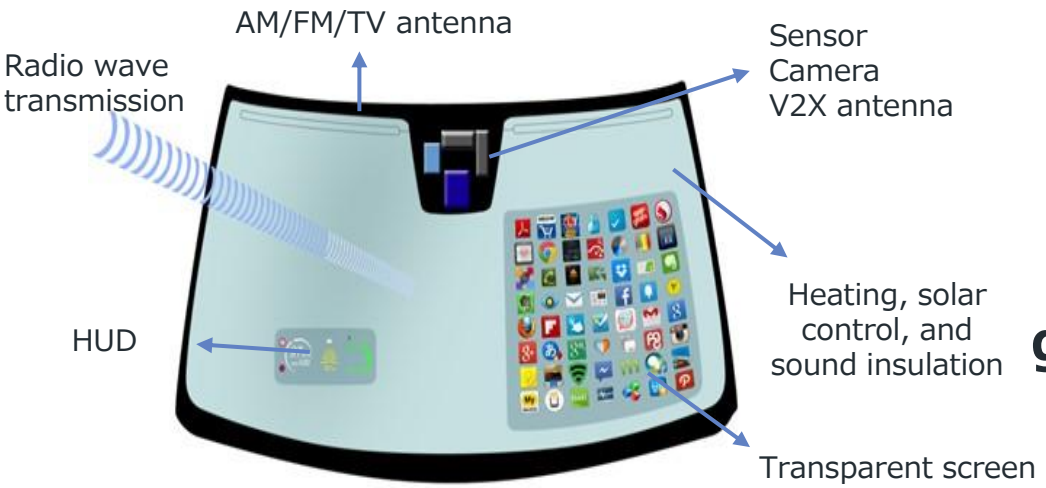
Automotive glass



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

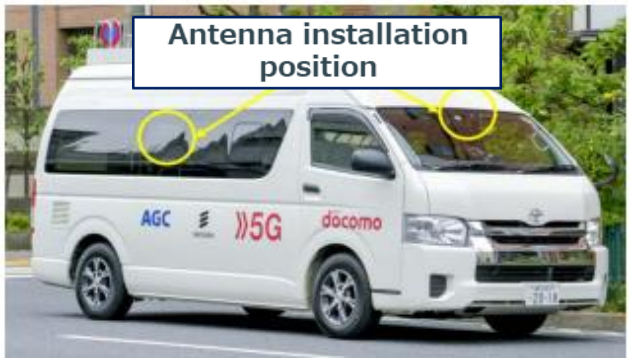
Display

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

Further expansion of high-value-added products by converting to EV

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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_2 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

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Comprehensive technological capabilities

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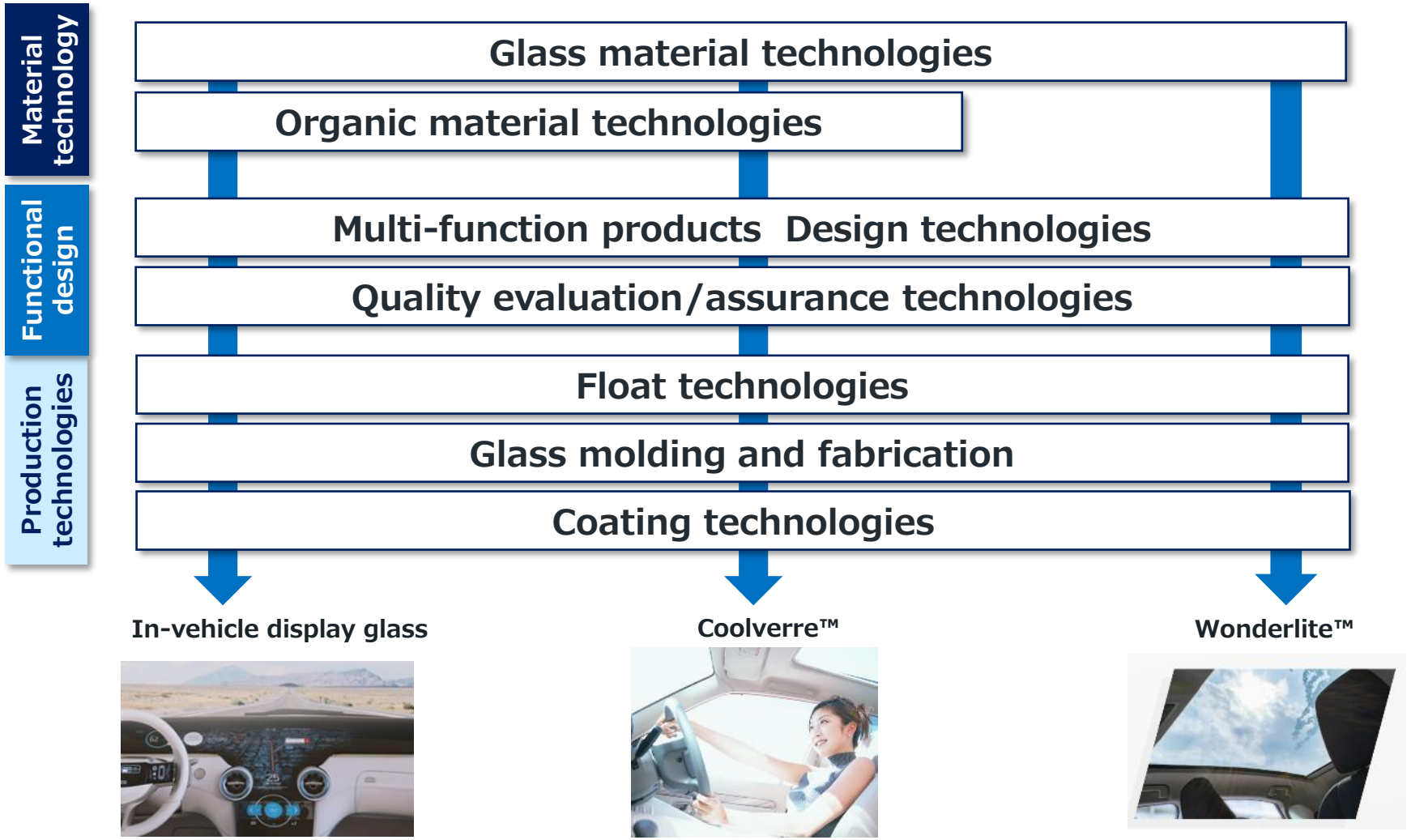
- Differentiate products with unique materials and solutions combining organic/inorganic material technologies and common basic technologies



Unique materials and solutions generated from total technological ability

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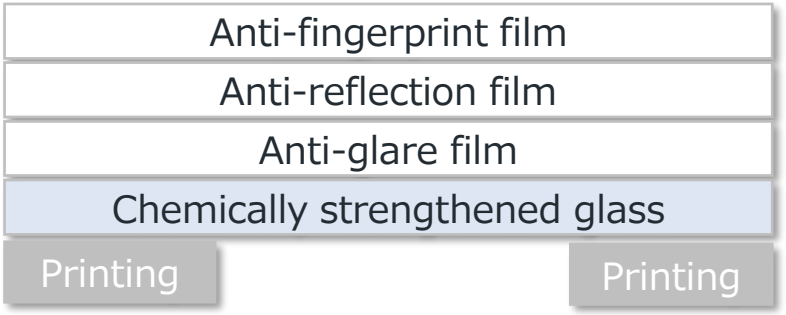
In-vehicle display cover glass

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



Unique materials and solutions generated from total technological ability

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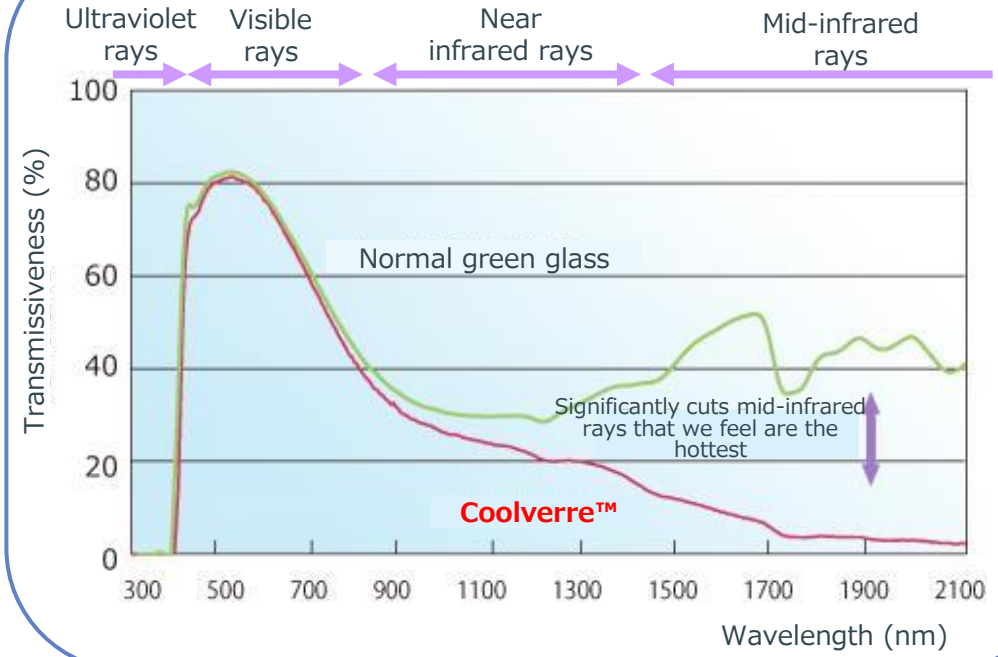
Coolverre™

Coolverre®
赤外線＆紫外線カットガラス

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.

Comparison of solar ray transmissiveness



IR cut agent (heat absorption type)

Knead IR (infrared ray) cut agent in the interlayer to effectively cut IR.

Unique materials and solutions generated from total technological ability

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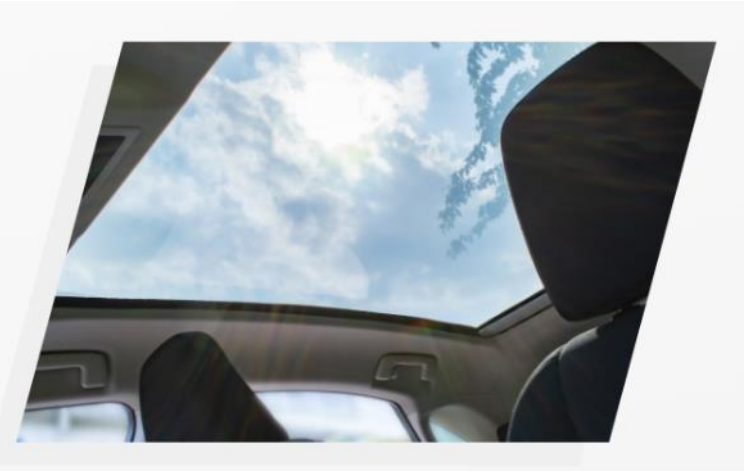
Wonderlite™ Dx

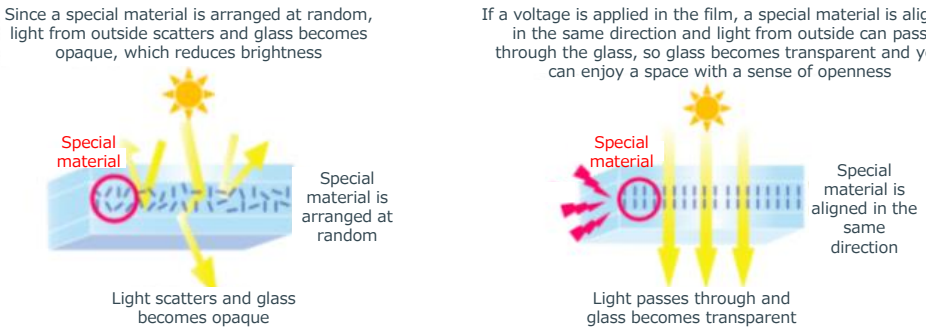
Structure of laminated glass that sandwiches a special film

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_2 emissions by reducing cooling loads





Appendix

AGC plus-2023
Main issues of Automotive Company

	Operation	Main issue	Direction
Strategic business	Mobility	- Surely grasp business opportunities in response to market changes because of CASE - Start mass production of in-vehicle display glass in China to contribute to revenue	Accelerate growth more
Core business (es)	Automotive Glass	- Expand high-value-added products and improve the operations 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-creation ability	Accelerate structural reform

Automotive glass Introduction of main products

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	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.
	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.

Mobility market trends and AGC strategy

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Market

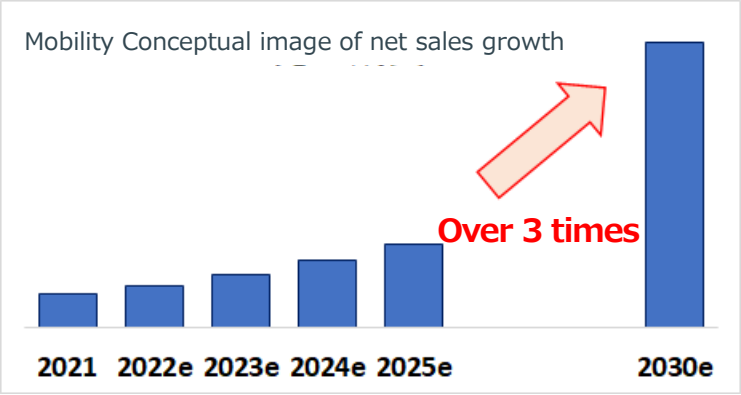
Changes in the automotive industry represented by CASE are steadily proceeding

- **Connectivity (5G): The market is assumed to start developing around 2025**
- **Autonomous: Level 4-5 is expected to start developing based on MaaS vehicles**
- **Electric and Environment: Accelerate social requirements from the viewpoint of SDGs**

Basic strategy of AGC

- **Focus on the strategy of three pillars**
- **Make the maximum use of the strengths as a total glass supplier**
- **Reinforce the growing strategy operations**

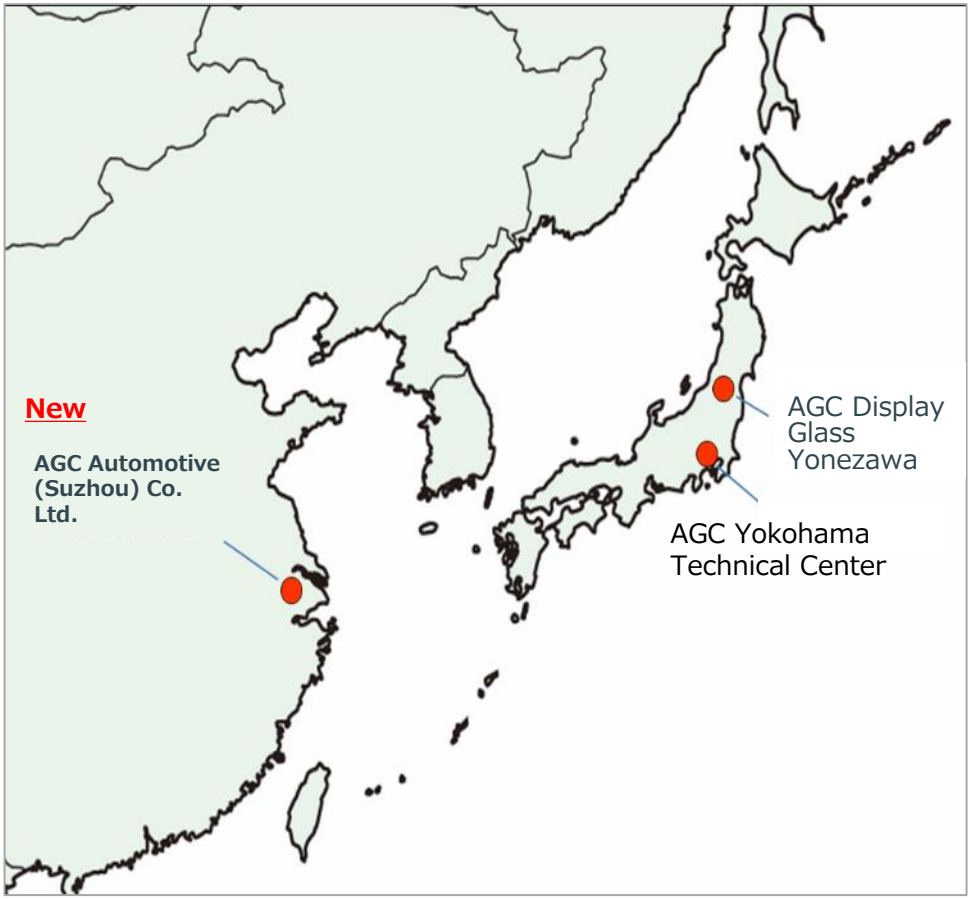
Full-scale contribution to profits will start in 2025

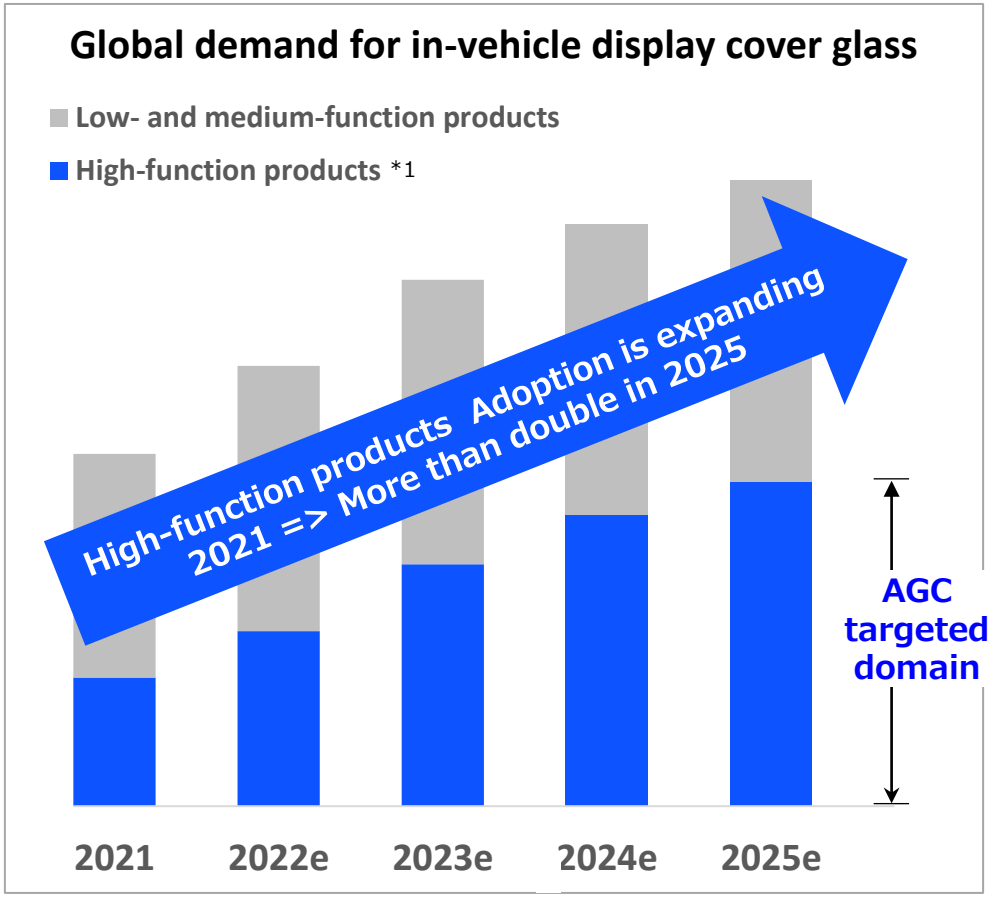


AGC mobility “Three pillars”

Antenna	Sensor	Display

In-vehicle display cover glass Site deployment and demand





Establish a production site in China
Start mass production in 2022

AGC: World top share*2

*1 Realize high safety thanks to superiority in terms of durability with the use of aluminosilicate glass
Including curved products, etc.
*2 On a sales basis; from our survey

Cases of glass antenna demonstration experiments

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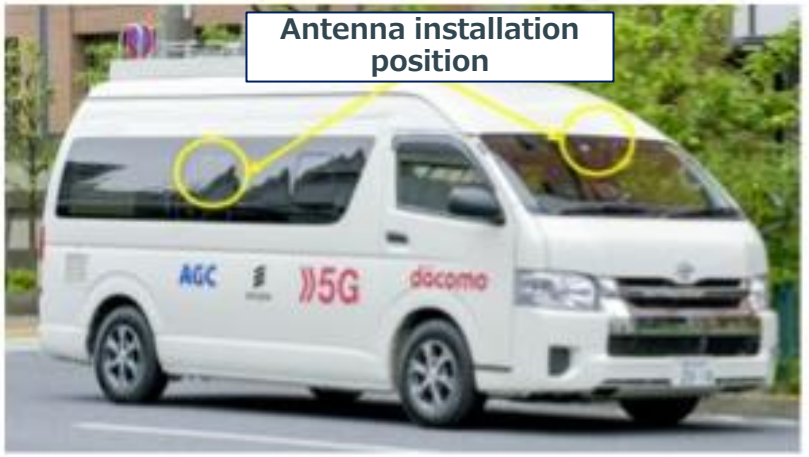
July 25, 2018
Succeeded in 5G communication with vehicle in-glass antenna for 5G connected cars

Realized ultra-high-speed communication of 8 Gbps with a high-speed vehicle using an antenna compatible with the 28 GHz band for the first time in the world

https://youtu.be/HxSEsHbklss

May 29, 2019
Succeeded in communication with glass antenna for a 5G terminal compatible with the 28 GHz band

-Realized 5G high-speed communication in doors and buildings



https://youtu.be/j0RY-o8rYXs

Constructed a system to develop automotive in-glass antenna with three global pillars

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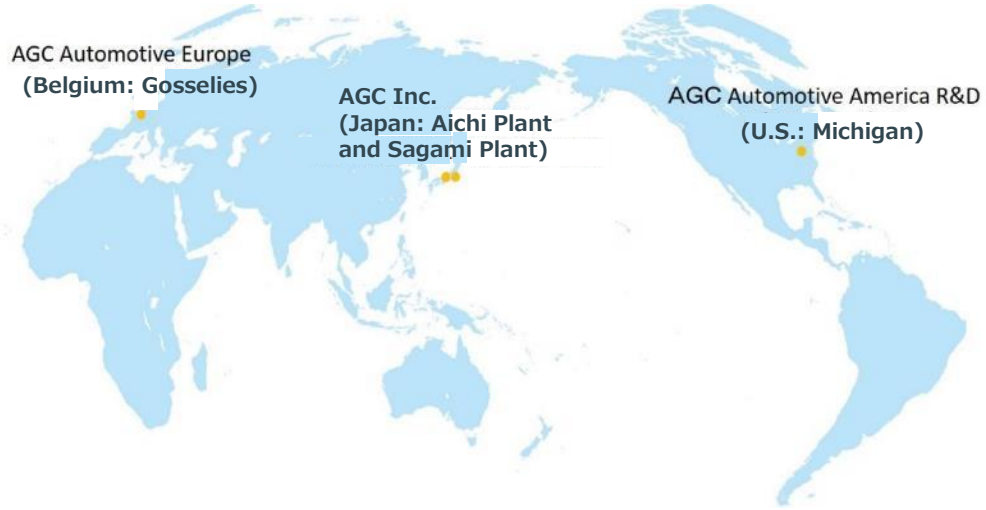
Industry's first!

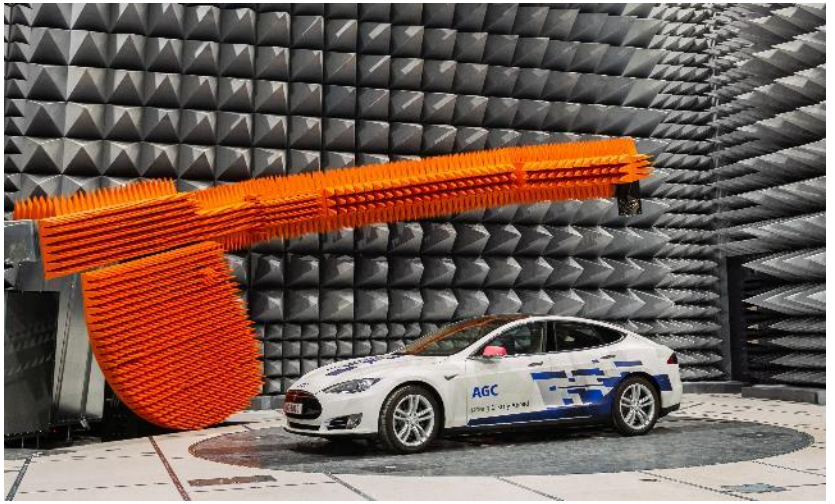
Antenna development system using three global pillars

Acceleration of development of next-generation connected antennas

AGC has been leading the industry in research, development, and manufacturing of automotive glass antenna for over 40 years.

We have established a system to globally support customers' development activities and accelerate the development of antennas compatible with connected vehicles in the age of the IoT!





http://www.agc.com/news/detail/1198953_2148.html

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END

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