



# AGC Integrated Report 2022

For the Year Ended December 31, 2021

**AGC**  
Your Dreams, Our Challenge

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This section provides the basic information needed to understand the AGC Group's corporate value enhancement initiatives.

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From their respective standpoints, President & CEO Yoshinori Hirai, CFO Shinji Miyaji, and CTO Hideyuki Kurata explain the long-term management strategy for achieving Vision 2030.

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Taking a long-term perspective, we outline our progress under the medium-term management plan, **AGC plus-2023**, which is advancing us toward realizing Vision 2030.

**Reporting Scope** (report issued in June 2022)

**Reporting Period**  
January 1 to December 31, 2021

**Reporting Organizations**  
AGC Inc. and its 206 consolidated subsidiaries in and outside Japan

**Principal Expressions and Their Scope**  
"The AGC Group" refers to the abovementioned reporting organizations. "AGC" refers to AGC Inc. on a non-consolidated basis.

**Reference Framework**

In preparing this report, the International Integrated Reporting Framework advocated by the Value Reporting Foundation and the *Guidance for Collaborative Value Creation* published by the Ministry of Economy, Trade and Industry have been used as references.



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Here, we focus on initiatives that are cementing our management foundations.

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This section comprises a discussion between Yasuchika Hasegawa, who served as chairperson of the Board of Directors until March 2022, and Yoshinori Hirai, president & CEO, as well as messages from Hiroyuki Yanagi, the former chairperson of the Nominating Committee, and Keiko Honda, the former chairperson of the Compensation Committee.

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### The Cover

The cover design expresses our commitment to *building a better future for the coming generations* in accordance with the **AGC plus 2.0** Management Policy.



# Main Communication Tools of the AGC Group

## Financial Information



### AGC Integrated Report 2022 (this report)

Introducing a wide range of corporate policies, business strategies, and activities aimed at enhancing corporate value over the long term


 [https://www.agc.com/en/company/agc\\_report/](https://www.agc.com/en/company/agc_report/)

## Non-Financial Information



### Financial Review 2021 (English version only)


Reporting on financial matters, including business overviews and consolidated financial statements

 <https://www.agc.com/en/ir/library/financial/>



### AGC Sustainability Data Book 2022

Reporting on non-financial data and policies for various initiatives aimed at achieving sustainability (publication scheduled for August 2022)

 <https://www.agc.com/en/csr/book/index.html#ac02>



### Shareholder and Investor Information


Distributing detailed, timely information on the AGC Group to investors, with a focus on financial information

 <https://www.agc.com/en/ir/index.html>



### Sustainability Information

Reporting on non-financial data and policies for various initiatives aimed at achieving sustainability

 <https://www.agc.com/en/csr/>



### The AGC Website

Providing a broad range of in-depth, timely information on the AGC Group

 <https://www.agc.com/en/>

Corporate Documents (PDF)

Website



## This report describes the AGC Group's initiatives for the long-term, sustainable enhancement of corporate value.

In accordance with its **"Look Beyond"** vision, the AGC Group is enhancing corporate value on a sustainable basis over the long term.

With investors and a wide range of other stakeholders as its target readers, *AGC Integrated Report 2022* explains the management approach and specific measures that the Group is taking to enhance corporate value.

Along with messages from the management team, the report provides detailed explanations of the main strategies for realizing the long-term management strategy, Vision 2030, as well as information regarding progress in relation to the medium-term management plan, **AGC plus-2023**, which we launched in February 2021. We sincerely hope that this report will deepen readers' understanding of the far-sighted approach to business management that has always been our hallmark.

## The AGC Group's Management Policy **AGC plus 2.0**

Based on its **AGC plus 2.0** Management Policy, the AGC Group will realize sustainable growth by providing additional value to all stakeholders.

### **AGC plus 2.0**

- Providing safety, security, and comfort to society;
- Creating new value and functions for customers and business partners and building trust with them;
- Enhancing job satisfaction among employees;
- Increasing the Group's corporate value for investors, and
- Building a better future for the coming generations

A photograph of three men in business suits standing in a modern office lobby with large glass windows. The man on the left is Hideyuki Kurata, the man in the center is Yoshinori Hirai, and the man on the right is Shinji Miyaji.

**Hideyuki Kurata**

Representative Director, Executive Vice President, CTO

**Yoshinori Hirai**

Representative Director, President & CEO

**Shinji Miyaji**

Representative Director,  
Senior Executive Vice President,  
CFO, CCO



## AGC's Group Vision

# ***“Look Beyond”***

**“Look Beyond”** is the AGC Group’s corporate philosophy underpinning all of its business and social activities. When embarking on integrated global management in April 2002, the Group formulated this vision to ensure that its employees around the world would continue to evolve as one.

**“Look Beyond”** calls for the following mindset.

**“Look Beyond”** Anticipate and envision the future,

**“Look Beyond”** Have perspectives beyond our own fields of expertise, and

**“Look Beyond”** Pursue innovations, not becoming complacent with the status quo.

By realizing its burgeoning potential, the entire Group will continue providing the world with value.

The structure and three elements of **“Look Beyond”**

## Our Mission

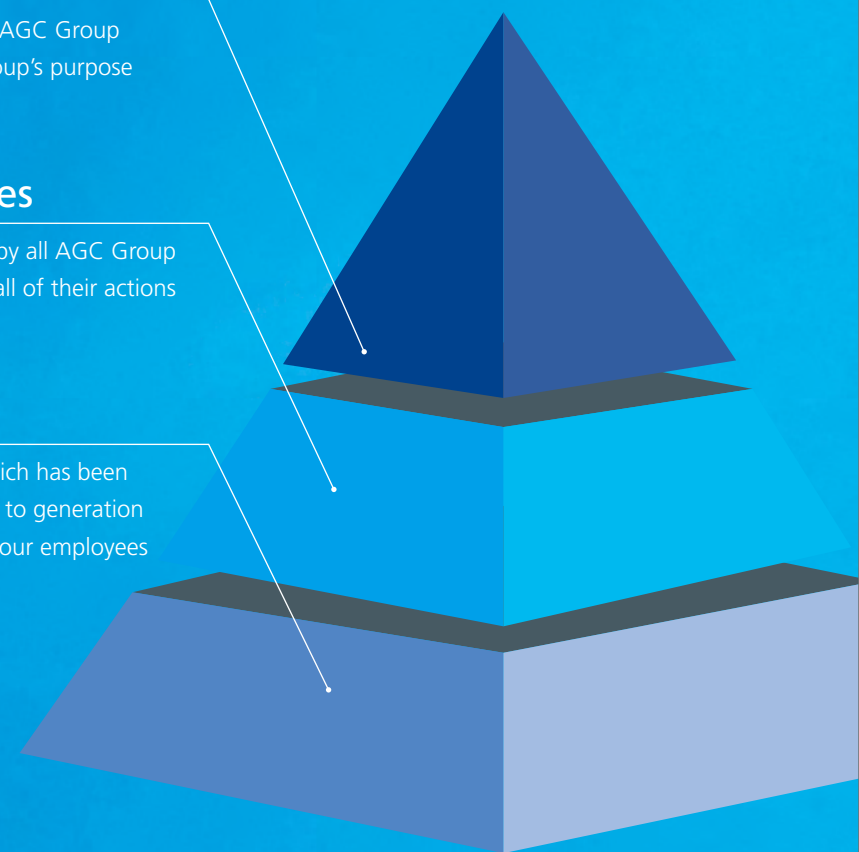
Setting out the value that the AGC Group should offer as well as the Group’s purpose

## Our Shared Values

The key ideas that are shared by all AGC Group employees and which inform all of their actions

## Our Spirit

Our fundamental mindset, which has been passed down from generation to generation and put into practice by all of our employees



## Our Mission

AGC, an Everyday Essential Part of Our World

AGC's unique materials and solutions make people's lives better around the world every day.

We, the AGC Group, aim to continue being the "first choice" solution provider for our customers by building long-term, trust-based relationships with them through unique materials and solutions developed using our wide-ranging material and production technologies. We will continue offering products and solutions that customers and society need, thereby making people's lives better around the world every day.

## Our Shared Values

Innovation & Operational Excellence Diversity Environment Integrity

### Innovation & Operational Excellence

- We will seek innovations in technology, products, and services beyond conventional concepts and frameworks.
- We will create value directed at our current and potential customer needs, accounting for changes in the business environment and social and market evolution.
- We will continuously improve all aspects of our operations, striving to achieve benchmark performance.

### Diversity

- We will respect the diversity of individuals of varied capabilities and personalities.
- We will respect cultural diversity in terms of race, ethnicity, religion, language, and nationality.
- We will respect different perspectives and opinions at all times.

### Environment

- We will contribute to the creation of a sustainable society in harmony with nature as a successful and responsible global citizen.
- We will strive to ensure and further improve occupational health and safety in our working environment.

### Integrity

- We will build open and fair relationships with all of our stakeholders based on the highest ethical standards.
- We will comply with all applicable laws and regulations.
- We will fulfill our contractual and legal responsibilities to achieve customer satisfaction and trust.

## Our Spirit

"Never take the easy way out, but confront difficulties."

Toshiya Iwasaki, who founded Asahi Glass Company in 1907, summed up his mindset in those early days with the motto, "Never take the easy way out, but confront difficulties." Much in evidence when our predecessors subsequently took on the ambitious goal of manufacturing flat glass domestically, this mindset has been passed down through the generations to the present day and remains the driver of all of our business activities.



## The AGC Group's Value Creation Model

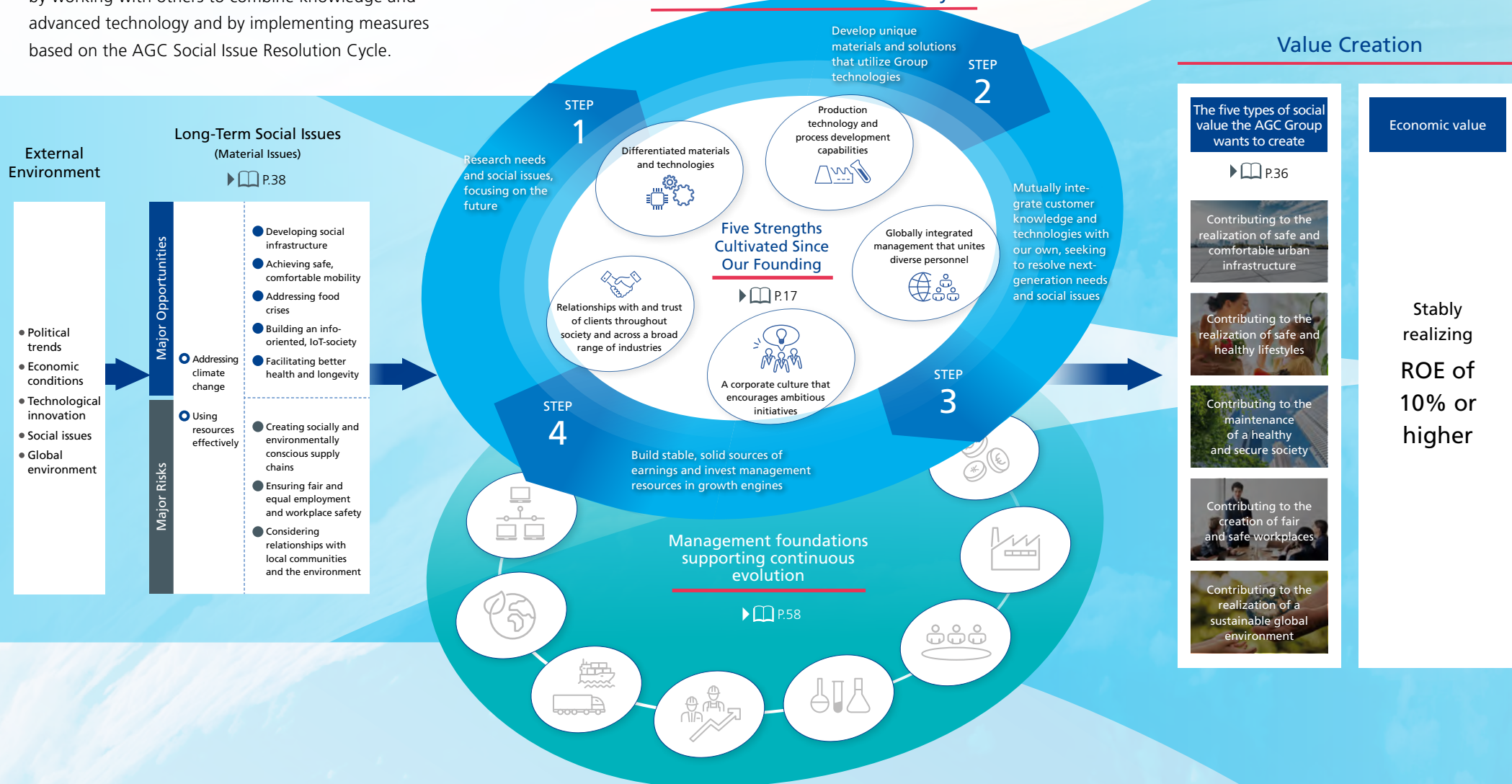
In accordance with its vision **"Look Beyond"**, the AGC Group conducts business management from a long-term perspective. Utilizing the five strengths cultivated since our founding, we continuously create economic and social value, help make ever-greater achievements possible, and bring bolder ideas to life by working with others to combine knowledge and advanced technology and by implementing measures based on the AGC Social Issue Resolution Cycle.

### AGC's Group Vision **"Look Beyond"**

The above phrase encapsulates the mindset underpinning all of our business and social activities.  
We always anticipate and envision the future, have perspectives beyond our own fields of expertise, and pursue innovations without being satisfied with the status quo.

▶ P.4

### AGC Social Issue Resolution Cycle



## Creating Social Value through Products

With businesses in an extensive range of fields, the AGC Group supports the daily lives of people worldwide in a variety of ways. From among the five types of social value the Group wants to create through its array of products, this section highlights initiatives aimed at *contributing to the realization of a sustainable global environment, contributing to the realization of safe and comfortable urban infrastructure, and contributing to the realization of safe and healthy lifestyles.*

### Social Value the AGC Group Wants to Create



Contributing to the realization of a sustainable global environment



Contributing to the realization of safe and comfortable urban infrastructure



Contributing to the realization of safe and healthy lifestyles



For information on the AGC Group's products, please visit the website below.

<https://www.agc.com/en/products/index.html>

● Glass ● Electronics ● Chemicals ● Ceramics and other businesses

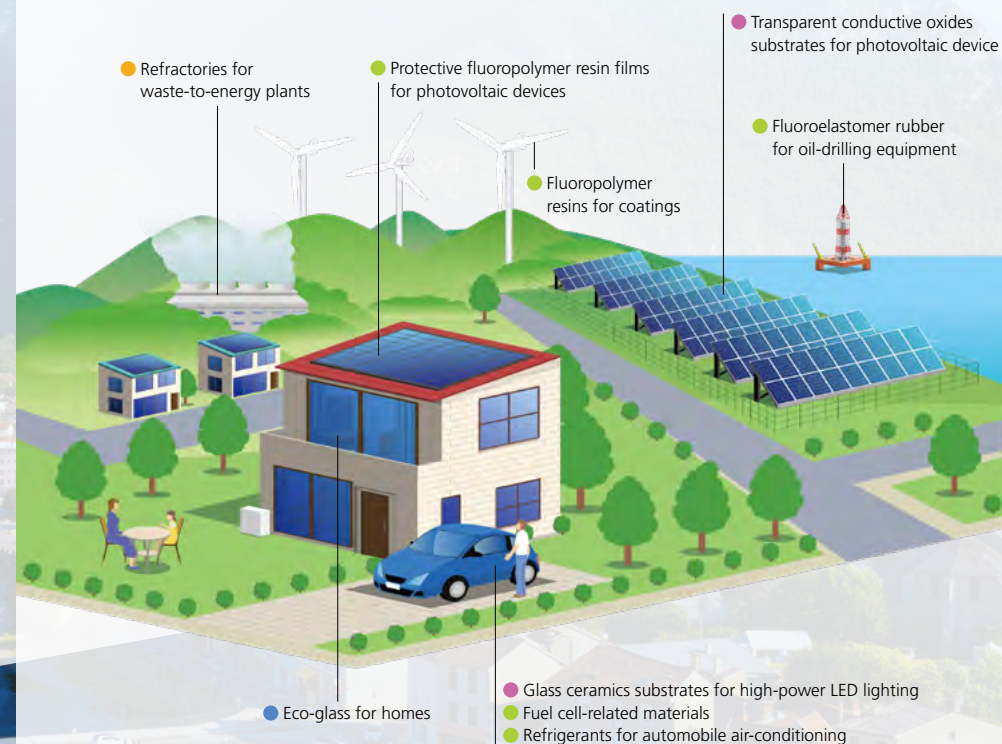


Contributing to the realization of a sustainable global environment



#### The Environmental Field

Our products that help create environment-friendly smart cities include glass for buildings and homes, solar power generation mirror glass, and green refrigerants.







## Contributing to the realization of safe and comfortable urban infrastructure



### The Mobility Field

We provide a host of different products that are essential to transportation equipment and which contribute to the realization of next-generation mobility that is safe and comfortable, including lightweight, high-performance window glass and cover glass for car-mounted displays.

- Fluoropolymer resins for coatings
- Fluoropolymer resins for components

- Truck glass
- Refrigerants for automobile air-conditioning
- Bus glass

- Construction machinery glass

- Automotive glass
- Cover glass for car-mounted displays
- Electronic materials for advanced driver-assistance systems
- Materials for LED and OLED lighting
- Polyurethane raw materials for car seats
- Fluoropolymer resins and rubber for automotive components

- Railway glass

### The Architectural and Social Infrastructure Fields

We offer architectural materials that help create reassuring, safe, and comfortable spaces as well as industrial materials that underpin social infrastructure.

- Photovoltaic glass for buildings
- Glass for office buildings
- Glass antennas for base stations
- Anti-reflective architectural glass
- Fluoropolymer films for membrane structures
- Materials for LED and OLED lighting
- Laminated safety glass for public facilities
- Glass substrates for displays
- Glass materials and components for optical equipment
- Optical materials and components for digital cameras
- Glass substrates for displays
- Glass materials and components for storage devices
- Fluoropolymer resins for electronic substrate materials

- Copper-clad laminates for base stations
- Display-integrated mirrors
- Sodium hypochlorite disinfectant for drinking water
- Polyvinyl chloride for water pipes

### The Electronics Field

We supply materials and components for displays and electronic equipment used in a variety of business situations as well as materials and components for semiconductors and communications equipment—which will be indispensable in the coming Internet of Things (IoT) and AI era as well as essential for the practical realization of 5G.



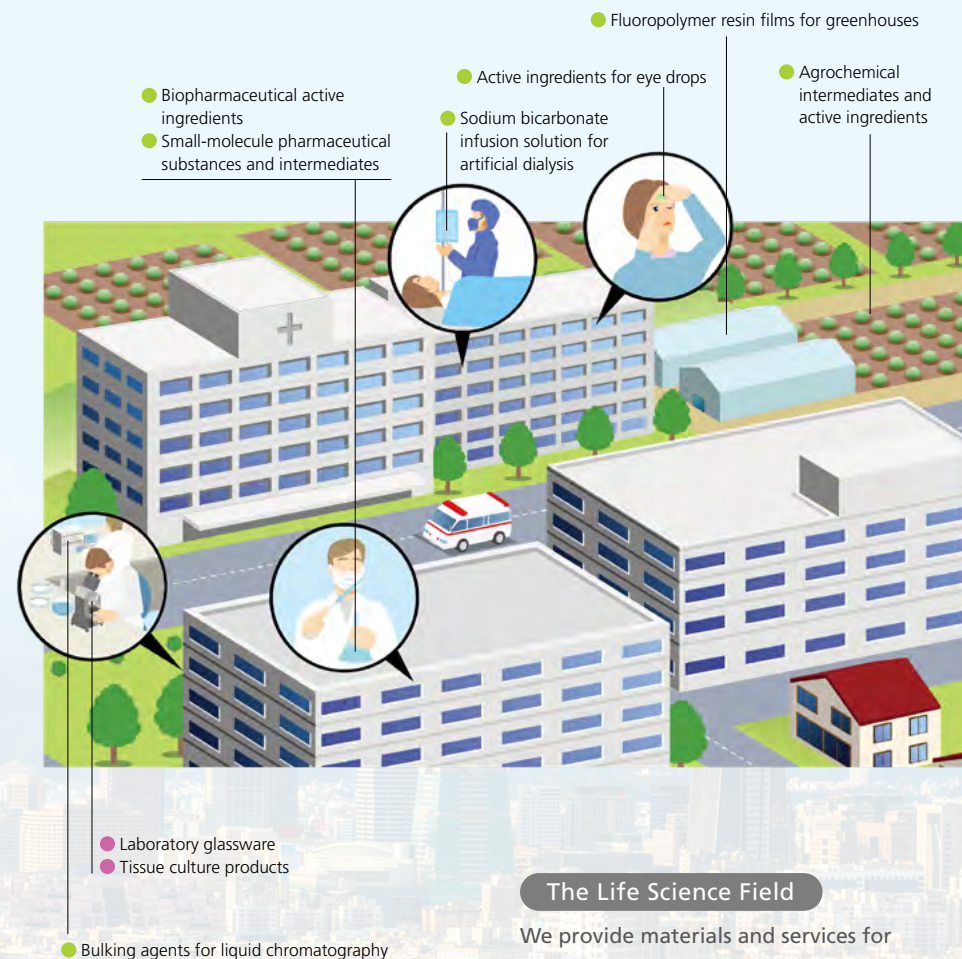
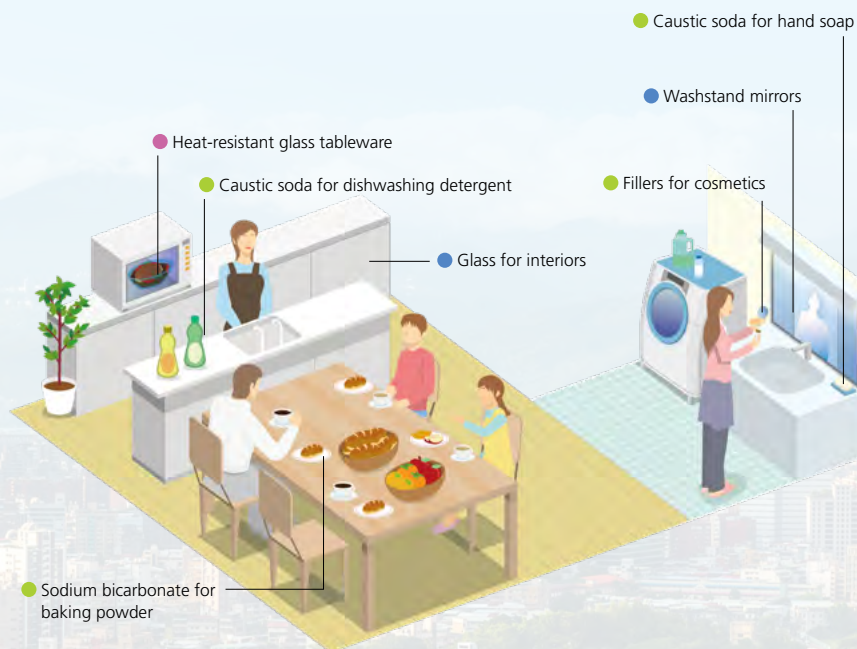


## Contributing to the realization of safe and healthy lifestyles



### The Consumer Products Field

We market products that bring comfort and convenience to daily life as well as many of the materials vital to their creation.



### The Life Science Field

We provide materials and services for pharmaceuticals and agrochemicals that cater to demand resulting from population growth, food shortages, longer life expectancy, and increasingly sophisticated medical needs.



## At a Glance

### The AGC Group: Providing a Broad Range of Materials and Solutions Worldwide

The AGC Group has established global business foundations spanning Japan, Asia, Europe, and the Americas. The Group's Glass, Electronics, Chemicals, and Ceramics businesses as well as other businesses create new value by leveraging a diverse range of world-class materials, technologies, advanced production technologies, and a broad customer base. These strengths have been cultivated during a history that stretches back more than 110 years.

## Description of Businesses

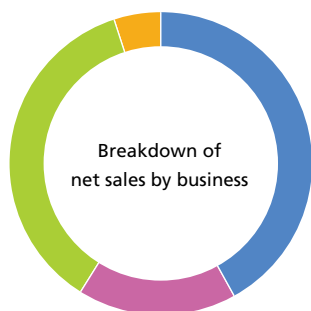
(Year ended December 31, 2021)

### The AGC Group

Net sales **¥1,697.4 billion**

Operating profit **¥206.2 billion**

Group employees Approx. **56,000**



- Glass Business **42%**
- Electronics Business **17%**
- Chemicals Business **36%**
- Ceramics and other businesses **5%**

Glass Business	Net sales	¥734.3 billion		Architectural Glass	Net sales ¥381.1 billion
	Operating profit	¥27.3 billion		Automotive Glass	Net sales ¥351.1 billion
Electronics Business	Net sales	¥305.0 billion		Display	Net sales ¥182.1 billion
	Operating profit	¥36.8 billion		Electronic Materials	Net sales ¥121.0 billion
Chemicals Business	Net sales ¥630.8 billion Operating profit ¥138.8 billion		Chlor-Alkali and Urethane	Net sales ¥390.4 billion	
			Fluorochemicals & Specialty Chemicals	Net sales ¥123.9 billion	
			Life Science	Net sales ¥115.2 billion	
Ceramics and other businesses	Net sales	¥79.4 billion			
	Operating profit	¥3.5 billion			

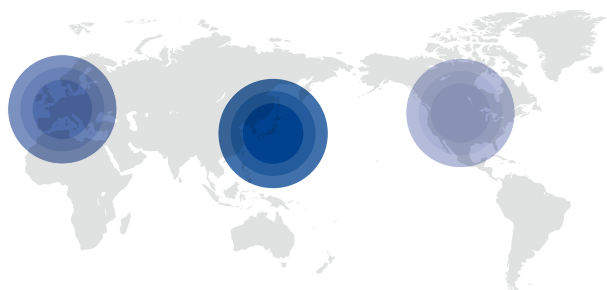
Notes 1. Sub-business net sales utilize net sales to external customers.

2. As net sales and operating profit by business are before the deduction of eliminations, the sum of net sales by business does not equal Companywide net sales, and the sum of operating profit by segment does not equal Companywide operating profit.

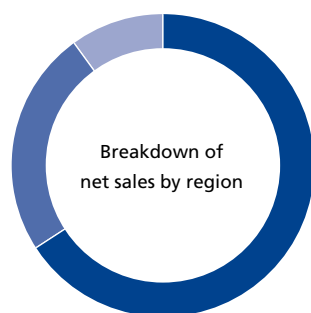
3. Due to corporate reorganization, cover glass for car-mounted displays, which was previously included in the Electronics Business, was integrated into the Glass Business in fiscal 2022.

## Global Expansion

(Year ended December 31, 2021)



Operating businesses in more than 30 countries and regions, including Japan, Asia, Europe, and the Americas



■ Japan/Asia 66%  
 ■ Europe 24%  
 ■ The Americas 10%

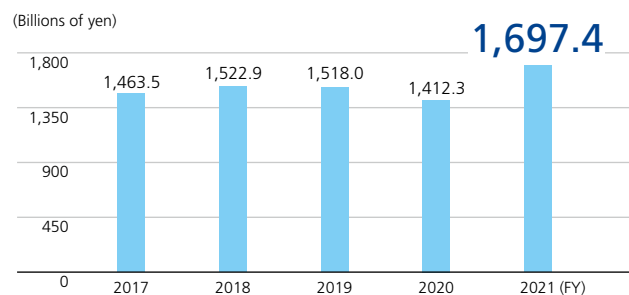
	Japan/Asia	Europe	The Americas
Net sales	¥1,124.4 billion	¥398.0 billion	¥175.0 billion
Operating profit	¥198.6 billion	¥37.5 billion	¥10.0 billion
Group employees	Approx. 34,500	Approx. 17,000	Approx. 4,500
Number of manufacturing sites	59	24 (including Africa)	10
Architectural Glass	●	●	●
Automotive Glass	●	●	●
Display	●		
Electronic Materials	●		●
Chlor-Alkali and Urethane	●		
Fluorochemicals & Specialty Chemicals	●	●	●
Life Science	●	●	●
Ceramics	●		

Note: As net sales and operating profit (loss) by region are before the deduction of eliminations and common regional expenses, the sum of net sales by region does not equal Companywide net sales, and the sum of operating profit (loss) by region does not equal Companywide operating profit (loss).



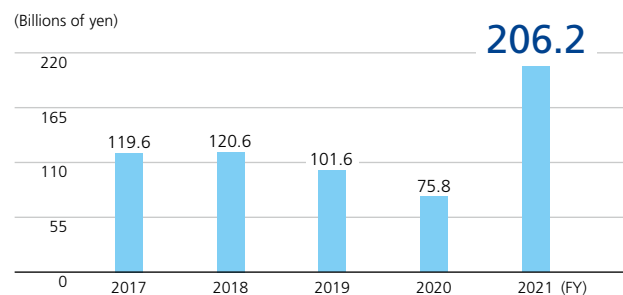
## Financial and Non-Financial Highlights

### Net Sales



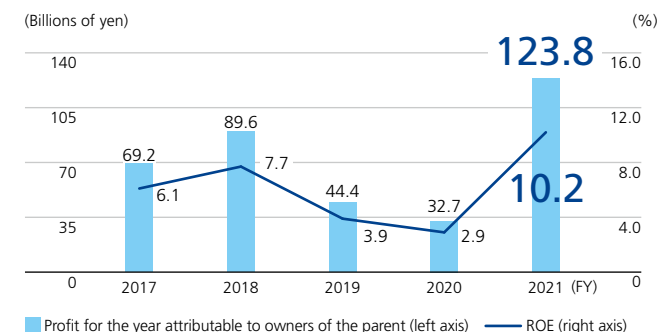
In fiscal 2021, due to higher product selling prices and the growth of Strategic Businesses, net sales increased ¥285.1 billion year on year, to a record high of ¥1,697.4 billion.

### Operating Profit



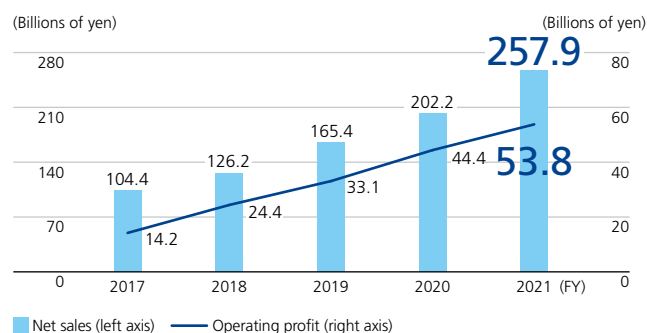
In fiscal 2021, operating profit reached its second highest level in AGC's history, rising ¥130.4 billion year on year, to ¥206.2 billion. This favorable performance reflected net sales growth and manufacturing cost reductions, which outweighed higher raw material and fuel prices, increased depreciation associated with the start-up of new facilities, and upward pressure on manufacturing costs stemming from foreign exchange rates.

### Profit for the Year Attributable to Owners of the Parent and ROE



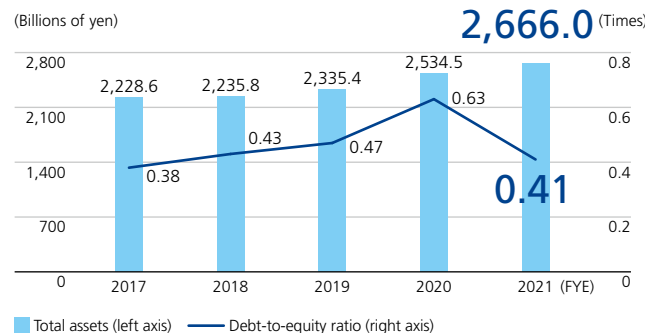
In fiscal 2021, profit for the year attributable to owners of the parent grew ¥91.1 billion year on year, to ¥123.8 billion, a new record.

### Net Sales and Operating Profit of Strategic Businesses



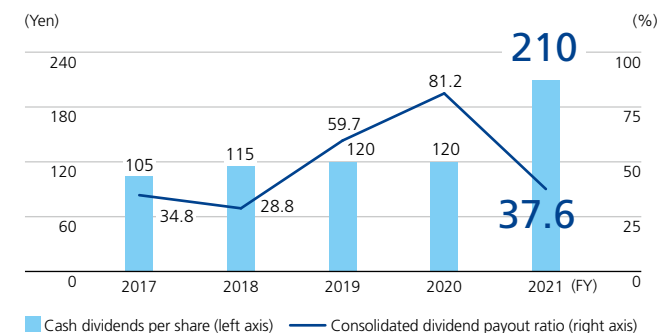
Fiscal 2021 saw year-on-year increases in both the net sales and operating profit of Strategic Businesses thanks to operational expansion of the Electronics and Life Science businesses.

### Total Assets and Debt-to-Equity Ratio



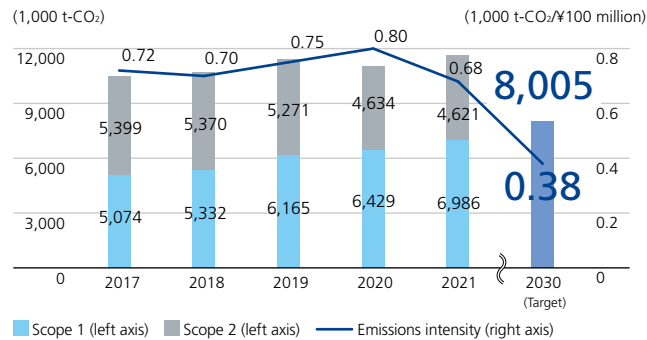
As of December 31, 2021, the debt-to-equity ratio was 0.41, a significant improvement compared with its level at December 31, 2020. This improvement was attributable to the repayment of interest-bearing debt accumulated during the COVID-19 pandemic.

### Cash Dividends per Share and Consolidated Dividend Payout Ratio



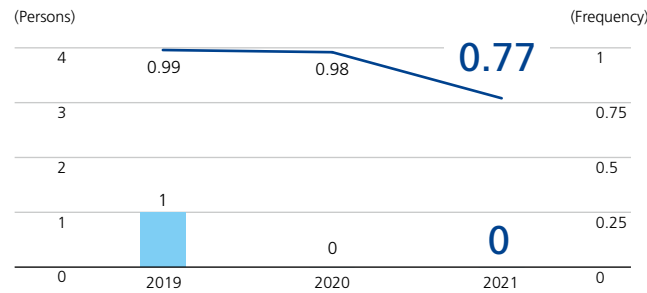
AGC paid an annual dividend of ¥210 per share in fiscal 2021. The annual dividend comprised an ordinary dividend of ¥160 per share and a special dividend of ¥50 per share, which reflected a one-time gain on the transfer of the Architectural Glass Business in North America.

## GHG Emissions (Scope 1 and Scope 2)



Our goal is to realize *net-zero carbon emissions* by 2050. By 2030, we aim to achieve reductions compared with 2019 levels of 30.0% in GHG emissions and 50.0% in GHG emissions per unit of sales.

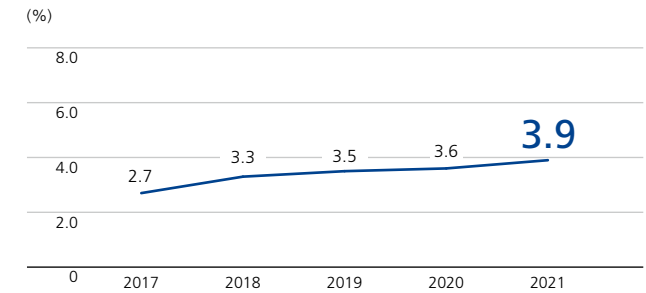
## Number of Occupational Accidents



\* Frequency of accidents requiring leave = Fatalities and injuries due to work-related accidents (leave of one or more days) × 1,000,000 ÷ Total working hours

The AGC Group promotes health and safety activities based on its policy of “No Production without Safety.”

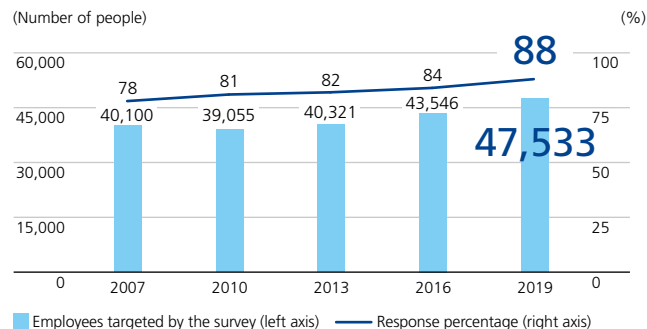
## Percentage of Female Managers (Division Manager or Higher)\* (AGC, Non-Consolidated Basis)



\* As of December 31 of each year (excluding employees aged 60 and above)

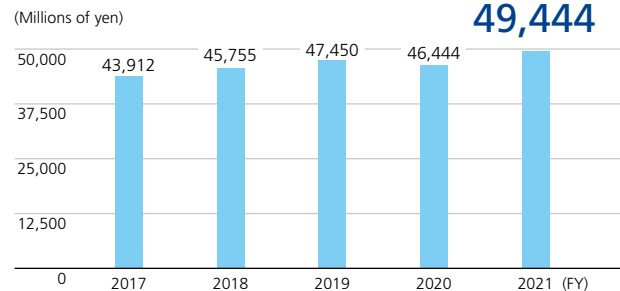
To provide society with value through the realization of diversity that empowers talented personnel regardless of gender, AGC aims for women to account for 30.0% of its directors and Audit & Supervisory Board members and 20.0% of its executive officers by 2030 on a non-consolidated basis.

## Employee Engagement Survey



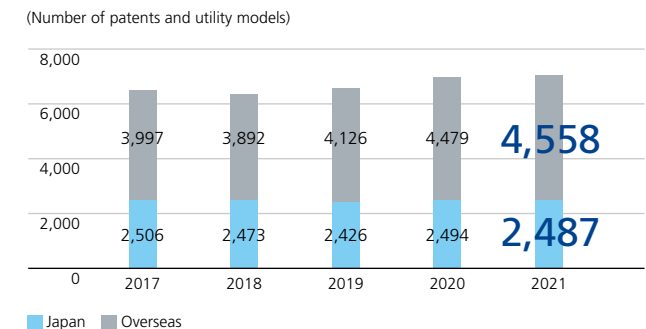
An employee engagement survey targeting all AGC Group employees is conducted every three years. Based on the survey results, required measures are determined and implemented in each division and workplace, with the effects of these measures being confirmed by subsequent surveys.

## Research and Development Expenses



AGC will continue to refine its range of unparalleled core technologies, which span the fields of glass, electronics, chemicals, and ceramics.

## Patents and Utility Models



Through its advanced strategy for intellectual properties, AGC will build competitive advantages and take on global competition.

## Lineages of Our Strengths

In its more than 110 years of history, the AGC Group has adapted to changes in society by partnering with customers to take on ambitious technological innovations and by foraying into new business fields and regions. The strengths we have cultivated through this history are *relationships with and the trust of clients throughout society and across a broad range of industries, differentiated materials and technologies, production technology and process development capabilities, globally integrated management that unites diverse personnel, and a corporate culture that encourages ambitious initiatives*. This section traces the lineages of these strengths.

For information on the value the AGC Group has provided in each era and its ambitions for the future, please visit the website below.

 <https://www.agc.com/en/company/history/index.html>

● Glass ● Electronics ● Chemicals ● Ceramics

### Social Developments

1900

Rapid construction of a modern nation



#### Architectural Glass

Amid a construction boom, AGC became the first company in Japan to successfully manufacture flat glass domestically, thereby supporting Japan's rapid transformation and modernization.



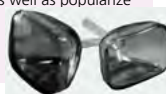
1950

Advent of the television age



#### Glass Bulbs for Television Cathode-Ray Tubes

By enhancing product performance and increasing production capacity, we helped advance video technology as well as popularize black-and-white and color televisions.



Advancement of motorization



#### Automotive Glass Business

AGC responded to burgeoning demand for automobiles by establishing a mass production system for automotive glass and developing production technologies.



1960

Development of social infrastructure



1970

Emergence of environmental problems



#### Development of the FLEMION™ Ion-Exchange Membrane Electrolysis Method for Caustic Soda Production

The FLEMION™ ion-exchange membrane electrolysis method does not use harmful substances and achieves significant energy savings. We have not only introduced this technology to in-house businesses but also offered it to peers who are taking steps to prevent environmental pollution.



### Lineages of Our Products and Technologies

- 1909 Began the first mass production of flat glass in Japan, using a Belgian technology based on hand-blown cylinders
- 1916 Commenced in-house production of refractory bricks for glass furnaces
- 1917 Started in-house production of soda ash, a key raw material for flat glass, in Kitakyushu, Japan
- 1928 Commenced use of the Fourcault process to produce flat glass
- 1933 Began use of the ammonia method to produce caustic soda
- 1938 Began production of tempered glass and laminated glass
- 1939 Began production of refractory bricks at the Iho Plant in Japan
- 1954 Started production of PairGlass™ double-glazing units
- 1955 Began production of glass bulbs for television cathode-ray tubes
- 1956 Launched the automotive glass business in earnest to meet rapidly growing demand
- 1960s Began full-scale production of monolithic refractories
- 1961 Started production of propylene oxide and propylene glycol
- 1966 Began utilization of the float method, a new technology, to produce large, flat sheets of glass (float glass)  
Commenced sales of heat-reflective glass in Japan
- 1970s Began development of automotive glass antennas
- 1972 Developed AsahiGuard™ water and oil repellents and Aflon™ COP fluorinated resins
- 1975 Developed the FLEMION™ fluoropolymer ion-exchange membrane electrolysis method for manufacturing caustic soda

### Lineage of Our Globalization

- 1907 Established Asahi Glass Company (now AGC Inc.) in Amagasaki, Hyogo Prefecture, Japan
- 1914 Exported flat glass to the United Kingdom for the first time
- 1925 Established Shoko Glass Co., Ltd., in China
- 1952 Concluded an agreement for the export of caustic soda electrolysis equipment to Indonesia
- 1956 Founded a glass manufacturing subsidiary in India, thereby developing overseas businesses ahead of other Japanese companies
- 1964 Entered the flat glass market in Thailand
- 1972 Began flat glass operations in Indonesia



1980

Global warming

**Alternative Fluorocarbon Asahiklin AK-225**

As fluorocarbon regulations became stricter, Asahiklin AK-225 attracted attention as the world's first alternative fluorocarbon. This product received the 1994 U.S. Environmental Protection Agency Stratospheric Ozone Protection Award.



1990

Development of IT

**Glass for TFT-LCDs**

In catering to the rapid growth in demand for flat-screen televisions since 2000, AGC has improved production technologies and established a mass production system for thin-film-transistor (TFT) liquid crystal display (LCD) glass.



2000

Spread of LCD TVs

**Dragontrail™ Glass for Smartphones and Tablet Computers**

Created through the integrated application of multiple technologies, our chemically tempered special glass Dragontrail™ is used for smartphones, tablet computers, and car-mounted displays and makes day-to-day life more comfortable and convenient.



2010

Popularization of smartphones



Development of biomedicine



Advent of the IoT era

**Biopharmaceutical Contract Manufacturing**

Having pioneered the contract manufacturing of the active ingredients and intermediates of small-molecule synthetic pharmaceuticals and agrochemicals, AGC has also launched a similar business model for biopharmaceuticals. Through these products, we are helping realize a healthy, long-lived society.

**EUV Lithography Photomask Blanks**

AGC is contributing to the miniaturization of semiconductor circuit patterns as the world's only manufacturer of EUV lithography photomask blanks with a lineup of vertically integrated technologies that extends from glass materials technologies through to polishing and film deposition technologies.



1980s Began production of a glass delay line for VHS deck playback

1980s Began the contract manufacturing of fluorine-containing pharmaceutical intermediates

1980 Commenced sales of insulating glass in Japan

1980 Developed a new ion-exchange membrane electrolyzer, the AZEC System

1982 Commenced production of LUMIFLON™ fluoropolymer resin for coatings

1982 Developed the high-quality fused cast refractory ZB-X950

1985 Started production of synthetic fused silica glass

1988 Began sales of Low-E insulating double-glazing glass in Japan

1990 Developed CYTOP™ transparent amorphous fluoropolymer

1991 Started production of alternative fluorocarbon Asahiklin AK-225

1992 Started production of glass filters that absorb infrared rays in cameras

1995 Began production of glass substrates for TFT-LCDs

1997 Commenced production of glass for DVD/CD optical pickups

2000 Began contract manufacturing of biopharmaceuticals

2003 Began production of CMP slurry for semiconductors  
Participated in a consortium for photomask blanks for EUV lithography

2005 Began sales of automotive door glass that blocks infrared rays

2008 Saw the use of high-performance Fluon® ETFE FILM for international sports venues in Beijing

2011 Began sales of UV Verre Premium Cool on™ tempered glass for automotive doors

2011 Began worldwide sales of Dragontrail™ glass for smartphones and tablet computers

2013 Commenced production of cover glass for car-mounted displays

2014 Began sales of smart-glazing glass Wonderlite™

2015 Initiated sales of UV Verre Premium Privashield™ automotive glass that cuts 99.0% of UV rays in all directions

2015 Began the supply of HFO-1234yf, a next-generation automotive refrigerant, with a low environmental burden

2017 Commenced production of photomask blanks for EUV lithography

2017 Acquired leading biopharmaceutical CDMO CMC Biologics

2019 Entered the extremely low-loss copper-clad laminates business by acquiring certain businesses from the U.S. companies Park Electrochemical Corp. and Taconic

2020 Acquired Molecular Medicine S.p.A. of Italy and began a CDMO business in the field of gene and cell therapy

1981 Acquired Glaverbel S.A. of Belgium and entered Europe's flat glass market in earnest

1985 Entered the automotive glass business in the United States in earnest

1986 Entered the chlor-alkali business in Indonesia in earnest

1997 Entered Russia's flat glass market

2000 Established a site for the production of LCD glass substrates in Taiwan

2005 Established a site for the production of LCD glass substrates in South Korea

2007 Marked centennial by making "AGC" the Group's unified brand

2010 Established in China the AGC Group Regional Headquarters for China

2011 Established a site for the production of LCD glass substrates in China

2013 Entered Brazil's flat glass market  
Established the AGC Group Regional Headquarters for Southeast Asia & Oceania in Singapore2016 Founded bases for information gathering and market research and analysis in India and Dubai  
Established an automotive glass production site in Morocco

2017 Acquired Vinythai Public Co., Ltd., of Thailand

2018 Consolidated bioscience businesses in Japan, the United States, and Europe and began integrated operations under AGC Biologics S.p.A.  
Changed corporate name to AGC Inc.

2019 Built a tripolar system for the development of automotive glass antennas

2021 Transferred the Architectural Glass Business in North America

## Social Developments

## Developing Differentiated Materials and Technologies That Cater to Evolving Needs

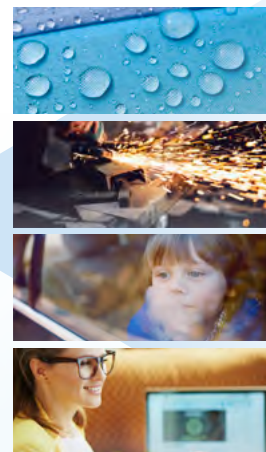
With the emergence of various technological innovations, society's needs have changed. The AGC Group has catered to these evolving needs by developing differentiated materials and technologies. A good example of our adaptability is the response to Japan's rapid motorization in the 1960s. Symbolizing the dawn of the popular car era, Toyota Motor Corporation's first-generation Corolla shipped more than one million units. At the time, only the Group's Kawasaki Plant, which was the first in the industry to introduce gas furnaces, was able to produce the side glass (bending tempered glass) required for the Corolla's design. At a stroke, competence in this regard increased the Group's presence in the automotive glass industry. Further, technological innovations can also be a threat to materials manufacturers. For example, technological innovations accompanying the evolution of televisions from black and white to color and from cathode-ray tubes to liquid crystal displays as well as the birth of smart-phones have greatly changed the requirements for display-related materials and components, making long-established materials and technologies obsolete. By overcoming such threats through the development of new materials and technologies, the AGC Group has secured one of the largest shares of the global display-related market.



## Lineages of Our Products and Technologies

## Utilizing the Flat Glass Business to Extend Our Business Domain

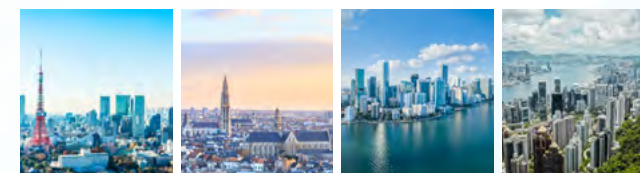
After our foundation, we followed the successful production of flat glass in Japan by domestically manufacturing refractory bricks for glass furnaces in 1916. As the outbreak of World War I had made it difficult to import soda ash, which is a raw material for flat glass, we developed our own method of manufacturing the material in 1917. Thus, we established the basis for the stable production of flat glass. Moreover, rather than only using the refractory bricks and soda ash in-house, we commercialized them to establish businesses that became the foundations of our current Ceramics and Chemicals businesses. Further, by utilizing the advanced technologies for materials, processing, surface treatment, and forming that it had developed through the manufacture of glass, ceramics, and chemicals, the Group launched the Electronic Materials Business. In this way, using its founding flat glass business as a starting point, the AGC Group has unflaggingly taken on bold initiatives to extend its business domain. This series of ambitious ventures has created a cycle whereby we develop ties with customers in a wide range of industries and societies, and these ties then enable us to extend our business domain even further.



## Lineage of Our Globalization

## Building Global Capabilities to Meet Global Demand

The AGC Group launched overseas business expansion ahead of other Japanese companies with the establishment of a subsidiary in India in 1956. Subsequently, we established subsidiaries in Thailand and Indonesia to increase our presence in Asia. Our next step was to establish and grow businesses in Europe and North America. As part of these efforts, AGC acquired the Belgian company Glaverbel S.A. (now AGC Glass Europe S.A.) in 1981. From the 1990s onward, the Group further advanced its global capabilities by entering emerging countries, such as Mexico and Vietnam. In 2002, we formulated AGC's Group Vision **"Look Beyond"**. In the same year, we began operating an integrated global management system in earnest by introducing a global in-house company system and delegating significant authority to in-house companies while concentrating cross-divisional functions in corporate divisions. In conjunction with these initiatives, we clarified the roles of the president & CEO, the chief financial officer, and the chief technology officer and instituted a management system centered on these three senior officers. Further, on the occasion of its centennial and with a view to accelerating its global growth strategy, the Group made "AGC" its unified brand in 2007. Since 2010, we have established operations in Brazil, Morocco, and other countries. Also, we are continuing to advance the global capabilities of our businesses. As an example of these efforts, in 2018 the Group consolidated bioscience businesses in Japan, the United States, and Europe to enable the launch of integrated operations under the management of AGC Biologics S.p.A.



## Bold Initiatives for Sustained Growth and Development

### Pursuing Further Growth in Both Core and Strategic Businesses

In 2016, the AGC Group set out its long-term management strategy Vision 2025, calling for further growth based on Core and Strategic Businesses. Core Businesses are based on existing technologies, products, and services—such as glass, chemicals, displays, and ceramics—and provide a stable long-term profit base. Meanwhile, Strategic Businesses act as growth engines by taking on the challenge of creating new technologies, products, and services in the target fields of mobility, electronics, and life science. For example, the Group launched its efforts in the life science field in the 1980s when the Chemicals Business applied fluorination technology in the contract manufacturing of the active ingredients and intermediates of small-molecule synthetic pharmaceuticals and agrochemicals. At present, we are achieving greater-than-expected business growth as a CDMO (contract development and manufacturing organization) not only for small-molecule synthetic pharmaceuticals but also for biopharmaceuticals, which are significantly increasing their presence in the global pharmaceuticals market. Moreover, based on the new long-term management strategy Vision 2030, we have already begun bold ventures in new fields, such as gene therapy, regenerative medicine, and next-generation antibody pharmaceuticals.

### Examples of Products and Services

#### Mobility

- Cover glass for car-mounted displays
- Fluorine-based materials for fuel cells
- 5G-compatible glass antennas

#### Electronics

- Semiconductor-related materials
- Optoelectronic materials
- Components for next-generation high-speed communications
- Fluorinated products for electronics

#### Life Science

- Synthetic pharmaceutical and agrochemical CDMOs
- Biopharmaceutical CDMOs

## Five Strengths Cultivated Since Our Founding

#### Relationships with and trust of clients throughout society and across a broad range of industries

Since our founding, we have extended our business domain to include an increasingly broad range of industries. Furthermore, we have used the contacts made in these industries to continuously create new applications that match market priorities. In this way, we have built unshakable relationships of trust with our customers. Going forward, we will use these relationships to realize collaboration with the leaders of each industry, thereby providing new value.

#### Differentiated materials and technologies

By always taking a long-term view of the likely changes in society, markets, and technologies and by developing materials and technologies in anticipation of customer needs, the AGC Group has been able to resolve customers' product issues and create new value. Thanks to this approach and the wide availability of our materials and technologies, customers continue looking to us for solutions—enabling us to create even more value.

#### Production technology and process development capabilities

In all of our businesses, we place importance on developing production technologies and facilities in conjunction with product development. With production technology and engineering capabilities honed over many years serving as a base, we will accelerate digital transformation to improve our production capabilities even further.

#### Globally integrated management that unites diverse personnel

Since our earliest days, we have proactively expanded businesses overseas. In tandem with these efforts, we have garnered capabilities for globally integrated management. Furthermore, the international character of our businesses has created a corporate culture of "cross-fertilization" in which self-confident personnel intermingle, and this culture has become a source of competitive strength. By preserving our corporate culture as the foundation of value creation, we will continue to further evolve globally integrated management.

#### A corporate culture that encourages ambitious initiatives

An openness that allows many different personnel to take on challenges without fearing failure is central to our founding spirit. Having become deeply rooted in our corporate culture, this openness has driven the growth of our organization and businesses. All employees of the AGC Group will drive its sustained growth by inheriting and preserving a corporate culture that encourages ambitious initiatives.



## A Message from the President & CEO

By providing differentiated materials and solutions, AGC strives to help realize a sustainable society and become an excellent company that grows and evolves continuously.



Yoshinori Hirai

Representative Director, President & CEO

### Beginning the Second Phase of Corporate Transformation

Upon becoming president & CEO, I said to AGC Group employees that we were entering the second phase of our corporate transformation. We first started the transformation journey in 2016. To explain how these initiatives came about, let me go back to the past and explain the background.

Until about 30 years ago, our growth driver was architectural glass, which was also the mainstay of our founding business. At the time, profit margins were large. Further, sales were growing steadily thanks to global economic development. However, such factors as the subsequent bursting of Japan's economic bubble caused a slump in sales of architectural glass, and in 1998 AGC Inc. recognized a non-consolidated operating loss for the first time since listing. We realized that a way out of these difficulties was offered by the liquid crystal display (LCD) glass market. As this market was booming, we grew steadily, posting record profits in fiscal 2010. Unfortunately, the market matured, growth in the LCD glass field stalled, and our performance slumped once again.

Thus, since around the beginning of this century, the AGC Group's performance has fluctuated. Aiming to break away from a profit structure that was overly dependent on a single business and to build a stable business portfolio resilient to market fluctuations, in February 2016 we set out Vision 2025, which identified Core Businesses and Strategic Businesses as the two pillars of our long-term management strategy. Operating in such fields as glass, chemicals, display glass, and ceramics, Core Businesses were to form a stable long-term profit base, while Strategic Businesses were to achieve strong growth by targeting the fields of mobility, electronics, and life science. Vision 2025 stated: "The AGC Group's Core Businesses will serve as solid sources of earnings, and Strategic Businesses will become growth drivers and lead further earnings growth. The AGC Group will continue being a highly profitable, leading global material and solution provider." With our sights set on these goals, we embarked on the road to corporate transformation.

“ Our business results are testament to steady progress in building a business portfolio resilient to market fluctuations. ”

To realize Vision 2025, we began pursuing a strategy of “organizational ambidexterity”<sup>\*1</sup> based on advancing both Core Businesses and Strategic Businesses. Our target was to raise the percentage of total earnings contributed by Strategic Businesses to 40% by fiscal 2025. As a milestone for this target, we sought operating profit of ¥40.0 billion from Strategic Businesses in fiscal 2020. We have surpassed the milestone by posting ¥44.4 billion operating profit for the businesses in fiscal 2022, thanks to greater-than-expected growth in the electronics and life science.

Therefore, I believe that corporate transformation toward a new business portfolio progressed steadily.

<sup>\*1</sup> Organizational ambidexterity refers to the ability of an organization to explore new technologies and markets while exploiting mature ones. This concept has been proposed by, among others, Professor Charles A. O'Reilly of Stanford University's Graduate School of Business in the United States.

## Advancing toward Vision 2030

In light of our progress, we decided to embark upon the second phase of corporate transformation. In February 2021, we announced a new medium-term management plan, **AGC plus-2023**, and a new long-term management strategy, Vision 2030, which we summarize as follows. “By providing differentiated materials and solutions, AGC strives to help realize a sustainable society and become an excellent company that grows and evolves continuously.” Further, the new vision sets out the following Groupwide strategy: “With both Core and Strategic Businesses as drivers, AGC will optimize its business portfolio and create economic and social value continuously.”

Under the vision, we have set financial targets with respect to economic value. Specifically, we are focused on realizing a stable ROE of 10.0% or higher by fiscal 2030. Also, we initially sought to achieve by 2030 a record operating profit, by surpassing ¥229.2 billion marked in fiscal 2010. However, in fiscal 2021 we posted operating profit of ¥206.2 billion, exceeding the initial forecast of ¥100.0 billion. Therefore, we have upwardly revised operating profit targets as shown in the table below. This robust performance reflected the COVID-19 pandemic's smaller-than-expected impact on business results coupled with a global economic recovery and the significant growth of the Life Science Business—one of our Strategic Businesses—as a result of catering to increased demand stemming from the pandemic. Moreover, our business results are testament to steady progress in building a business portfolio resilient to market fluctuations.

Meanwhile, based on the long-term social issues that we have identified as our material issues, we will create social value in five areas by contributing to *the realization of a sustainable global environment, the realization of a safe and comfortable urban infrastructure, the realization of safe and healthy lifestyles, the maintenance of a healthy and secure society, and the creation of fair and safe workplaces.*

### ► P25, P33

For details on the medium-term management plan **AGC plus-2023**, please see “A Message from the Chief Financial Officer” and “Toward Realizing Vision 2030.”

### ► P6, P38

For details on the long-term social issues identified as AGC's material issues, please see “The AGC Group's Value Creation Model” and “Process for identifying Long-Term Social Issues (Material Issues).”

## Economic Value We Will Create

- Reach the ambitious, upwardly revised target for operating profit in fiscal 2025 and the newly established target for operating profit in fiscal 2030
- Enable Strategic Businesses to account for more than half of Companywide operating profit by fiscal 2030
- Grow and evolve continuously and realize a stable ROE of 10.0% or higher

		FY2021 (result)	FY2023	FY2025	FY2030	...	FY2050
Economic value	Companywide operating profit	¥206.2 billion	¥230.0 billion	¥250.0 billion	¥300.0 billion		
	Operating profit of Strategic Businesses	¥53.8 billion	¥80.0 billion	¥100.0 billion	¥150.0 billion		
	EBITDA*	¥372.9 billion	¥433.0 billion	¥490.0 billion			
	ROE	10.2%	Stable ROE of 10.0% or higher				
	Debt-to-equity ratio	0.41	0.5 or lower				

\* EBITDA = Operating profit + Depreciation

“ To sustain growth and evolution, we must not only expand existing Strategic Businesses but also continuously create new ones. ”

### Accelerating Business Portfolio Transformation

We will realize the long-term management strategy Vision 2030 by pursuing initiatives focused on two overriding goals. The first is *business portfolio transformation*, which we have been working toward for some time. As I mentioned earlier, in 2016 we defined Core and Strategic Businesses. In the following fiscal year, Core Businesses generated operating profit of ¥100.0 billion, while Strategic Businesses produced operating profit of about ¥14.0 billion.

Subsequently, the operating profit of Core Businesses continued to grow, reaching ¥152.4 billion in fiscal 2021. This growth was attributable to the recovery of the Architectural Glass Business following structural reform, to the marked growth of the Chlor-Alkali Business in Southeast Asia due to aggressive investments beginning from 2016, and to higher earnings that resulted from the soaring prices of chlor-alkali products. Markets could soften going forward, and operating profit may decline correspondingly. Nonetheless, I firmly believe we have established a stable long-term profit base of about ¥150.0 billion, as Core Businesses should be able to maintain their current level of operating profit given the likely recovery of the Fluorochemicals & Specialty Chemicals and Automotive Glass businesses, which were significantly impacted by the pandemic.

Meanwhile, operating profit from Strategic Businesses reached ¥53.8 billion in fiscal 2021, having risen by around ¥10.0 billion each year since fiscal 2016. Through continued growth at a similar pace, this operating profit is projected to reach ¥150.0 billion by fiscal 2030, thereby accounting for more than half of the AGC Group's overall operating profit. Through the accelerated *business portfolio transformation* and the continuous growth and evolution, we will realize a stable ROE of 10.0% or higher. Furthermore, the growth of Strategic Businesses could very well outpace the aforementioned projection. Such optimism is not unfounded. For example, we will accelerate expansion of the biopharmaceutical CDMO (contract development and manufacturing organization) business in the life science field as well as the EUV lithography photomask blanks business and other semiconductor-related businesses in the electronics field.

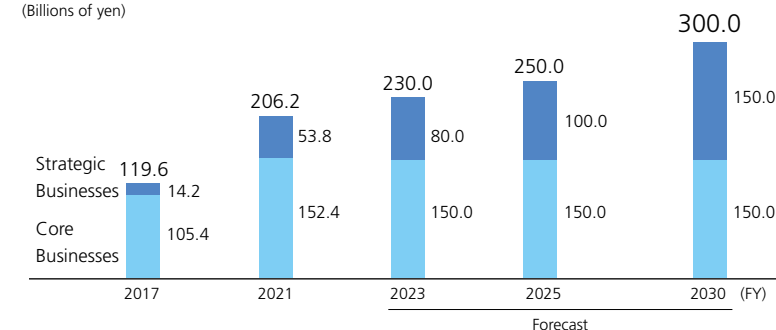
Also, to sustain growth and evolution, we must not only expand existing Strategic Businesses but also continuously create new ones. For instance, plans call for growing the net sales of the Life Science Business to

#### Business Portfolio Transformation

- Position Core Businesses as a stable long-term profit base
- Continue growing Strategic Businesses so that they account for more than half of Companywide operating profit by fiscal 2030

#### Operating Profit of Core Businesses and Strategic Businesses

(Billions of yen)





¥200.0 billion by fiscal 2025. When net sales reach this scale, the business will transition from a Strategic Business to a Core Business. At this juncture, while ensuring that existing Strategic Businesses grow into new Core Businesses, we must prepare for the creation of new Strategic Businesses. With this in mind, in 2021 we established a task force for the creation of new Strategic Businesses. In the near future, we should be able to present the next mainstay Strategic Businesses. With regard to the materials industry, developing and bringing to market a single product generally takes from five to 10 years. As is the case with EUV lithography photomask blanks, lead times as long as 15 years are not uncommon. Therefore, when exploring our next Strategic Businesses, we have to look ahead not just one or two years but 10 or 20 years. Accordingly, in opening up new fields, we are using long-term perspectives to guide our efforts.

Here I would like to comment on themes related to climate change. Last year, I commented in the *AGC integrated report 2021* that energy and environment would be promising fields for our next Strategic Businesses. However, since the development of technologies and businesses in the energy and environment fields is critical for both Strategic Businesses and Core Businesses, we have decided to advance initiatives through both types of business.

## Moving Forward with Initiatives to Address Climate Change

The second overriding goal of initiatives to realize Vision 2030 is the *promotion of sustainability management*. In global initiatives to address social issues, the past few years have seen particular emphasis placed on climate change. We are proud that, for more than a century, we have addressed a range of social issues by providing unique materials and solutions that meet society's changing needs. With respect to climate change, however, the

materials industry emits a large amount of greenhouse gas (GHG) emissions, and the AGC Group is no exception. Aware of this issue, in February 2021 we declared the achievement of *net-zero carbon emissions* by 2050 as a goal.

Let me explain our specific measures to reduce GHG emissions. First of all, glass is manufactured by melting raw materials at the high temperature of 1,600 °C. To reduce the CO<sub>2</sub> emitted during this process, AGC has been steadily converting the fuel used by glass-melting furnaces from heavy oil to natural gas, which when combusted produces 20.0% less CO<sub>2</sub> emissions than heavy oil. We increased the percentage of our glass-melting furnaces fueled by natural gas from 46.0% to 93.0% between 2010 and 2020. In addition to such efforts, as an industry leader, the AGC Group is developing and introducing world-class energy-saving glass manufacturing technologies, and the Group is advancing the development of other leading-edge production technologies, such as carbon-free ammonia combustion. Further, in February 2022 we made a full-scale introduction of internal carbon pricing. Our efforts to reduce GHG emissions will be accelerated by this Groupwide adoption of internal carbon pricing, previously only used by our European glass operations pursuant with the region's progressive environmental measures.

In addition, as shown by the long-term social issues that the AGC Group has identified as its material issues, *addressing climate change* represents both a major opportunity and a major risk. Anticipating even stronger demand for environment-friendly products, we have developed various products, including a vacuum-insulating window, building-integrated photovoltaic (BIPV) modules, and the AMOLEA™ series of next-generation refrigerants and solvents. Going forward, we will expand our lineups of environment-friendly products. For example, over its service life architectural insulating glass is estimated to realize a reduction in CO<sub>2</sub> emissions equivalent to 10 times\*<sup>2</sup> the CO<sub>2</sub> emitted during the product's manufacture. Further, demand for electrolyte polymer for fuel cells is growing apace as fuel-cell vehicles become popular due to initiatives to realize a hydrogen

energy-based society. Moreover, our offerings that combine outstanding power generation performance with excellent durability have secured us a dominant position in the market for these products and will continue contributing to the spread of fuel-cell vehicles.

What is more, Strategic Businesses have high asset efficiency and robust growth potential and, compared with Core Businesses, boast extremely high carbon efficiency. Therefore, by expanding the former while improving the carbon and asset efficiency of the latter, we will build an optimal business portfolio that continuously creates and enhances economic and social value.

The aforementioned *business portfolio transformation* will enable the AGC Group to reach milestones on the way to realizing the goal of *net-zero carbon emissions* by 2050. Specifically, by 2030 we will achieve reductions versus 2019 levels of 30.0% in GHG emissions\*<sup>3</sup> and 50.0% in GHG emissions per unit of sales.

\*2 Based on the actual figures of the Architectural Glass Business in Europe

\*3 Scope 1 GHG emissions + Scope 2 GHG emissions

Scope 1: Direct GHG emissions from the business operator (fuel combustion and industrial processes)

Scope 2: Indirect GHG emissions derived from the use of electricity, heat, and steam supplied by other parties



“ We will build an optimal business portfolio that continuously creates and enhances economic and social value. ”

## Heightening the Sustainability of Society and the AGC Group

Social issues related to sustainability are not limited to climate change. To take one example from among the long-term social issues identified as our material issues, we view *facilitating better health and longevity* as a key opportunity. Today, the axis of the global economy is shifting from developed to emerging countries. As emerging countries follow developed countries and become long-lived societies, demand for the technologies and products that support these societies will grow rapidly. One such product category is biopharmaceuticals, an area that we are engaged in through a CDMO business in the life science field. Messenger ribonucleic acid (mRNA) vaccines, which have come to the fore during the COVID-19 pandemic, are biopharmaceuticals and are likely to play an increasingly prominent role in society. To date, the AGC Group has helped address social issues based on its competence in technologies related to inorganic and organic chemistry. By adding biochemistry-based technologies to this skill set, we will make an even greater contribution to the new society of the 21st century.

Further, to remain sustainable, the AGC Group must diversify its human resources. The Group operates businesses globally, with overseas operations accounting for approximately 70.0% of total net sales and 80.0% of overall personnel. Given our global presence, we have to develop systems and environments that encourage employees of various nationalities to play

### ► P.38

For information on the AGC Group's material issues, please see “Process for Identifying Long-Term Social Issues (Material Issues).”

more active roles. Also, we will promote such employees to management and executive positions. As for AGC Inc. on a non-consolidated basis, the empowerment of female employees is an urgent task. Accordingly, we have set targets for raising the percentages of women in a range of senior positions. Using the end of fiscal 2021 as a benchmark, by 2030 we aim to increase the percentages of female managers from 4.0% to 8.0%, female executive officers from 3.0% to 20.0%, and female executives from 18.0% to 30.0%. Also, we are preparing a road map for the achievement of these targets.

At the same time, we are enhancing disclosure of the aforementioned efforts and other sustainability initiatives. In making investment decisions, investors are increasingly seeking disclosure on environmental, social, and governance (ESG) factors. We must provide explanations that are readily understandable for both investors and society at large. For this reason, we are implementing a range of measures designed to improve not only the quantity but also the quality of our disclosure. These measures include the publication of the AGC Integrated Report and the AGC Sustainability Data Book as well as the holding of ESG IR briefings. Through these efforts, we will actively enhance the sustainability of society and our businesses.

### Continuing to Grow and Evolve by Leveraging People Power

At the beginning of this message, I mentioned that we embarked on the path toward corporate transformation in 2016. When business conditions are tough, companies generally place greater emphasis on managerialism, while personnel evaluation systems tend to become more focused on demerits. In such environments, employees are negatively evaluated if they take on challenges and fail. In the AGC Group in 2016, a similar tendency was prevalent. However, deep down inside, there was always a strong appetite for taking on challenges, and it has enabled the AGC Group to realize innovations and benefit society to this day. Looking back to our origins, this attitude is clear from the motto that expresses our founding

spirit: “Never take the easy way out, but confront difficulties.” Aiming to revive this mindset, our CEO at the time, Takuya Shimamura, who is currently the Group’s chairperson, issued a message urging the Group to return to its starting point. He wanted to restore our original corporate culture by shifting to positive evaluations that commended those taking on challenges and following through ambitious initiatives. Reviving the hallmarks of our corporate culture is another important element of corporate transformation. Although we still have some way to go, we are making steady progress in fostering a merit-focused corporate culture. For example, we conduct an engagement survey of all AGC Group employees every three years. A comparison of the 2016 and 2019 surveys shows that employee engagement has risen in all categories. I believe this improvement reflects the gradual spread of a corporate culture that values individual employees and praises them for tackling bold initiatives.

Our efforts to enhance the corporate culture have put particular emphasis on dialogue between management and employees. Simply issuing Groupwide statements on the direction in which the senior management team is headed is not enough to ensure that messages get through to all employees. Messaging that is relatable and resonates with employees is important. Therefore, at our business locations worldwide we hold dialogues between management and employees, which are aimed at inspiring employees to act autonomously. Before the pandemic, my predecessor and I participated in more than one hundred such dialogues a year. Since the pandemic, we have continued the dialogues by holding them online.

Personnel are the driving force behind all value creation. Without a doubt, the comprehensive strength of the AGC Group will be enhanced if it provides an environment in which each person can enhance their skills and work with vitality and pride. One of our slogans is *AGC People: the driver of our growth!*<sup>\*4</sup> We will realize this slogan and continue to grow and evolve by enhancing our corporate culture, promoting diversity, developing personnel, and sustaining efforts to improve employee engagement.

<sup>\*4</sup> This expresses a situation in which maximum utilization of each person’s professional skills enables the creation of a strong organization that is based on the sum total of each person’s contributions, the realization of business strategies and organizational targets, and the growth of the Company and each person.



“By keeping long-term viewpoints at the core of management efforts, we will accomplish corporate transformation and sustain growth and evolution. In doing so, we will continuously create economic and social value while elevating corporate value.”

### Taking a Far-Sighted Approach to Addressing Social Issues

Our Mission requires us to be *an everyday essential part of our world*, and it is set forth in AGC's Group Vision **“Look Beyond.”** I believe our *purpose*—in other words, the role we should always play in society—is best summed up by the statement: *AGC's unique materials and solutions make people's lives better around the world every day*. In fulfilling this role, a long-term perspective is essential, as suggested by the phrase **“Look Beyond.”** Farsightedness is needed because, as I mentioned earlier, the creation of *unique materials and solutions* can take as long as 10 or 20 years.

Further, AGC's Group Vision establishes Our Shared Values—Innovation & Operational Excellence, Diversity, the Environment, and Integrity. Although formulated in 2002, Our Shared Values have not become antiquated during the intervening 20 years. In fact, they are more relevant than ever. I feel that this ongoing relevance gives an idea of how much importance has been placed on the long-term perspectives utilized in the business management of AGC.

In addition, when changing our trade name from Asahi Glass to AGC in 2018, we formulated the brand statement *Your Dreams, Our Challenge* to encapsulate the various messages of the Vision. Based on its founding spirit, the AGC Group has supported the leading companies of each era

and helped address social issues by building unshakable relationships of trust with customers and providing *unique materials and solutions*. Continuing this tradition of collaboration and innovation, we will work with customers and society to combine knowledge and advanced technology and help make ever-greater achievements possible and bring bolder ideas to life. Through the brand statement, we want to cultivate a shared sense of commitment with all of our stakeholders.

When talking with employees, I always stress the importance of taking a broad view from a high vantage point. By this, I mean we should not become overly preoccupied with near-term exigencies but rather value long-term perspectives, something I always try to keep in mind myself when managing businesses. By keeping long-term viewpoints at the core of management efforts, we will accomplish corporate transformation and sustain growth and evolution. In doing so, we will continuously create economic and social value while elevating corporate value. As we move forward, I would like to ask all of our stakeholders for their continued support and understanding.

June 2022

**Yoshinori Hirai**

Representative Director,  
President & CEO



## A Message from the Chief Financial Officer



**Shinji Miyaji**

Representative Director,  
Senior Executive Vice President, CFO, CCO  
General Manager of the Corporate Planning  
General Division

With our sights set on realizing Vision 2030, we will transform our business portfolio in line with the basic strategies set forth in the medium-term management plan **AGC plus-2023**.

### Fiscal 2021 Review

#### — Realizing the Early Achievement of Fiscal 2023 Financial Targets

The AGC Group is currently implementing its three-year medium-term management plan, **AGC plus-2023**, which ends in fiscal 2023. Initially, the plan's four financial targets for fiscal 2023 were operating profit of ¥160.0 billion, operating profit of Strategic Businesses of ¥70.0 billion, ROE of 8%, and a debt-to-equity ratio of 0.5 or lower.

In fiscal 2021, the first year of the plan, net sales increased 20.2% year on year, to the record level of ¥1,697.4 billion, while operating profit rose 172.1% year on year, to ¥206.2 billion. Of this amount, the operating profit of Strategic Businesses was ¥53.8 billion, up ¥9.4 billion from the previous fiscal year. Reflecting higher operating profit and recognition of a gain on the transfer of the Architectural Glass Business in North America, profit for the year attributable to owners of the parent grew 278.5%, to a record high of ¥123.8 billion.

As a result of the aforementioned performance, ROE increased 7.3 percentage points year on year, to 10.2%. Further, due to the repayment of interest-bearing debt accumulated in preparation for the contingencies related to the COVID-19 pandemic, the debt-to-equity ratio was 0.41. Moreover, excluding the target set for the operating profit of Strategic Businesses, we reached the plan's financial targets two years ahead of schedule. This rapid progress was attributable to the pandemic's lighter-than-expected impact on Core Businesses coupled with favorable performances by Strategic Businesses, which saw stronger demand for semiconductors and biopharmaceuticals due to the pandemic as well as significant growth in the electronics and life science fields. Also, in Southeast Asia a hike in the market prices of chlor-alkali and urethane products surpassed expectations and significantly boosted business results.

In light of the aforementioned business results, we have revised the financial targets of the medium-term management plan.

**AGC plus-2023** Financial Targets

	FY2021 results	FY2023 targets (Set in February 2021)	FY2023 targets (Set in February 2022)
Operating profit	¥206.2 billion	¥160.0 billion	¥230.0 billion
ROE	10.2%	8%	10%
Operating profit of Strategic Businesses	¥53.8 billion	¥70.0 billion	¥80.0 billion
Debt-to-equity ratio	0.41	0.5 or lower	0.5 or lower

**Initiatives for Each Basic Strategy**► Basic Strategy 1: *Pursuing Ambidextrous Management*

## — Steadily Expanding Strategic Businesses

Next, I will outline progress under each of the medium-term management plan's basic strategies, beginning with efforts focused on *pursuing ambidextrous management*. Fiscal 2021 saw the net sales of Strategic Businesses increase more than ¥50.0 billion year on year, to ¥257.9 billion. In the period through fiscal 2023, we expect steady net sales growth in all fields. In the life science field, the biopharmaceutical CDMO (contract development and manufacturing organization) business achieved particularly significant growth, and businesses in this field posted net sales of more than ¥100.0 billion. Also, the operating profit of these businesses has been rising at a rate of approximately ¥10.0 billion per year. Through until at least fiscal 2025, I do not anticipate any major concerns regarding the growth of Strategic Businesses. If I had to single out one field that may have issues, however, it would be mobility. Even allowing for the effect of the pandemic, the net sales of businesses in this field have not grown as much as expected, and their contributions to operating profit are likely to be realized later than hoped.

## — Progressing with Structural Reform of the Glass Segment, a Core Business

As for Core Businesses, the structural reform of the Glass Segment is progressing well. We are on track to reach the goal of reducing costs, centered on fixed costs, by ¥15.0 billion, compared with those of fiscal 2019, during the period of the current medium-term management plan. As of fiscal 2021, we have already reduced fixed costs by ¥12.0 billion.

In the Architectural Glass Business, the steady reduction of fixed costs in Europe lowered the break-even point of the business. Also, in August 2021 we sold our North American Architectural Glass Business, and in December of the same year we disposed of all shares of Schott Gemtron Corporation held by a U.S. subsidiary.

The Automotive Glass Business also lowered fixed costs by reducing the number of employees at its Europe General Division and consolidating production, through the introduction of highly efficient equipment that enabled the elimination of certain production lines. The performance of the Architectural Glass Business has improved, partly due to a pickup in the market as governments worldwide ease restrictions to contain the pandemic. However, the Automotive Glass Business continues to face challenging conditions due to such factors as shortages of semiconductors and other products. Therefore, we will continue advancing structural reforms. However, the current pause in demand provides an opportunity to rigorously reform the cost structure of the Automotive Glass Business, given the difficulty of implementing cost reduction measures in a phase of production volume growth. Moreover, these reforms will raise the percentage of net sales that high-performance products account for, thereby realizing higher profitability and getting the business back on a growth trajectory.

The Chlor-Alkali Business—which significantly boosted the AGC Group's performance in fiscal 2021—saw sales prices soar globally as PVC supplies struggled to keep up with demand. Although this rise in prices has gradually softened since reaching a peak around October 2021, we expect the tightness of the supply-demand situation to remain unchanged. Particularly in Southeast Asia, where the Group has robust business foundations, infrastructure development is progressing rapidly as the region's economy develops. Going forward, demand for PVC—indispensable for infrastructure development—is likely to keep growing. By continuing to aggressively ramp up the production capacity of the Chlor-Alkali Business, AGC will solidify the position it has built as the No. 1 supplier in Southeast Asia.





### ► Basic Strategy 2: Promoting Sustainability Management

#### — Laying Foundations for Social Value Creation

I would now like to give an overview of measures aimed at *promoting sustainability management*. Compared with the previous medium-term management plan, the current plan focuses more strongly on social value creation. In fiscal 2019, AGC began considering how to help realize the Sustainable Development Goals (SDGs).<sup>\*1</sup> In conjunction with the release of the plan in fiscal 2021, AGC internally and externally announced the five types of social value it will create. In addition, we have established the achievement of *net-zero carbon emissions* by 2050 as a goal, and we are currently formulating a specific road map with a view to reducing GHG (greenhouse gas) emissions. I believe we have made steady progress in laying the foundations for the creation of social value centered on helping realize *a sustainable global environment*. For example, in February 2022 we made full-fledged introduction of internal carbon pricing. Also, we have established diversity-related key performance indicators, such as numerical targets for the empowerment of female employees. However, the formulation of other key performance indicators has yet to be completed and therefore remains a task going forward.

With concern over climate change mounting worldwide, society is becoming increasingly critical of industries that emit large amounts of GHG emissions, such as the materials industry. To help assuage concern in this regard, one option would be to divest businesses with high GHG emissions, but to do so would not solve the issue for society as a whole. Many of AGC's

products, including glass, which we have been manufacturing since our founding, are indispensable to daily life. As a market leader, we have a responsibility to leverage our long-cultivated, advanced technological capabilities with a view to both reducing GHG emissions generated in the manufacture of such products and creating new products that help society lower GHG emissions.

\*1 The United Nations has adopted 17 SDGs, which comprise 169 targets. The SDGs and targets are to be achieved between 2016 and 2030.

### ► Basic Strategy 3: Gaining Competitiveness by Accelerating Digital Transformation

#### — Leveraging Accumulated Data to Advance Innovation

Our third basic strategy entails *gaining competitiveness by accelerating digital transformation*. Ahead of its competitors, AGC launched full-fledged digital transformation initiatives in 2015. We began by digitalizing our manufacturing sites. Consequently, over the past several years we have accumulated a huge amount of operational data. With respect to the introduction of smart factories, the Chemicals Business has made particularly noteworthy progress. Based on the vast amount of data being accumulated, this business is optimizing its manufacturing processes. Further, we are digitally transforming a wide range of business processes, including R&D, sales, and back-office processes.

Rather than limiting ourselves to the development and entrenchment of digital transformation measures for discrete business processes, we will revamp all business processes so that they can be digitalized and made more customer and market driven. Furthermore, these efforts will pave the way for transforming our business model itself. For example, the integration of our data with that of suppliers, client companies, and other business partners could heighten efficiency throughout supply chains. Our hope is that, just as new combinations can trigger innovation, combining different types of data in supply chains will encourage innovation and the creation of entirely new business models.

In realizing the aforementioned initiatives, it is important that personnel with an in-depth understanding of AGC's technologies and businesses lead the drive toward digital transformation. Accordingly, in fiscal 2018 we launched Data Science Plus, an in-house program for the training of data scientists. Through this program, we are fostering dual-skilled personnel who have advanced data analysis skills and operational knowledge of such areas as materials development, production, sales, and logistics. Since fiscal 2021, we have been incorporating a broader range of employees into the program by focusing on offering data scientist training to personnel directly involved in manufacturing processes.

## Financial Strategy

### Maintaining Financial Soundness While Realizing Focused Investments

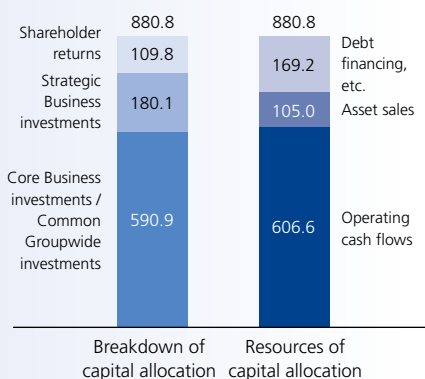
Now, I will explain our capital allocation strategy. We will accelerate the growth of Strategic Businesses through an increase in investments of approximately ¥100.0 billion compared with investments over the period of the previous medium-term management plan. At the same time, we will curb investments in Core Businesses and common Groupwide investments by roughly ¥100.0 billion, thereby keeping total investments at the same level as those of the previous plan while elevating shareholder returns by about ¥30.0 billion. We will source more than ¥760.0 billion in investment capital from operating cash flows as they will rise in step with net sales growth. The remaining investment capital will be secured by accelerating the sale of idle assets and all shares held for strategic purposes. In this way, we will maintain financial soundness while realizing focused allocation of investment resources.

### Capital Allocation Policy

- Increase investments in Strategic Businesses by ¥100.0 billion compared with the previous plan
- Accelerate asset sales, including all shares held for strategic purposes

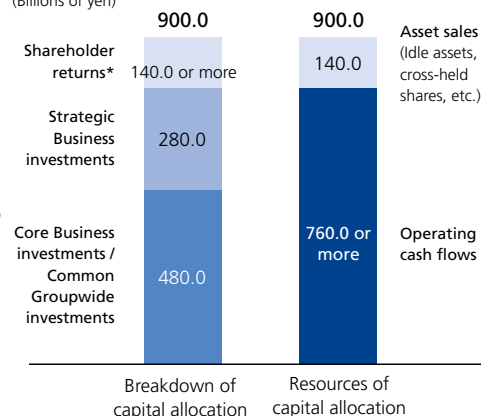
#### Previous Medium-Term Management Plan (FY2018–FY2020)

(Billions of yen)



#### Current Medium-Term Management Plan (FY2021–FY2023)

(Billions of yen)



\* Including payment of dividends to non-controlling interests

As for our policy on shareholder returns, while comprehensively taking into account such factors as performance and future capital requirements, we will continue to pay stable dividends with a consolidated dividend payout ratio of 40% as a target and to acquire treasury stock flexibly. Regarding dividends for fiscal 2021, based on consideration of performance trends, the business environment, and future business development, we decided to pay an annual dividend of ¥210 per share, a year-on-year increase of ¥90 per share and comprising an interim dividend of ¥80 per share and a year-end dividend of ¥130 per share. The consolidated dividend payout ratio was 37.6%. Out of the annual dividend increase, ¥50 was a special dividend commensurate with extraordinary profit recognized due to the transfer of the Architectural Glass Business in North America.

With respect to fiscal 2022, we expect year-on-year increases of 6% in net sales, to ¥1,800.0 billion, and 1.9% in operating profit, to ¥210.0 billion, but a 7.1% year-on-year decline in profit for the year attributable to owners of the parent, to ¥115.0 billion. In fiscal 2022, we plan to pay an annual dividend of ¥210 per share, unchanged year on year and comprising interim and year-end dividends of ¥105 per share.

## Outlook

### Aiming to Stably Realize ROE of 10% or Higher

ROE is a financial indicator on which I place particular importance as it measures whether a company is generating returns that exceed the expectations of capital markets. Since fiscal 2012, AGC's ROE has been unstable, hovering below 8%, and in certain fiscal years dipping below 2%. Given the instability of our ROE, we cannot claim to be meeting the expectations of capital markets. As I mentioned at the outset, in fiscal 2021 we achieved ROE above 10%, but the construction of a business portfolio that can stably sustain this level is critical.

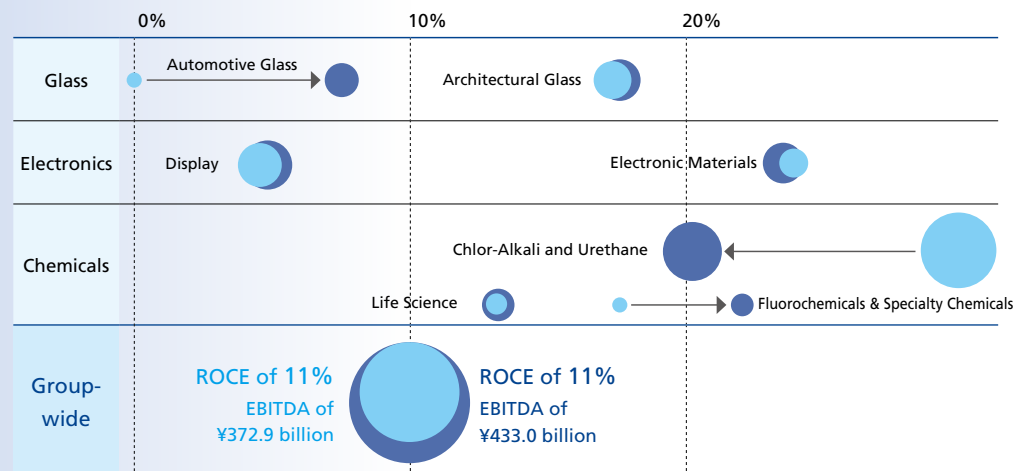
To this end, we are measuring the asset efficiency of each in-house company and strategic business unit by using return on capital employed (ROCE)\*<sup>2</sup> as a financial indicator. Further, we are utilizing earnings before interest, taxes, depreciation, and amortization (EBITDA) as a financial indicator for the measurement of growth. Based on the aforementioned financial indicators, we have established targets best suited to each type of business. For businesses in which growth is important, we emphasize EBITDA, while for businesses in which asset efficiency is a priority, we emphasize ROCE. The chart on the following page visually represents changes in ROCE and

\*<sup>2</sup> ROCE (return on capital employed): Operating profit divided by operating assets

EBITDA from fiscal 2021 through fiscal 2023. With fiscal 2019 as a benchmark, the current medium-term management plan initially called for the AGC Group as a whole to lift ROCE from 5.9% to 7.5% and to increase EBITDA by approximately ¥100.0 billion, to ¥344.0 billion, by fiscal 2023. In fiscal 2021, however, we surpassed these targets by posting ROCE of 11% and EBITDA of ¥372.9 billion. Therefore, our new targets for fiscal 2023 are to increase EBITDA by approximately ¥60.0 billion, to ¥433.0 billion, while keeping ROCE at 11%. Although the Chlor-Alkali and Urethane Business is expected to decline amid a softening market, anticipated recovery of the Automotive Glass Business and growth of other businesses will more than make up for it.

### Projected Changes in ROCE of Respective Businesses

ROCE in FY2021 (Actual) ● vs. FY2023 (Target) ●



Notes:

1. EBITDA = Operating profit + Depreciation
2. ROCE: Operating profit forecast for the current fiscal year ÷ Operating asset forecast at the current fiscal year-end (based on fiscal 2023 targets).  
Operating profit by business is before allocation of common investments.
3. The diameter of each circle above, excluding those on a Groupwide basis, represents the scale of EBITDA of the respective businesses.

In fiscal 2021, despite a global economic environment that remained challenging, we were able to achieve ROE above 10%. This performance is testament to steady progress in building a stable business portfolio that is resilient to market fluctuations. Moreover, in light of our fiscal 2021 performance, I do not see any cause for changing our basic strategy of *pursuing ambidextrous management*. By accelerating the growth of Strategic Businesses while improving the ROCE of Core Businesses, the AGC Group will transform its business portfolio even further.

I view my own role as being to develop and execute plans for the realization of the president & CEO's vision. As I have explained, we are making good progress under the current medium-term management plan. Nonetheless, we must recognize that stepped-up investments in Strategic Businesses mean both greater opportunities and risks. For this reason, I believe one important role of the chief financial officer is to vigilantly monitor risks and, if risks outweigh opportunities, take decisive action to curb investments. While keeping this role firmly in mind, I will transform our business portfolio in accordance with the basic strategies of the current medium-term management plan, thereby preparing the way for the realization of Vision 2030.





## A Message from the Chief Technology Officer

AGC will step up the pace of R&D by focusing on ambidextrous development, open innovation, and digital transformation.

### Hideyuki Kurata

Representative Director, Executive Vice President, CTO,  
General Manager of the Technology General Division,  
General Manager of the Business Development Division



## Three R&D Pillars

### Accelerating Development to Meet Changing Needs

Over the more than 100 years since its founding, the AGC Group has refined core technologies in the fields of materials, functional design, and production. At the same time, we have accumulated and evolved common basic technologies, such as analysis, evaluation, and simulation technologies, and combined them with our core technologies. These combinations have formed the basis of high-value-added solutions that could not have been achieved through the application of technologies in isolation. In this way, we have helped address social issues in each era. Social issues are currently becoming increasingly complex, and our customers are seeking a greater variety of advanced solutions in response. In addition, with the faster pace of social change, the timely creation of solutions is gaining importance. The AGC Group will reflect such changes and continue helping solve social issues by increasing the speed of development through an emphasis on ambidextrous development, open innovation, and digital transformation.

### ► Ambidextrous Development

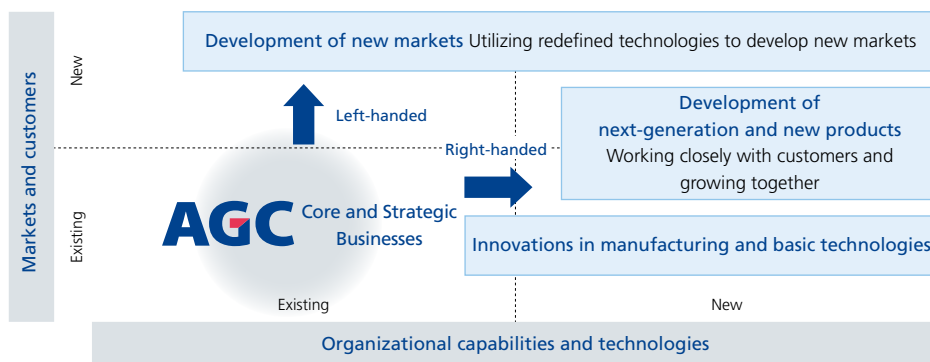
#### Heightening the Competitiveness of Existing Businesses While Creating Tomorrow

First of all, let me explain ambidextrous development. “Right-handed” development refers to the innovation of existing production technologies and basic technologies and to the development of new products together with our customers. Involving working closely with customers and catering to their needs, this type of development uses a forecasting approach in which current conditions are the starting point of projections and improvement measures. “Left-handed” development, by contrast, is based on backcasting, which begins by anticipating future trends and then undertakes the initiatives and new business creation needed to adapt to these trends. In other words, the goal of left-handed development is to open up new markets by redefining existing production technologies and fundamental technologies. Our history includes many examples of both types of development. An example of right-handed development is AGC’s use of architectural glass production technologies and basic technologies. Using these technologies, we developed Low-E glass, which is highly functional double-glazing glass that has heat-insulating and heat-shielding properties. As for left-handed development, the development of automotive glass and glass for cathode-ray tubes enabled forays into the automobile and television fields.

Both types of development are important. The AGC Group has grown and evolved by heightening the competitiveness of existing businesses through right-handed development while helping create the future through left-handed development. Balancing the two approaches is the key to advancing ambidextrous development. Although development bases tend to emphasize right-handed development that meets the needs of customers by solving their problems, this approach alone will not allow us to adapt to major changes in society. With this in mind, I encourage researchers to tackle both near- and long-term development challenges. At the same time, as I believe that my mission is to determine how best to allocate management resources between right- and left-handed development, I am committed to achieving an optimal overall balance between them.

### Ambidextrous Development

- **Right-handed development:** Innovating manufacturing and basic technologies to develop new products together with customers
- **Left-handed development:** Redefining proprietary technologies and developing new markets



### ► Open Innovation

#### — Promoting Collaboration with External Partners

Next, I would like to focus on our approach to open innovation. As I mentioned earlier, society is calling for faster responses to issues that are becoming ever-more complex. Given the growing difficulty of addressing such social issues using only the AGC Group's proprietary technologies or combinations thereof, collaboration with customers, universities, research institutions, venture companies, and other outside partners is vital.

To date, the Group has conducted many different types of collaboration. A recent example is our joint development initiative with NTT DOCOMO, INC., a major telecommunications carrier. At

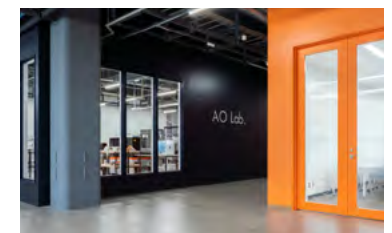
present, finding locations in cities where mobile communication antennas can be installed is becoming difficult. In response, we have been partnering with the telecommunications carrier to develop WAVEATTOCH™, a glass antenna that can be installed from the interior side of existing window glass, thereby converting the windows of downtown buildings into antennas.

We are also advancing open innovation through industry-academia tie-ups, which include joint research with the University of Tokyo, Tokyo Institute of Technology, and Nagoya University. These joint efforts are accelerating the creation of new products and businesses. Moreover, industry-academia tie-ups not only augment the skill sets of our research personnel but also provide university students with educational opportunities. Thus, such projects are very meaningful in terms of enhancing the R&D capabilities of Japan as a whole.

In addition to the aforementioned efforts with external partners, the Group aims to accelerate innovation by promoting collaboration among in-house businesses. To this end, we established a collaborative creation space, AGC Open Square (AO, pronounced "ah-oh"), on the premises of the AGC Yokohama Technical Center (YTC) in 2020.

Thus, based on the concepts of "connect," "create," and "materialize," YTC has established a platform for collaborative creation with such partners as companies, research institutions, and universities. While precautionary measures have been put in place to prevent the spread of COVID-19, AGC Open Square has already received many visitors from outside the Group.

Also, by bringing together R&D functions that were previously split between two bases, YTC has created a system that seamlessly connects everything from materials and process development to equipment technology development. This integrated system gives in-house researchers more opportunities to interact with each other. Consequently, we have high hopes for YTC as a hub that will produce innovation.



AGC Open Square (AO)—A collaborative space within the AGC Yokohama Technical Center

### ► Digital Transformation

#### — Shortening Development Lead Times by Utilizing New Digital Technologies and Methods

The third component of our efforts to accelerate development is digital transformation, which entails the active adoption of new digital technologies and methods. For example, by incorporating

materials informatics—which means the use of AI, big data analysis, and data mining in materials development and composition development—the AGC Group is increasing the competitiveness and speed of R&D. What is more, proposals derived by engineers through the application of AI to the vast amount of data accumulated thus far will heighten the inventiveness of our researchers.

An example of a product that originated from the application of materials informatics is AMOLEA™, an environment-friendly fluorinated solvent. Normally, when developing fluorine compounds, many candidate compounds have to be actually synthesized. In developing AMOLEA™, however, before conducting actual synthesis we narrowed down candidate compounds by running AI-enabled simulations that referred to a database comprising our accumulated data and data collected from published papers from around the world. Also, we are dramatically truncating development lead times through the use of virtual reality for prototype creation and tests that formerly had to be carried out in the real world. Such initiatives include utilizing virtual reality spaces to share with customers visual representations of architectural or automotive glass installations. Also, we are using numerical analysis methods to predict the fracture patterns of chemically tempered glass.

## Reinforcement of the AGC Group's Comprehensive Strengths

### — Heightening Comprehensive Strengths by Integrating Businesses Globally

As well as AGC's Technology General Division and Intellectual Property Division, the chief technology officer has jurisdiction over Groupwide divisions, namely, the Environment, Occupational Health & Safety and Quality (EHSQ) General Division and Business Development and Productivity Innovation divisions. In the AGC Group, which has introduced an in-house company system, these divisions enhance the Group's comprehensive strengths by globally linking technologies and businesses. For example, awareness of sustainability is growing worldwide. Therefore, in addition to in-house company and regional initiatives, more than ever the AGC Group must take a global approach to identifying and advancing measures to address environmental, safety, and quality issues. With this in mind, the AGC Group has declared that it aims to achieve *net-zero carbon emissions* by 2050. To realize this goal, the EHSQ General Division and the Technology General Division have to strengthen cooperation with in-house companies so that the Group can concertedly advance initiatives and technology development that reduce greenhouse gas emissions. Given our leading shares of the markets for various materials indispensable for day-to-day life, I believe that we have a responsibility to promote such initiatives.

Another important role of the chief technology officer is the creation and development of new Strategic Businesses. Tasked with proposing and advancing such businesses, the Business

Development Division not only coordinates with in-house companies, strategic business units, and the Technology General Division but also collaborates with external partners. In addition, I want to emphasize that the technological power of the AGC Group lies in the all-encompassing scope of its technological capabilities. Our core technologies include materials technologies for glass, inorganic, organic, and ceramic materials; functional design technologies that realize composite, highly functional materials; and production technologies that support innovative processes and unique facilities. As well as the aforementioned core technologies, we have further developed and incorporated such common basic technologies as analysis, evaluation, and simulation technologies.

## Responsibilities of the Chief Technology Officer

### — Developing Personnel and Technologies to Continue Benefiting Society

In manufacturing, technologies are key. Accordingly, the continued creation of technologies that earn worldwide recognition is essential for the sustained growth of AGC's corporate value. Given that only people can create technologies, the establishment of a culture that nurtures personnel and technologies and thereby enables the Group to continue contributing to society is paramount. The Group has many highly skilled, ambitious personnel. Indeed, the growth of the AGC Group has been driven by a virtuous cycle in which the outstanding technologies and technological prowess established by these personnel have attracted additional talent. To maintain this cycle, we must always set challenging goals, a mindset encapsulated by the motto expressing our founding spirit: "Never take the easy way out, but confront difficulties." Further, whatever lofty goals we set, I am confident that we have the ability to accomplish them.

I am committed to carefully analyzing the ambitious goals proposed by each person and to holding discussions with personnel to support the achievement of these goals. My own goal is to create workplaces where diversity is recognized, all kinds of opinions can be expressed, and personnel have an ongoing sense of optimism and personal growth. Accordingly, I will fulfill my responsibilities as chief technology officer with a view to realizing this goal and creating employee-friendly work environments of which personnel can be proud.





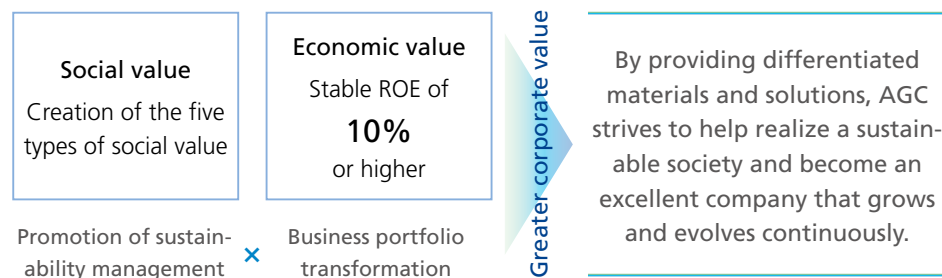
## Toward Realizing Vision 2030

In February 2021, the AGC Group unveiled Vision 2030, its new long-term management strategy, and also commenced its new medium-term management plan, **AGC plus-2023**. We are currently taking initiatives to reform the business portfolio and advance sustainability management as key strategies to sustainably create social value and economic value over the long term.

### Long-Term Management Strategy: Vision 2030

Under Vision 2030, AGC has set the following long-term aim: “By providing differentiated materials and solutions, AGC strives to help realize a sustainable society and become an excellent company that grows and evolves continuously.” To realize this, the Company must create economic value by improving capital efficiency through reforms to its business model and creating new businesses, in addition to creating social value through various corporate activities and by providing products and technologies. Our first major strategy in this endeavor is *business portfolio transformation*. AGC aims to expand Strategic Businesses and accelerate growth while reforming business models and core business structures in order to build a business portfolio resilient to changes in market conditions with high asset efficiency, growth potential, and carbon efficiency. Our second major strategy is the *promotion of sustainability management*. Sustainability targets for the entire Company and each business are set and then pursued while minimizing the negative impacts and maximizing the positive impacts of business activities on the planet and society.

- Grow through well-balanced creation of social and economic value



### Our Mission and Brand Statement: *Your Dreams, Our Challenge*

In accordance with the **“Look Beyond”** vision, we have declared Our Mission to be “AGC, an Everyday Essential Part of Our World: AGC’s unique materials and solutions make people’s lives better around the world every day.” This is central to management and our work at AGC. We decided on *Your Dreams, Our Challenge* as our brand statement to convey our passion to stakeholders inside and outside the Company. This signifies the purpose of the AGC Group, underpinned by Vision 2030. The Group revises its long-term management strategy once every five years or so while eyeing the next decade. This is mainly because it takes 10 to 20 years to develop and commercialize new materials. Moreover, we ask ourselves why the AGC Group exists while remembering where we came from, as expressed in our corporate philosophy and founding spirit, and view this process as an opportunity to revisit our long-term management strategy. Management, based on our long-term strategy that revolves around our purpose, is the basis for sustainable growth of the AGC Group.

#### Brand Statement

## Your Dreams, Our Challenge

Today, by working with others to combine knowledge and advanced technology, we help make ever-greater achievements possible and bring bolder ideas to life. AGC creates many types of social value through its products, based on its brand statement.

## Major Strategy 1 Business Portfolio Transformation

### What Is “Ambidextrous Management” at AGC?

Under Vision 2025, unveiled in February 2016, AGC defined Strategic Businesses as growth engines for the future and Core Businesses as components of its solid earnings foundation. Accordingly, the Company created a framework for strategic investments and aggressively pursued M&A deals, while also enhancing the ability of Core Businesses to generate cash, resulting in the rapid growth of Strategic Businesses at the same time. AGC’s approach to this kind of “ambidextrous management” became a case study at Stanford University’s Graduate School of Business, and the Company’s operations are managed with a clear understanding of this concept.

Ambidextrous management at the AGC Group is unique in that it entails the coexistence and practice of two different organizational capabilities, namely, exploiting mature businesses and exploring new businesses. This management system has become embedded in our organizational culture. Business development divisions under the direction of the management team are responsible for business incubation through the corporate investment system, and business divisions and R&D divisions send human resources and train personnel to become in-house entrepreneurs. This system of nurturing businesses and training personnel for the eventual handing off to business divisions leads to improved sustainability of ambidextrous management without causing problems, such as shortages of personnel for creating new businesses, or misaligned interests that tend to arise between new business divisions and mature business divisions.

Encouraging employees to take on new challenges is a fundamental aspect of the organizational culture at the AGC Group. Adapting to industry and market changes, the history of the Group is one of constant creation of new applications for materials, and a spirit of taking on challenges is essential to innovation. The accumulation of such achievements has shaped the current organizational culture of the Group. Dialogue is key to preserving this organizational culture. Through dialogues with business divisions and employees, management has continued to champion that learning from challenges and experiencing failures is good in itself. The culmination of successes and failures from facing challenges in our management systems and organizational culture is an irreplaceable, intangible asset that facilitates the continued improvement of corporate value for the AGC Group today and far into the future.

### Direction of Business Portfolio Transformation

At the AGC Group, our business portfolio has changed substantially as a result of measures taken since fiscal 2015, when our current chairperson, Takuya Shimamura, was appointed CEO. Management defined Mobility, Electronics, and Life Science as Strategic Businesses, and it continues to grow and expand these businesses through marketing strategy and M&A deals. The period to date was the first chapter of corporate transformation, and the period starting in fiscal 2021 is the second chapter.

For this second chapter, AGC revised its business portfolio management methods in light of changes in the business environment and strategies, in a bid to further transform the business portfolio. Currently, AGC comprehensively evaluates businesses based on criteria that include resilience to market changes, asset efficiency, growth potential, and carbon efficiency; makes decisions on how to allocate management resources; and then draws up business strategies and investment plans.

Over the long term, it is imperative that we maximize economic value and social value while pursuing our business portfolio strategy. In our Core Businesses, most of which consume large amounts of energy, we are focusing on technological innovations to reduce greenhouse gas emissions in the manufacturing process while increasing the ratio of higher-value-added products. In Strategic Businesses, meanwhile, since both carbon efficiency and asset efficiency are high, AGC is keen to spur further growth in these businesses, which should lead to greater economic and social value. Growth in Strategic Businesses translates into the creation of a more sustainable business portfolio. As a specific example, in fiscal 2021, AGC sold its North American Architectural Glass Business and concentrated resources in the Architectural Glass Business in other regions where it has a stronger presence. In the Life Science Business, meanwhile, AGC is targeting market opportunities for growth through the timely expansion of production capacity with a strategic combination of capital investments and acquisitions. The central strategy of continued transformation of the business portfolio is to improve the corporate value of the AGC Group, now and in the future. The Group aims for Strategic Businesses to account for a majority of consolidated operating income by fiscal 2030.

## Initiatives in Strategic Businesses

Of the three businesses designated as Strategic Businesses, the Life Science and Electronics businesses were the first to embark on growth trajectories. In the biopharmaceutical CDMO\*<sup>1</sup> business in the Life Science Business, AGC has been contracted for drug development projects through to commercial production with a combination of single-use bioreactors (SUBs), which can handle many kinds of strains in small lots, and stainless steel cell culture (SUS) bioreactors, which are suited for large-scale projects. The Company is executing measures from a long-term perspective with the objective of reaching ¥200.0 billion in net sales from fiscal 2024 to fiscal 2025, by strengthening competitiveness in the field of cutting-edge gene and cell therapies. In the Electronics Business, AGC is expanding the use of photomask blanks for EUV lithography in the semiconductor production process. AGC plans to double its production capacity in fiscal 2022 and again in fiscal 2024, in a bid to tap into demand in this growing market.

### Major Expansion in Capacity in the Cell and Gene Therapy Field

The AGC Group has positioned the Life Science Business, which includes the biopharmaceutical CDMO business, as one of its Strategic Businesses, and has aggressively made acquisitions and capital investments to expand this business domain and bolster technologies.

In the cell and gene therapy field, which has seen significant advances in the past few years, in fiscal 2020, AGC acquired Italy-based Molecular Medicine S.p.A. (MolMed), which has a spectacular track record and cutting-edge technologies. In fiscal 2021, AGC acquired the cell and gene therapy facility of Novartis Gene Therapies, gaining a foothold for production capacity in the United States, the largest market for such therapies in the world. Through investments to expand capacity at each site and leveraging MolMed's superior knowledge, we are working to expand high-quality GMP\*<sup>2</sup> and services.

The AGC Group provides a wide range of global CDMO services, from plasmid to cell and gene therapies, including from its site in Heidelberg, Germany, which is commercializing the contract manufacturing of plasmid DNA as a raw material for cell and gene therapies.



\*1 CDMO (contract development and manufacturing organization): A company that is contracted to take over manufacturing and production method development

\*2 GMP (good manufacturing practice): Standards for managing production and quality in pharmaceuticals and quasi drugs

## Initiatives in Core Businesses

In the Core Businesses of Architectural Glass, Automotive Glass, Chemicals, Display, and Ceramics, AGC is tapping into demand in countries and regions around the world as social issues caused by climate change and urbanization become more serious. For example, sales have steadily increased for Low-E double-glazing glass, which helps buildings conserve energy, thanks to stricter government regulations regarding building renovations in Europe. In the Chemicals Business, chlor-alkali products have been performing well on the back of expanding demand for polyvinyl chloride (PVC) in Southeast Asian countries, where strong investments are being made in urban infrastructure. In order to reduce the environmental footprint of our business activities, we have been focusing on innovative manufacturing technologies and advancing R&D and field tests of energy conversion concepts, such as the electrification of the glass-melting process and use of ammonia combustion.

### World's Highest-class Insulation Performance and High Durability Vacuum-Insulating Glass FINEO

FINEO is a vacuum-insulating glass that was developed in collaboration with Panasonic Holdings Corporation. It realizes best-in-class insulation performance and high durability with a thickness of less than 1 cm by utilizing advanced technology. Its thermal insulation performance equals that of a triple glazing while its weight is one third lighter while even better in terms of acoustic insulation and better light transmission. The development of a product that can be used in existing window frames led to the creation of new solutions that can be provided to both the new construction and renovation markets.

At its launch FINEO won the Belgian Prize for Energy and the Environment 2019 in the Sustainable Energy category. This prize is awarded to those who thanks to their achievement and creativity contribute towards saving the planet.





## Major Strategy 2 Promotion of Sustainability Management

### AGC's Approach to Sustainability Management

Since its founding, the AGC Group has solved social issues by providing various materials and solutions through collaboration with its customers, who are leading players in each era. In recent years, the movement toward sustainability has been a major change in the business environment that rivals the expansion of globalization and the proliferation of the internet in the past. To adapt to this major change, AGC is changing what should be changed and maintaining what should be maintained. This is how the AGC Group strategically approaches sustainability management. To this end, the Company anticipates future changes in social issues and identifies material issues that could become major opportunities or risks over the long term. Moreover, we have clarified the social and economic value we aim to create while advancing Group management and business activities along this path.

More specifically, in addition to earnings targets, the Company has set sustainability targets based on material issues for each business division (i.e., product-based solutions for social issues and initiatives for the environment, human resources, and safety) and incorporates these goals in its medium-term management plans. The businesses of the AGC Group have diverse strengths, business models, products, and regions where business is developed. We therefore allow each business to effectively set their own logical goals based on their unique traits. Moreover, in response to problems caused by climate change, management decides Companywide policies and objectives for issues that AGC should focus on and clarifies the initiatives that should be taken by each business division.

### Social Value the AGC Group Wants to Create

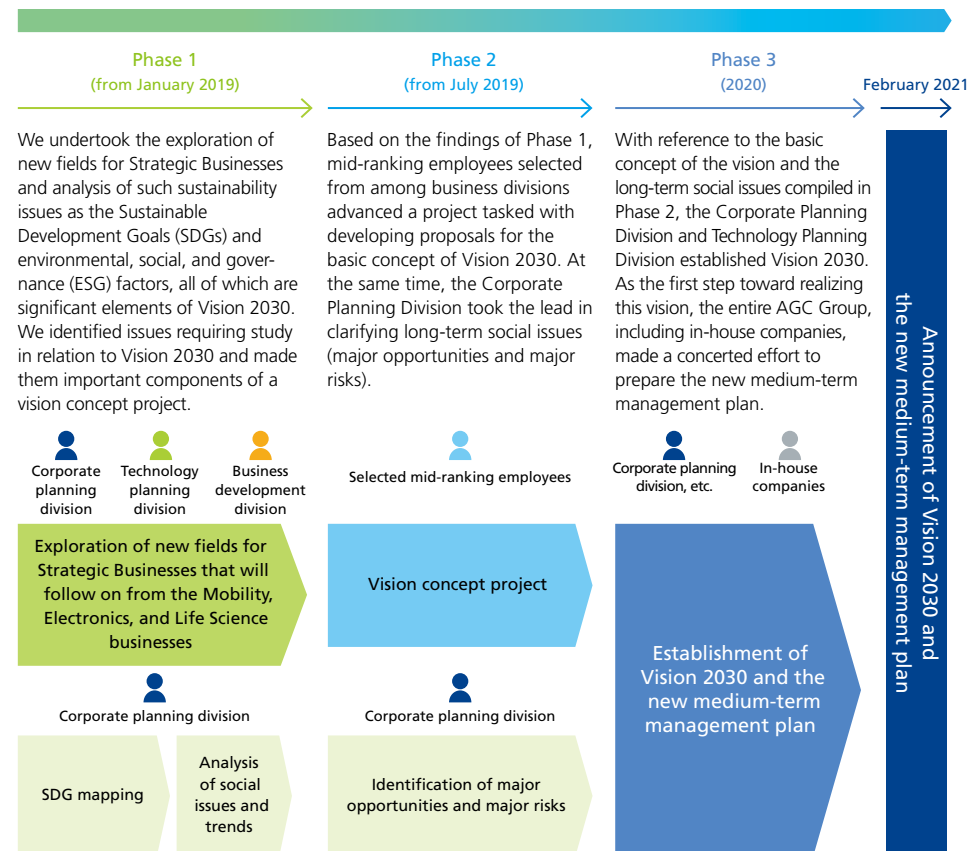
- Creation of the five types of social value through business activities to resolve social issues



### Material Issues for the AGC Group

In tandem with changes in the operating environment and business conditions, the AGC Group formulated Vision 2030 after identifying long-term social issues (material issues) that should be regarded as major opportunities and risks for the AGC Group. Our current medium-term management plan has basic strategies and measures for realizing this vision. Major opportunities are social issues that might turn into business opportunities and lead to sustained growth over the long term in Core Businesses and Strategic Businesses. On the other hand, major risks are social issues that could pose a threat to the survival of the Group unless properly managed.

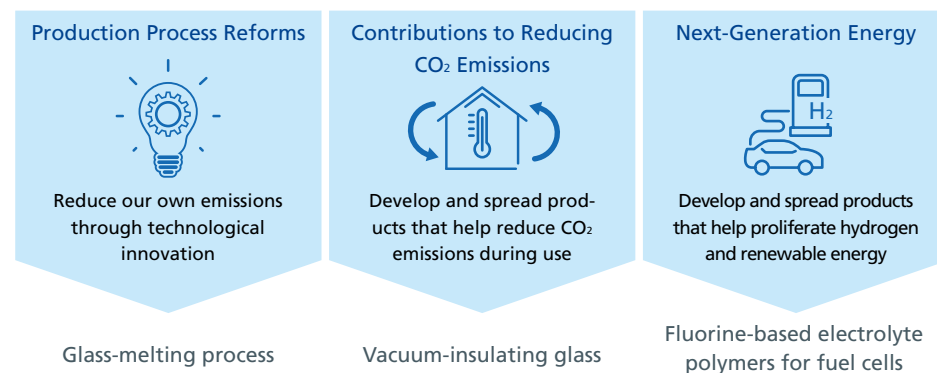
### Formulation Process for the Long-Term Management Strategy Vision 2030 and the Medium-Term Management Plan **AGC plus-2023**



## Initiatives to Address Climate Change

As a midway point to its goal of achieving *net-zero carbon emissions* by 2050, the AGC Group has set 2030 milestone targets to reduce greenhouse gas emissions by 30% and cut greenhouse gas emissions per unit of sales by 50% (both compared with 2019 levels). We also intend to continue contributing toward a carbon-neutral world through our products and technologies. We have collected our specific strategies and measures to achieve net-zero carbon emissions into a road map for addressing climate change, and have begun to address issues in order of priority and importance. As an industry leader, AGC is developing and introducing production technologies for energy-conserving glass with world-class performance, contributing to cutting emissions of greenhouse gases from the manufacturing process. In addition to steadily and systematically outfitting oxygen combustion and electrical boosters to existing technologies and facilities, the Company is working on the development of innovative technologies that will have a major impact on the future. Specifically, from the end of December 2021, AGC launched the joint development of combustion technologies for ammonia fuel with Taiyo Nippon Sanso Corporation, the National Institute of Advanced Industrial Science and Technology, and Tohoku University. We are further expanding our contributions to the prevention of global warming through our products and technologies. In both Core Businesses and Strategic Businesses, AGC has drawn up strategic aims for technological and business development in the fields of the environment and energy. In accordance with these aims, the Company is expanding the use of the AMOLEA™ series of environment-friendly, next-generation refrigerants and solvent, as well as solar cells embedded in construction materials.

■ We are aiming for *net-zero carbon emissions* in our business activities and striving to help the world become carbon neutral.



## Human Resource Initiatives

*AGC People: the driver of our growth!* is the motto of the AGC Group. We aim to remain viable as a corporate group with the slogan, "By enabling each and every employee to fully demonstrate their capabilities, we are creating an organization that is stronger than the sum of its parts, as we achieve our business strategies and organizational targets while delivering corporate and individual growth." To this end, we are *pursuing diversity, strengthening the individual, and improving employee engagement*. In 2021, opportunities for communication inside the Company were diminished by the COVID-19 pandemic. In order to improve employee engagement, we proactively deployed online meeting technologies; held global Companywide meetings with management present; held discussions between management and employees at sites inside and outside Japan and employees at affiliated companies; and expanded skills-based networking events across national, regional, and business division boundaries.



Online dialogue between the management team and employees from overseas sites

## Open Innovation Initiatives

At the AGC Group, we nurture open innovation with customers and external partners in order to maximize the value of our in-house developed materials and solutions. Through strategic communications with customers that are leading companies in their respective industries, the Group identifies future changes in the industry and technologies and ceaselessly advances the development of technologies and products on multiple fronts with an eye on the future. With the aim of creating solutions through the exploration and acquisition of innovative technologies and supporting technologies, the Company collaborates with a broad range of external partners, such as universities, research institutions, and venture firms. In 2021, our new research wing was fully opened at the AGC Yokohama Technical Center, and we welcomed many companies to our collaborative creation space called AGC Open Square (AO) to explore the possibilities of collaboration.



See below for details about AGC Open Square.  
<https://www.agc.com/en/innovation/ao/index.html>

## Process for Identifying Long-Term Social Issues (Material Issues)

Following the process below, the AGC Group identifies long-term material issues as major opportunities and major risks that might have an impact on the long-term direction of business and corporate value.

### Formulation Process

#### 1 SDG mapping

To enable analysis of our long-term social issues, we reconfirmed our current progress toward the realization of sustainability by using the 169 targets of the SDGs as the basis for analysis of the types of social issues addressed by our existing products.

1. Focused on existing mainstay products in each business field
2. Calculated the "business impact score" for each product based on its sales and growth potential
3. Linked each product to the SDG targets to which it can contribute
4. Described the type of social value that the AGC Group is creating in relation to each SDG by taking into account the contributions of all products linked to a given target
5. Added up the total business impact score of all products linked to each type of social value
6. Corrected the business impact score for each type of social value based on the degree of contribution to addressing social issues
7. Set the corrected results as the social impact score and identified the top 15 types of notable social value

The above procedure identified fields where existing products can help address current social issues.



Energy saving, creation, and storage and climate change mitigation

Construction of smart cities

Provision of reliable, safe water resources



Realization of safe, comfortable mobility

Health improvement and realization of longer life spans

#### 2 Analyzing social issues and trends

In light of its current contributions to the resolution of social issues, important opportunities and risks for the Group going forward were identified through analysis of future trends in social issues. (The analysis results were also used as basic information in preparing Vision 2030.)

##### ① Compiled a list of social issues

- 169 targets of the SDGs
- Sustainability megatrends (circular economy, etc.)
- Based on the *Global Risks Report* (World Economic Forum), compiled a list of items representing opportunities and risks for the AGC Group (79 items in total)

##### ② Assessed material issues for stakeholders

###### Social issues with opportunities

With respect to the list of social issues,

- Identified social issues addressed by customers and competitors
- Assessed material issues based on sustainability and megatrends

###### Social issues with risks

With respect to the list of social issues, assessed material issues based on the assessment indicators of major ESG rating organizations

##### ③ Assessed material issues for the AGC Group

###### Social issues with opportunities

With respect to the list of social issues, assessed material issues based on relevance to current Core and Strategic Businesses and the potential fields for the latter

###### Social issues with risks

With respect to the list of social issues, assessed material issues based on overviews of the Group's value chains, including upstream and downstream

#### 3 Identifying major opportunities and major risks

Based on the results of analyzing trends in social issues and in light of expert opinions, we identified major opportunities and major risks associated with simultaneously achieving sustainable development of the planet and society and sustainable growth as a corporate group. These opportunities and risks are discussed and determined by the Sustainability Committee and the Board of Directors and were then used as the foundation for setting sustainability targets.

##### Major Opportunities

##### Major Risks

- Addressing climate change
- Using resources effectively

- Developing social infrastructure
- Achieving safe, comfortable mobility
- Addressing food crises
- Building an info-oriented, IoT-society
- Facilitating better health and longevity

- Creating socially and environmentally conscious supply chains
- Ensuring fair and equal employment and workplace safety
- Considering relationships with local communities and the environment



# Business Strategies

This section gives an overview of each business and its strategies.

- 40 Business Overview
- 41 Glass Business
- 49 Electronics Business
- 52 Chemicals Business
- 56 Ceramics Business
- 57 New Business Creation



## Business Overview



Notes 1. Sub-business net sales are based on net sales to external customers. 2. As net sales and operating profit (loss) by business are before the deduction of eliminations, the sum of net sales by business does not equal Companywide net sales, and the sum of operating profit (loss) by business does not equal Companywide operating profit. 3. Among manufacturing sites in the Glass Business, for the Architectural Glass Business, the manufacturing sites are for float glass and figured glass. 4. Cover glass for car-mounted displays, previously included in the Electronics Business, was moved entirely to the Glass Business in 2022 following organizational changes at the Company.



## Glass Business

### Architectural Glass Business

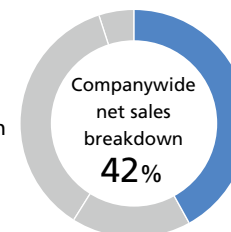
Based on our vision of *inspiring people by using glass to connect them with their surroundings*, we provide a wide variety of products that meet the needs of each region.

### Automotive Glass Business

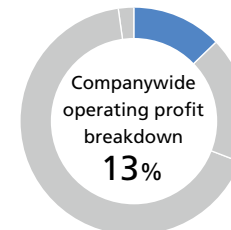
We contribute to make safe and comfortable cars by providing high-performance automotive glass globally. At the same time, we develop and supply unique high-value-added products that will lead the realization of sustainable mobility society.

### Fiscal 2021 Performance

Net sales  
¥734.3 billion

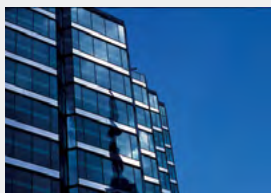


Operating profit  
¥27.3 billion



### Architectural Glass Business

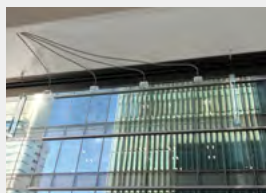
#### Architectural glass



#### Building-integrated photovoltaic (BIPV) modules



#### Glass antennas



#### Overview

In 1909, we became the first company to successfully produce flat glass in Japan. Now, we boast one of the largest shares of the global market for float glass. Since its establishment, the AGC Group's Architectural Glass Business has been a mainstay of profits. Currently, we are also aggressively developing new businesses that manufacture high-performance glass and environment-friendly glass. Examples of these leading-edge products include float glass for homes, buildings, and industrial use and such high-performance glass as double-glazing glass with heat-insulating and heat-shielding properties and laminated glass ideally suited to crime prevention applications.

#### Main Products

Float glass, laminated glass, double-glazing glass, eco-glass, tempered glass, heat-resistant tempered glass, mirrors, colored glass, figured glass, and wired glass

### Automotive Glass Business

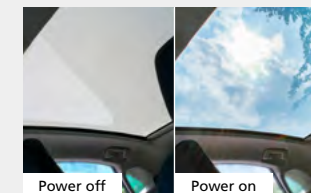
#### Laminated glass and tempered glass



#### Cover glass for car-mounted displays



#### Smart glazing



#### Overview

We have carved out one of the top share of the global market for automotive glass by establishing technology development sites in Japan, Europe, North America, and China that provide high-quality products, services, and solutions to global automobile manufacturers. The Core Business is the Automotive Glass Business, which manufactures and sells laminated glass, tempered glass, and other high-value-added products in 15 countries worldwide. Positioned as a Strategic Business, the Mobility Business boasts world-leading, advanced coating and glass-processing technologies, mainly used in the manufacture of cover glass for car-mounted displays. Going forward, this business will grow sales significantly.

#### Main Products

Laminated glass, tempered glass, smart glazing, 99% ultraviolet cut glass, infrared cut glass, privacy glass, acoustic glass, laminated side windows, water repellent door glass, snow-melting and ice-melting front glass, electrothermal defogging glass, printed glass antennas, embedded digital television glass antennas, glass for head-up displays, module assembly windows, and cover glass for car-mounted displays



## Architectural Glass Europe & Americas Business

### Business Environment

#### Opportunities

- Widening adoption of the environment-friendly Renovation Wave Strategy,\* mainly in Europe
- Growth in demand for environment-friendly products with improved energy efficiency and other benefits
- Growth of markets for 5G communications and other next-generation high-speed communications

\* Announced in 2020 by the European Commission to promote renovation that improves the energy efficiency of buildings

#### Risk

- Regulations and social obligations focused on the greenhouse gas emissions of glass production processes

### Business Issues

	Business	Main Task
Core Business	Architectural Glass	<ul style="list-style-type: none"> <li>■ Be the long-term stable source of earnings by increasing competitiveness in our core markets</li> </ul>

### Strengths

- A powerful brand that customers associate with advanced performance, quality, and reliability
- The industry's most extensive product lineup, stretching from commodity products through to leading-edge high-value-added products
- An integrated value chain
- Comprehensive glass technology-related capabilities as a leading global company

### Business Strategy



**Davide Cappellino**

President of Architectural Glass Europe  
& Americas Company

Our goal is to be a long-term, stable source of earnings for AGC and for the shareholders. Our ambition is to be the most profitable player in each of our business fields. Within our management policy "We lead the way for a better world," we are working on five dimensions.

#### Be the Best Player in Each of Our Business Fields

We focus our resources, we accelerate innovation and apply the latest digital technologies to build the best supply chain and become the most reliable player in each of our markets. The world is becoming more and more conscious about the necessity to invest in energy conservation, for environmental and for economic reasons, and to achieve a better quality of life.

We, at AGC Architectural Glass & Europe Americas (AGEA), are bringing to the market products that greatly contribute to the energy efficiency of buildings and that make life more comfortable. Therefore, we are very confident about the potential of our markets, both for the construction of new buildings and in renovation, which is a major trend in developed markets. We want to be the best player in the market, to support our customers, and allow them to secure all the opportunities ahead of us.

#### Adopt Integrated Value Chain Approach

The value chain of architectural glass can be split into two parts: "upstream" and "downstream." In the "upstream" part, natural raw materials are melted to form flat glass. Through special treatments, we add a variety of performance and functionality to flat glass, including heat reflection, safety, and decorativeness. Then in the "downstream" part of the business, large panes of glass are transformed into finished products that can be distributed to the final customers and installed in building facades, windows and for the decoration of the home interiors.

The integrated glass value chain approach of AGC, with optimized balance between upstream and downstream activities in every market, is maximizing financial performance and assuring a higher resilience to the cycles of the economy, as downstream activities assure captive output to the upstream, while presenting less fluctuations thanks to the proximity to the final customers. Our geographical presence in several regions is also shielding us from the excessive volatility of economic cycles.

#### Quick Innovation, with a Purpose

The world is moving at a faster pace than ever, and so must do our innovation. We are improving our speed, to bring to the market our new ideas quickly. At the same time, we are focusing our innovation initiatives, to concentrate our efforts where we can generate more value for our customers and for the society. One of our focus areas for innovation is the field of telecommunications.

By applying our experience in glass technology, we can treat the glass surfaces to control the transmission of electromagnetic signals. Depending on the needs of the customers, we can transform a window into a perfect barrier to 4G and 5G radio waves, or a transparent gateway, or even an amplifier of signal. We recently launched the "WAVETHRU" service, which is an aftermarket service to address the stock of windows already installed.

#### Become a Leader in Sustainability

To contribute to a carbon-neutral society, we are taking major steps to reduce greenhouse gas emissions, both through our production processes and environment-friendly products.

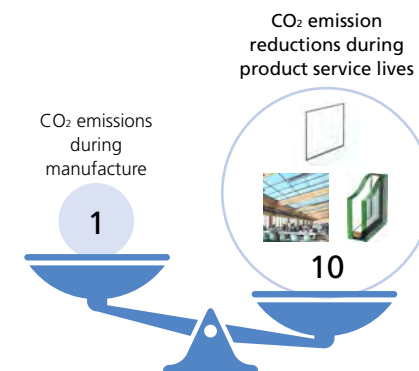
As a leader in glass, we want to play a major role in the evolution of the industry toward sustainability.

We have set up an ambitious technology road map to gradually replace fossil fuels with renewable and non-carbon emitting energy. Our 100-year-strong experience in glass melting is a great asset in this moment of challenging technological changes. AGEA will contribute strongly to the achievement of AGC's goal to be carbon neutral by 2050. At the same time, we keep on enriching our product range with eco-friendly and energy efficient glass products.

As our products greatly contribute to the thermal efficiency of buildings, during the lifetime of our products the CO<sub>2</sub> emissions that we contribute to avoid are conspicuous, many times more than the CO<sub>2</sub> emitted during the production process, even with traditional technologies.

#### Realize Business Excellence

We take every day the challenge of continuously improving our business to make it more efficient, more competitive, more capable of bringing reliability and satisfaction to our customers. By leveraging our great diversity, the different nationalities, experiences, and ideas of our colleagues all across AGEA, we are setting up a culture of challenge, courage, and obsession with continuous improvement. We are inspired by AGC motto "Your Dreams, Our Challenge" and we work for it every day.



#### Fiscal 2021 Review

##### ■ Architectural Glass Europe & Americas Business

Mainly in Europe, shipments increased as economies recovered from the effect of the COVID-19 pandemic. Further, selling prices in Europe and South America also rose markedly. In addition, the aforementioned revenue growth factors outweighed a decline in revenues that resulted from the sale of the North American Architectural Glass Business in August 2021. Consequently, revenues were higher than those of fiscal 2020.

## Architectural Glass Asia Pacific Business

### Business Environment

#### Opportunities

- Growing demand for environment-friendly products, such as products that improve energy efficiency and Building integrated photovoltaic products
- Technological differentiation through innovation in manufacturing technologies
- Window opening of buildings becoming potential platform to serve more sophisticated society's infrastructure by such solution as glass antennas
- Permeation of high-value-added products in growing Asian markets such as Thailand and Indonesia and in Oceania

#### Risks

- Meeting further requirements stemming from climate change issues (for example, the need to further reduce the GHG emissions of float glass furnaces)
- Emergence of fierce competition as a result of oversupply in the region

### Business Issues

	Business	Main Tasks
Core Business	Architectural Glass	<ul style="list-style-type: none"> <li>■ Generating cash in the Core Business</li> <li>■ Grow through new businesses and high-value-added products</li> <li>■ Address climate change and achieving other SDGs initiatives</li> </ul>

### Strengths

- Expertise in developing high-performance glass products and process engineering capability, with world leading class energy-saving glass being a representative example
- Manufacturing capabilities from float glass, to various coating and processing technologies
- Ability to offer customers value
- Robust supply chain underpinned by trust fostered over many years
- Diverse human resources, who support the abovementioned strengths as well as our global network

### Business Strategy



**Shigeki Yoshiba**

President of Architectural Glass  
Asia Pacific Company

Architectural Glass Asia Pacific Company will continue to strive as the most trusted leading player in the architectural glass business and enhance the global collaborations of the Architectural Glass Business, by accelerating the planning and implementation of business strategies that reflect regional conditions in Japan, Asia, and Oceania. In each market, robust supply chains, stable supply capabilities, a strong market presence, and advanced development and technological capabilities will support our growth. We will capitalize on these advantages to enhance asset efficiency, improve productivity, and reduce costs even further, thereby making the business sounder and stronger than ever. Also, in developing the business we will address such trends as energy conservation, energy creation, communications, and other challenges for building a sustainable future as our opportunities.

#### Japan Business

We operate at every stage of the supply chain, from glass production to sales and installation. While fully utilizing production facilities that are among the largest of their kind in Japan and which are the foundations of our business, we capitalize on our nationwide network of glass-processing sites as well as the distribution networks of AGC and our customers to stably manufacture and sell high-value-added products such as energy-saving glass among others. Through the utilization of know-how gained from catering to and offering solutions for a wide range of needs, we are also developing products that enhance our contribution to the realization of a decarbonized, sustainable society. One example of these efforts is Thermocline™, which has a longer service life and is more readily recyclable than other types of double-glazing glass that have high thermal insulation.





Another major strength is our ability to install products for various projects nationwide. These extensive installation capabilities not only support the existing glass business but also play a crucial role in the development of businesses offering such products as glass antennas and building-integrated photovoltaic (BIPV) products.

#### Asia Business

Asia and Oceania promise market growth. In these regions, we will capture not only expansion of commodity needs centered in Indonesia and Thailand where we have business sites, but also permeation of the high-value-added products such as coated glass with the increasing emphasis on creating a low-carbon society. In the commodity market, thanks to customer trust fostered over many years, our ability to supply products stably, and an extensive sales network inside and outside the region, we will ensure that we meet the needs of regions with growing demand for glass. Meanwhile, we are advancing businesses in the high-value-added products market by capitalizing on our position as the only domestic supplier of coated glass in Indonesia and Thailand as well as the strong presence we have established in the commodity market. In addition to initiatives in these two countries, we will lead efforts to expand high-value-added products markets in other countries. Specifically, we will conduct sales activities targeting markets in Asia, Oceania, and other regions while promoting the dissemination of high-value-added products through industry-government-academia partnerships. Also, we are helping transform existing supply chains to better serve high-value-added products and expand their markets. One important task will be to develop collaborations in the technology and marketing fields with customers who distribute and install our products. In this way, we will facilitate the supply of products with even higher added value, so that the AGC Group and its customers, prosper altogether.

## Fiscal 2021 Review

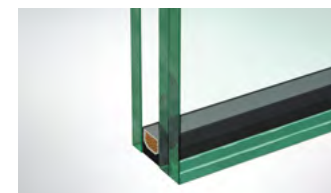
### ■ Architectural Glass Asia Pacific Business

As in fiscal 2020, COVID-19 affected demand in many countries. Further, the disruption to international logistics directly and indirectly impacted our operational management. As the economy recovered, however, the commodity market regained strength, and shipments increased, particularly in Indonesia. In Japan and Asia, utilization rates and sales prices rose year on year, while profits were up despite lower revenues.

### Social Value We Will Create

#### Contributing to a Sustainable, More Comfortable Society

Through the supply of glass products needed for construction, AGC has been serving society for its betterment. We will redouble our efforts to help realize a society that is more sustainable and comfortable by providing energy-saving solutions based on Low-E glass (double-glazing glass) and offering electricity generation solutions made possible by BIPV products. At the same time, we will create innovative technology to significantly reduce the GHG emissions of glass production while developing products and manufacturing methods that are well suited to recycling. We also strive to enhance social value by steadily pursuing improvements aimed at ensuring the Company remains an organization where diverse personnel can work safely and take pride in their work.



## A Discussion between Coworkers

**Kohei Yamamoto**

Market Development Group Smart Glass Team  
Japan General Division  
Architectural Glass Asia Pacific Company

Kohei Yamamoto joined AGC in 2018. Drawing on his experience in product planning, which was acquired in the R&D department of an exterior wall material manufacturer, he analyzes the technical issues associated with introducing BIPV modules, light control glass, and other types of smart glass products to buildings and then makes proposals for improvements.

**Marcus Tan**

Smart Glass Division  
AGC Asia Pacific Pte. Ltd.

Marcus Tan joined AGC Asia Pacific Pte. Ltd. in 2019. He previously worked for more than 10 years in the construction industry. A wealth of knowledge and insight allows him to advance the marketing and sales of BIPV modules and other smart glass products in the Asia Pacific region.

## Developing the BIPV Module Business to Advance Sustainable Construction

**Yamamoto** In sustainability management, addressing climate change is one of the key theme. Accordingly, the AGC Group has been actively promoting energy conservation in its manufacturing processes. Our BIPV products, on the contrary, through creation of clean energy, would contribute to the realization of net-zero carbon society.

**Tan** Data shows that greenhouse gas (GHG) emissions from building construction have a significant impact on global climate change. Consequently, green buildings with low CO<sub>2</sub> emissions and water use are attracting increasing attention. BIPV products are based on an important technology that can contribute greatly to the achievement of carbon-neutral, sustainable buildings through energy creation. Another big advantage is that, unlike ordinary solar panels, BIPV products can be freely designed by architects and designers. So, buildings will not lose their aesthetic appeal.

**Yamamoto** Yes, that is right. On the other hand, BIPV products pose design and construction difficulties that differ from those of ordinary building materials. Since launching its BIPV business in Japan in 2001, the AGC Group has accumulated and developed a wide range of BIPV related technologies and know-how for 20 years. The resulting competence gives the Group an advantage in BIPV products by enabling it to provide one-stop services encompassing design, construction, and after-sales services.

**Tan** September 2021 saw Singapore AGC Asia Pacific win its first order for photovoltaic glass, a BIPV product. In addition to the product earning high marks for its beneficial features, the company received praise for offering integrated services that are based on collaboration with AGC Inc. in Japan. With this in mind, we will continue sharing technical knowledge and expertise by ensuring close cooperation and effective communication between the two parties.

**Yamamoto** BIPV which incorporates electrical functions in glass, light control glass, and other innovative technologies that have hitherto not been used in buildings will fundamentally change buildings. Being able to lead the way in this transition is really exciting.

**Tan** Yes, I think so too. I will continue informing our business partners about the benefits of AGC's progressive, sustainable technologies so that more buildings incorporate AGC products.

## Automotive Glass Business

### Business Environment

#### Opportunities

- Business opportunities and increased materials-related needs stemming from changes in the market due to the emergence of the CASE\* trend
- Greater demand for high-speed communications and sensing technologies that enable autonomous driving
- Expansion of the use of materials that contribute to the electrification of automobiles
- Rising demand for vehicle interiors' comfort, and for larger and more sophisticated - vehicle mounted touch-panel displays

#### Risks

- Increase in use of alternative technologies and materials to reduce burden on environment, such as GHG emissions.
- Delayed recovery of automobile production and sales due to the prolonged effect of the COVID-19 pandemic or shortage of semiconductor supplies

\* Connected, autonomous, shared & service, and electric

### Business Issues

	Business	Main Tasks
Core Business	Automotive Glass	<ul style="list-style-type: none"> <li>■ Increase sales of high-value-added products and improve the business portfolio</li> <li>■ Improve profitability and asset efficiency and strengthen cash generation capabilities by establishing an optimal production system as well as by continuously implementing productivity improvements and cost reduction.</li> </ul>
Strategic Business	Mobility	<ul style="list-style-type: none"> <li>■ Capture business opportunities by anticipating market changes driven by CASE trend.</li> <li>■ Improve profitability by strengthening domestic operations and by start manufacturing cover glass for car-mounted displays at new plant in China.</li> </ul>

### Strengths

- Major manufacturing plants in 15 countries worldwide which enable to provide high-quality products and services
- Comprehensive glass technologies such as coating and glass-processing as well as world-class, energy-saving glass production technologies
- The AGC Group's technology development and comprehensive capabilities, which integrate glass, chemicals, and electronics

### Business Strategy

#### Yoshio Takegawa

President of Automotive Company

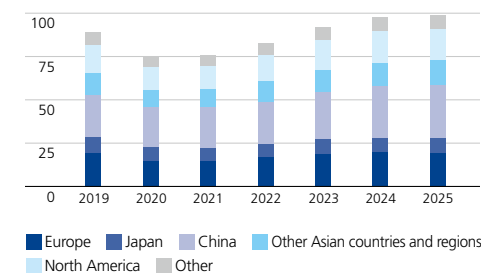


#### Automotive Glass Business

Amid the COVID-19 pandemic, global automobile production and sales decreased around the world in 2020 and remained lackluster in 2021 due to a global shortage of semiconductors. Currently, the picture is uneven, with varying degrees of recovery in respective countries. Since 2020, the AGC Group has made efforts to improve profitability by implementing production system reform and fixed cost reduction while at the same time continuously improving productivity. In conjunction with these efforts, we have accelerated the shift toward high-value-added products to enhance profitability and asset efficiency. With the aim of reducing CO<sub>2</sub> emissions, we are working to improve and develop process, including conversion to highly efficient processes through employing the advantages of our proprietary technologies.

#### Global Number of Automobiles Produced (Estimate)

(Millions of units)



\* Created based on IHS data (as of December 31, 2021)

#### Mobility Business

In the automotive industry, advancement of change of CASE is accelerating. To capture this opportunity we are promoting businesses in fields where we can demonstrate our strengths—namely, displays, antennas, and sensors—enhancing competitiveness, and transforming into more efficient businesses.

With the increasing incorporation of IT into automobiles, demand is rising for car-mounted touch-panel displays that are larger and more complexly shaped and which offer more-advanced performance. In response, the AGC Group has developed the world's first cover glass for car-mounted displays with complex three-dimensional shapes. As well as meeting the technical specifications of such displays, this product realizes the high degree of design flexibility expected of glass and the level of safety needed for automotive interiors. Thanks to these attributes, the product has claimed a large market share centered on high-end European cars.



In addition, we are accelerating the development and commercialization of important technologies that underpin autonomous driving. Specifically, we are developing fundamental technologies for antennas whose compatibility with 5G networks and other high-speed communications that enables the exchange of various information with external data servers and other entities. Other priority commercialization initiatives include our development of glass with optimal transparency in the wavelength range used by autonomous-driving sensors.

### A Message from an Employee

#### Contribute to Strengthen the AGC Group's Competitiveness from the Sales Front Line

In 2019, I joined AGC In-Vehicle Design Glass Europe GmbH (AIEU), an AGC subsidiary engaged in the sale and marketing of cover glass for car-mounted displays in continental Europe.

Cover glass for car-mounted displays has an important part to play in the major shift toward CASE vehicles that is underway in the automotive industry, and the market for these products is likely to grow even more vigorously in the future. By combining various original technologies, the AGC Group became the first company in the world to successfully develop and manufacture cover glass, which is essential for car-mounted displays. As well being as able to ensure the advanced levels of safety essential for automotive components, the Group has robust patents related to a range of critical functions for cover glass, including visibility, antifouling, and abrasion resistance. Moreover, the Group has established a system that enables flexible adaptation to customers' design requirements. Made of Dragontrail™ glass, AIEU's mainstay premium-quality cover glass for car-mounted displays has established an excellent reputation among major European automotive manufacturers.

In ensuring that the AGC Group retains a lead in this market, AIEU must rapidly identify emerging business opportunities for automotive display cover glass in Europe and share them within the Group. By conducting market research and competitor analysis and reporting on the latest customer needs so that they can be reflected in R&D, frontline sales personnel will ensure the Group always offers solutions that are ahead of the times. Going forward, we will also further strengthen relationships with customers, evolving into an entity that creates innovations in partnership with them.



**Robin Lendel**

AGC In-Vehicle Design Glass Europe  
GmbH (AIEU)  
In-Vehicle Design Glass Division  
Mobility General Division

### Fiscal 2021 Review

#### ■ Automotive Glass Business

Although shortages of semiconductors and other components impacted automobile production, business results surpassed those of fiscal 2020, when shipments fell sharply due to the COVID-19 pandemic.

#### ■ Mobility Business

Business results recovered from the pandemic-driven slump of fiscal 2020 supported by steady increase of shipments. To meet future growth in demand, we established a new manufacturing plant in China for cover glass for car-mounted displays, which started up mass production in fiscal 2022.

### Social Value We Will Create

#### Responding to Climate Change by Providing Low-E Eco-Glass

Our Low-E eco-glass ensures the temperature inside vehicles is comfortable all year round. In summer, the glass keeps vehicle cabin cool by blocking solar radiation heat, while in winter it keeps the cabin warm by preventing the escape of internal heat. By reducing the need to use air-conditioners, eco-glass improves the fuel efficiency of internal combustion engine vehicles—which lowers CO<sub>2</sub> emissions—and extends the range of electric vehicles. Furthermore, our product has the potential to reduce the need for sunroof shades thus enabling lighter vehicles at a lower cost.



#### Transforming Vehicle Windows into a New Advertising Medium

The projection of advertisements onto the side windows of taxi is transforming automotive window glass into a new medium for disseminating information. AGC's Glascene™ transparent glass screens have been adopted for a taxi-window-based mobile signage service, THE TOKYO MOBILITY GALLERY Canvas, which was launched in May 2021 by News Technology Inc. and S.RIDE Inc. Automotive side window glass of taxi will enable to project advertisement as new medium for disseminating information during idling.



▶ To view a video of Glascene™, please visit the website below.  
<https://www.youtube.com/watch?v=wkPHkJ9rQNU>



## Electronics Business

Under the Electronics Company's vision "*STAY in FRONT with SDGs*," we will continue to contribute to a sustainable society as a leading supplier of differentiated materials and solutions.

### Fiscal 2021 Performance

Net sales  
¥305.0 billion

Companywide  
net sales  
breakdown  
17%

Operating  
profit  
¥36.8 billion

Companywide  
operating profit  
breakdown  
18%

## Display Business

### Display glass



#### Overview

The Display Business has the second-largest shares of the global markets for glass substrates for thin-film-transistor (TFT) liquid crystal displays (LCD) and glass substrates for organic light-emitting diodes (OLED). We are further heightening our global competitiveness through the use of proprietary manufacturing methods and advanced production technologies. At the same time, we are focusing efforts on development aimed at next-generation display devices.

#### Main Products

Glass substrates for TFT LCD and glass substrates for OLED

### Applied glass materials



#### Overview

Concentrating on the development of new applications for specialty glass that take advantage of its distinctive thinness, lightness, and strength, we are constantly adding to our product lineup, which includes cover glass for smartphones, tablet computers, and other electronic devices as well as glass substrates for solar cells and touch-panel displays.

#### Main Products

Specialty glass for chemical strengthening and high-quality soda-lime glass

## Electronic Materials Business

### Optoelectronic materials



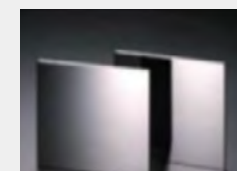
#### Overview

Such optoelectronic materials as infrared ray-absorbing glass filters for smartphones and digital cameras are the mainstays of this business.

#### Main Products

High refractive index glass substrates, diffractive optical elements and glass diffusers, glass ceramic substrates, optical planar devices, infrared ray-absorbing glass filters, aspherical glass lenses, and micro-lens arrays

### Semiconductor-related products



#### Overview

Primarily manufacturing semiconductor-related products, this business offers synthetic fused silica glass, which has established a leading market share; extreme ultraviolet (EUV) lithography photomask blanks; high-purity silicon carbide (SiC) jigs; and chemical mechanical polishing (CMP) slurries.

#### Main Products

Synthetic fused silica glass, synthetic quartz, SiC, CMP slurries, EUV lithography photomask blanks, glass frit, glass pastes, and low-temperature hermetic sealing parts

### Printed circuit board materials



#### Overview

Catering to markets with strong growth potential, this business manufactures copper-clad laminates, which are used as printed circuit board materials for high-performance applications, such as advanced driver-assistance systems and 5G systems.

#### Main Products

Copper-clad laminates and industrial polytetrafluoroethylene (PTFE) composite derivatives

## Business Environment

## Opportunities

- Higher demand for infrastructure-related products indispensable for a data-driven society enabled by big data
- Growth in demand for products essential for the safety, security, and comfort of autonomous driving-based mobility
- Increase in demand for semiconductor-related products indispensable for industry

## Risks

- Necessity of measures to reduce GHG emissions
- Market volatility in the electronics industry

## Business Issues

	Business	Main Tasks
Core Business	Display	<ul style="list-style-type: none"> <li>■ Respond to the further demand increase in the Chinese market to build a long-term, stable business foundation</li> </ul>
Strategic Business	Electronics	<ul style="list-style-type: none"> <li>■ Expand value-added products including EUV lithography photomask blanks</li> <li>■ Constantly generate new businesses</li> </ul>

## Strengths

- Marketing capabilities and ability to offer customers solutions that include technical support
- Ability to develop businesses globally
- Production technology for the float method, which is suited to the mass production of large-sized glass
- One-stop technological capabilities thanks to an integrated manufacturing system that begins from material design

## Business Strategy

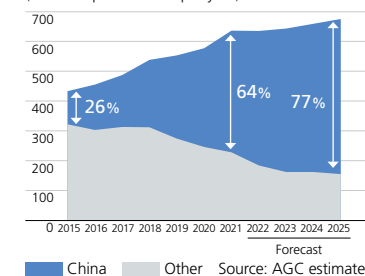
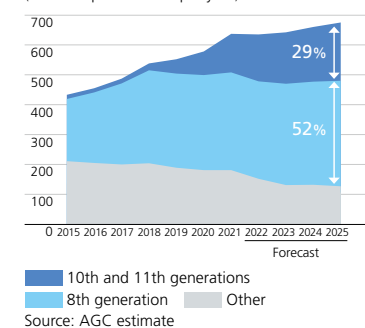


Kenzo Moriyama

President of Electronics Company

## Display Business

In recent years, demand for glass substrates for liquid crystal displays (LCD) has been growing steadily as television screens have become bigger. Going forward, China's market is expected to see particularly robust demand growth and the AGC Group is proactively developing its supply system in the country accordingly. Given the likelihood of a marked increase in demand for large 11th-generation thin-film-transistor (TFT) LCD glass substrates, we have built a furnace dedicated to their manufacture, which began mass production in 2019. Thanks to this new facility, we are steadily capturing the growing demand in China's market. For 11th-generation TFT-LCD glass substrates, we will continue increasing our supply capacity while improving productivity with the aim of enhancing profitability and asset efficiency. Further, by maintaining and developing strong relationships with major Chinese manufacturers and introducing technologies that heighten carbon efficiency, we will establish business foundations that remain stable over the long term. In addition, sales of our specialty glass for displays—which boasts outstanding strength and scratch resistance—are expected to grow steadily as smartphone unit sales increase. Also, demand remains high for products with advanced functionality, such as strength, scratch resistance, and compatibility with the 5G next-generation telecommunications standard. Therefore, the business will focus on developing new products to meet these needs and expand aggressively.

LCD Glass Demand by Region  
(Million square meters per year)LCD Glass Demand by Generation  
(Million square meters per year)

## Electronic Materials Business

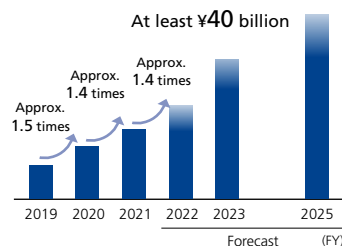
As society rapidly digitalizes, demand for higher-performance, more-compact electronic devices is rapidly growing. Meeting this demand requires miniaturization of semiconductor chip circuits, which increases computational process speeds, data capacity, and integration. Against this backdrop, EUV lithography



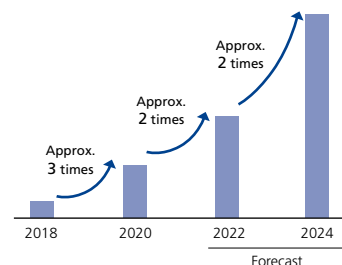
technology has attracted attention because it enables further miniaturization. From early in the first decade of the 2000s, the AGC Group began developing photomask blanks, which are processing materials needed for semiconductor production that uses EUV lithography technology. Thanks to these efforts, we successfully met exacting quality standards and started up production in 2017. Since then, we have expanded our mass production system for EUV lithography photomask blanks in step with market growth. Going forward, we will double our current production capacity by 2024, thereby lifting net sales above ¥40.0 billion in fiscal 2025. In addition to EUV lithography photomask blanks, we will accelerate the development of new high-value-added products, thus realizing steady business growth in the field of semiconductor-related products.

As for optoelectronic materials, demand is steadily growing for glass filters that absorb infrared light and which are compatible with the multiple-lens, high-performance cameras of smartphones. Going forward, we will proactively develop new products for next-generation devices that promise to follow on from the success of smartphones and to form significant new markets. For example, we will develop glass substrates for augmented reality and mixed-reality eyewear devices. In addition, we will make the businesses—which include printed circuit board materials businesses—acquired from U.S. companies Park Electrochemical Corp. and Taconic in 2018 and 2019, respectively, to expand operations that cater to the copper-clad laminates market. These laminates have significant growth potential for high-performance applications, such as advanced driver-assistance systems and 5G systems.

### Net Sales of AGC's EUV Lithography Photomask Blanks



### Ramping Up Production Capacity of EUV Lithography Photomask Blanks



## Fiscal 2021 Performance

### ■ Display Business

Although shipments of glass substrates for displays declined, shipments of specialty glass for displays increased. Meanwhile, we steadily started up a facility for 11th-generation TFT-LCD glass substrates, thereby further developing business foundations that cater to the growing demand for these products in China's market.

### ■ Electronic Materials Business

Shipments of printed circuit board materials decreased due to such factors as trade friction between the United States and China. However, the business saw a rise in shipments of semiconductor-related products, such as EUV lithography photomask blanks, and optoelectronic materials.

## A Message from an Employee

### Heightening the AGC Group's Presence in the Semiconductor Field

In 2003, I joined AGC Electronics America, where I am responsible for promoting sales of materials for semiconductor wafer processing in the United States and Europe. In this role, I draw on my contacts and experience built up when I worked at a vendor of semiconductor manufacturing equipment.

My mission is to build supply chains that meet the needs of customers both in terms of product quality and distribution by connecting suppliers, manufacturers, and various other companies in the semiconductor industry. We not only sell materials and components for semiconductor manufacturing but also provide many other types of support. For example, we assist with the incorporation of materials and processes vital for semiconductor fabrication by providing technical know-how to maximize process performance and yields. What is more, we arrange for the provision of related consumable items by collaborating with various material suppliers and equipment manufacturers. Further, we work with R&D teams in Japan to develop new products and processes reflecting customer needs for future wafer fabrication technologies.

Demand for semiconductors is increasing as next-generation technologies such as the Internet of Things (IoT), AI, and advanced driver-assistance systems become more widespread. On the other hand, stiff competition is a feature of the semiconductor industry, and products must be updated constantly to ensure differentiated quality, performance, and pricing. For these reasons, I want to create innovative technologies and businesses by interacting with as many people as possible and exploring new opportunities.

For more than 20 years, I have experienced the remarkable development of the semiconductor field. I will help the AGC Group heighten its presence in this field by collaborating with the R&D teams in Japan and contributing to the development of new products.



**Deepak Kumar**

Business Development  
AGC Electronics America

## Social Value We Will Create

### Contributing to a Sustainable Society through Differentiated Material Solutions

Many of the new devices that are expected to become common, such as 3D sensors and augmented reality and mixed-reality eyewear devices, include optical materials and components. Based on optoelectronic technologies fostered for cameras, the Electronics Business will develop new types of glass with high refractive indexes and high transmission for augmented reality and mixed-reality eyewear devices and other leading-edge equipment.

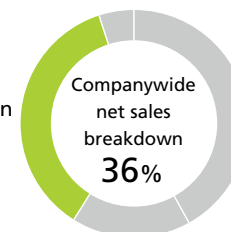


## Chemicals Business

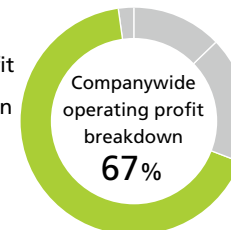
*Our Chemistry for a Blue Planet vision entails creating a safe, secure, comfortable, and environmentally friendly world with chemical technology. While realizing this vision, we will also sustain growth.*

### Fiscal 2021 Performance

Net sales  
¥630.8 billion



Operating profit  
¥138.8 billion



### Chlor-Alkali and Urethane Business

#### Chlor-Alkali Business



##### Overview

We will contribute to the society by stably supplying essential products, such as Caustic Soda and PVC (Polyvinyl Chloride) that are produced by electrolysis of Salt brine, to a wide range of industries.

##### Main Products

Caustic soda, caustic potash, potassium carbonate, hydrochloric acid, sodium hypochlorite, liquid chlorine, VCM (vinyl chloride monomer), polyvinyl chloride, tri-chloroethylene, tetra-chloroethylene, methyl chloride, methylene chloride, chloroform, and epichlorohydrin

#### Urethane Business



##### Overview

We manufacture urethane-related products, which are used as materials for a variety of products making lives more comfortable, i.e., insulating materials, automotive seat cushions. Polypropylene glycol (PPG), for example, is an essential raw material in polyurethane manufacturing. Our integrated production line for PPG begins with PO (propylene oxide). This enables us to provide a stable supply of high-quality PPG with less impurities. The AGC Group also helps lower environmental burden by providing HFO (hydrofluorolefin) products that can be used as new, environment-friendly refrigerants and foaming agents.

##### Main Products

Propylene oxide, propylene glycol, and polyol

### Fluorochemicals & Specialty Chemicals Business



##### Overview

The characteristics of fluorine atoms give organic fluorine compounds extremely useful physical and chemical properties, including excellent heat and chemical resistance as well as water and oil repellency. We leverage these properties to create many different high-performance products, such as Fluon® ETFE, which boasts the largest share of the global market for fluoropolymers. Beyond being used in the manufacture of a wide range of products—including automobiles, aircraft, semiconductors, construction materials, electronics, and air-conditioners—our products play an important role in the creation of social infrastructure, urban spaces, and homes that are safe and comfortable.

##### Main Products

Fluoropolymers, fluoroelastomers, fluoropolymer films, transparent amorphous fluoropolymers, fluoropolymer resins for coatings, water and oil repellents, fluorine-based electrolyte polymers for fuel cells, fluoropolymer ion-exchange membranes, fluorinated refrigerant gases, fluorinated solvents, fluorosurfactants, and fluorinated coating agents

## Life Science Business



## Overview

Worldwide, we are expanding contract development and manufacturing organizations (CDMO), which develop processes for and manufacture pharmaceutical and agrochemical intermediates and active ingredients. In addition to synthetic pharmaceutical CDMO that leverage organic synthesis technology fostered in the fluoro-products business, we are focusing on CDMO for biopharmaceuticals, demand for which has grown globally in recent years. With business sites in Japan, Europe, and the United States, we will contribute to the health, peace of mind, and comfort of people around the world by providing high-quality services that meet the needs of customers in each market.

## Main Products

Synthetic pharmaceutical and agrochemical intermediates and active ingredients, biopharmaceuticals, and fine silica

## Business Environment

## Opportunities

## Chlor-Alkali and Urethane

- Growth of the Southeast Asian market

## Fluorochemicals &amp; Specialty Chemicals

- Catering to needs related to energy conversion, including water electrolysis and storage batteries
- Catering to demand for ultra-high-frequency substrates and other products required for 5G and 6G communications

## Life Science

- Meeting the needs of a health-focused, long-lived society
- Increase in the contracting of pharmaceutical manufacturing

## Risks

## Chlor-Alkali and Urethane

- Trend toward carbon neutrality for electricity consumed in electrolysis

## Fluorochemicals &amp; Specialty Chemicals

- Trend toward the stricter regulation of fluorochemicals

## Life Science

- Shortage of personnel due to the expansion of the CDMO market
- Shortage of materials

## Business Issues

	Business	Main Tasks
Core Businesses	Chlor-Alkali and Urethane	<ul style="list-style-type: none"> <li>■ Strengthen the foundation of businesses in Southeast Asia by expanding facilities in Thailand and Indonesia</li> </ul>
	Fluorochemicals & Specialty Chemicals	<ul style="list-style-type: none"> <li>■ Develop products that meet customers' increasingly advanced needs and capture niche demand globally</li> <li>■ Develop products and process technologies in anticipation of environmental regulations and turn them into business opportunities</li> </ul>
Strategic Business	Life Science	<ul style="list-style-type: none"> <li>■ Expand businesses through timely investments</li> <li>■ Achieve high growth by leveraging global operations and flexible technological capabilities</li> </ul>

## Strengths

## Chlor-Alkali and Urethane

- Strong market presence in Southeast Asia and a sales and distribution network built up over many years
- Cooperation among sites in Indonesia, Thailand, and Vietnam

## Fluorochemicals &amp; Specialty Chemicals

- Development of mass production technologies and high-performance materials based on proprietary organic synthesis technology
- Global operation of manufacturing, marketing, and technical service sites

## Life Science

- Globally integrated network that meets customer needs through sites in Japan, Europe, and the United States
- Extensive inspection and commercial pharmaceutical manufacturing experience based on advanced quality assurance and technological development capabilities
- Ability to use leading-edge technologies to resolve manufacturing and development issues



## Business Strategy

Masao Nemoto

President of Chemicals Company



## Chlor-Alkali and Urethane Business

Having identified East Japan and Southeast Asia as key markets, the Chlor-Alkali Business is strengthening customer services and competitiveness through a *regional concentration strategy*.

In Japan, the Chlor-Alkali Business will contribute to customers and society by providing stable supplies of various essential products, such as caustic soda, sodium bicarbonate, and sodium hypochlorite, which is a disinfectant for drinking water. Meanwhile, the Urethane Business will transform by shifting its product mix from general-purpose products toward specialty offerings. In this way, this business will provide new solutions that assist customers in addressing environmental burden reduction and other tasks.

Overseas, we will focus on advancing businesses in Southeast Asia, where strong economic growth is expected to continue. We have manufacturing sites in Indonesia, Thailand, and Vietnam, and to meet the region's burgeoning demand, we will continue increasing production capacity. By providing stable supplies of products, we will help expand the social infrastructure and enhance the regional economies and living conditions of emerging countries.

Also, through the utilization of in-house-developed ion-exchange membrane FORBLUE™ FLEMION™ and new production technologies, the Chlor-Alkali Business will adopt energy-saving processes that have world-leading levels of nontoxicity and environment friendliness, thereby continuing to help reduce GHG emissions and improve the global environment.

## Fluorochemicals &amp; Specialty Chemicals Business

The Fluorochemicals & Specialty Chemicals Business develops differentiated, high-performance products by leveraging the advantages of the AGC Group's proprietary organic synthesis technology. At the same time, the business pursues a *global niche top strategy*, which focuses strongly on clearly defined targets to secure large market shares in niche fields. To date, the priority fields we have targeted include aerospace, transportation equipment, and semiconductors—all of which require advanced performance and uncompromising quality. By using our technological prowess to meet the needs of customers in such leading-edge fields, we will heighten our competitiveness and profitability. Fluorinated materials, which have low transmission loss, are attracting attention due to their suitability for 5G communications systems and other next-generation high-speed communications equipment that are expected to become ubiquitous. In this field, the Group will focus on developing high-performance products that meet customer needs. In addition, we will increase supplies of products that help reduce environmental

burden, including the FORBLUE™ FLEMION™ ion-exchange membrane for brine electrolysis and AMOLEAT™ next-generation environment-friendly refrigerants and solvents.

We will help keep society secure and sustainable by providing useful fluorochemicals that are safe and reliable. In manufacturing processes, we will reduce substances of concern and develop technologies that enable collection, recycling, and the use of alternative substances. At the same time, the business will actively build recycling systems for products that have reached the end of their service lives.

## Life Science Business

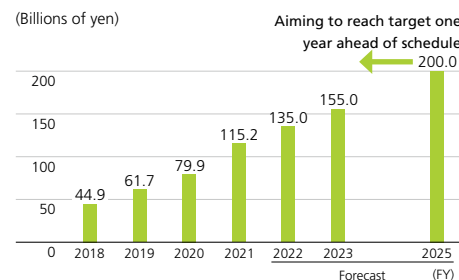
The global CDMO market is expected to continue growing over the medium to long term due to an increasing elderly population, advances in medicine, and the contracting of pharmaceutical manufacturing by pharmaceutical companies. In this market environment, AGC is expanding businesses on a global scale by building on the customer trust cultivated by and the track record.

In regard to synthetic pharmaceutical and agrochemical CDMO, AGC is achieving differentiation through organic synthesis process development capabilities and high productivity, both of which are backed by advanced organic synthesis technology. With respect to biopharmaceutical CDMO, we were the first to market single-use bioreactors for mammalian cell cultures, which are suited to small-lot production and have been seeing increased demand due to progress in the rare disease field. We are focused on building a globally integrated development and production network that is based in Japan, Europe, and the United States and which can flexibly meet customer needs. In addition to cell and gene therapy, on which we have already begun working, we will continue taking on the challenge of developing regenerative medicine and other new technologies that are still in the early stages of development.

As the CDMO market expands, there are concerns about shortages of biopharmaceutical culture media and other equipment and materials. In addressing such issues, the Seattle-based head office of AGC Biologics optimizes the operations of the biopharmaceutical CDMO business by conducting integrated management of global demand and facilitating resource sharing among sites. Also, to secure sufficient talented personnel for business expansion, AGC Biologics will continue hiring globally, utilizing shared services, and transferring personnel between sites.

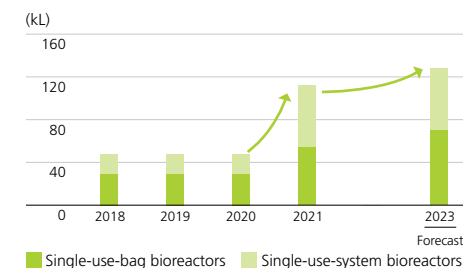
## Life Science Net Sales

(Billions of yen)



## Production Capacity of Biopharmaceutical CDMO

(kL)



## Fiscal 2021 Performance

## ■ Chlor-Alkali and Urethane Business

International market prices for vinyl chloride products soared due to cold weather and hurricanes in the United States and power restrictions in China. As a result, the sales price of PVC rose in Southeast Asia, leading to improved business results compared with those of fiscal 2020.

## ■ Fluorochemicals &amp; Specialty Chemicals Business

The business surpassed its fiscal 2020 performance thanks to a recovery in shipments of fluorinated products for automobiles—which had been sluggish due to the COVID-19 pandemic—and to signs of a pickup in shipments of fluorinated products for aircraft from the third quarter of fiscal 2021 onward.

## ■ Life Science Business

Synthetic pharmaceutical and agrochemical CDMO as well as biopharmaceutical CDMO saw increases in contracts. Also, biopharmaceutical CDMO received contracts for products related to COVID-19. Consequently, business results exceeded those of fiscal 2020.

## A Message from an Employee

## Pursuing Digital Transformation That Can Be Used Proactively in Frontline Operations

Before joining AGC in 2021, I worked at an engineering company, where I first experienced process design for refineries and other oil & gas facilities and then experienced about two years of in-house system development. Since joining AGC, I have been working in the Digital Transformation Office, where I am responsible for digitalizing a wide range of activities in the Chemicals Company. For example, I am engaged in introducing an infrastructure system for data collection and storage as well as a system for utilization of the accumulated data.

Aiming to realize digital transformation, AGC is taking progressive measures. In 2020, the Company developed CHOPIN, an integrated management system for chemical plant operations. The introduction of this system has achieved cost reductions of more than ¥100.0 million per year at the Chiba Plant. However, this is only the first step. If digital technology is introduced and effective use of data is promoted, there is still room for growth.

My mission is to show all employees, including management, how data can be used to create value. Also, data utilization is particularly important at manufacturing plant, which are the core of AGC. For this reason, I try to visit manufacturing plant as much as possible, find out the issues, and propose what can be achieved through data utilization. Once the value of data is understood, personnel become motivated to incorporate more digital technologies. For the next step, I will concentrate on education to increase talent who can wield two swords: those who possess both knowledge of manufacturing operations and advanced digital technologies. It will accelerate data utilization for the creation of additional value.



Kosuke Nakai

Applied Technology Group  
Digital Transformation Office  
Company Strategy General Division  
Chemicals Company

## Social Value We Will Create

## Increasing the Supply of Products That Help Lower Environmental Burden

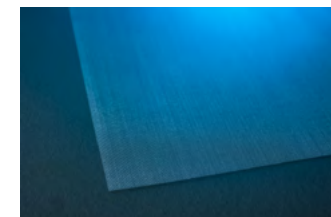
The Chemicals Business is advancing initiatives aimed at protecting the environment and realizing a comfortable society that is safe and reassuring. Particularly in the field of environmental preservation, we are addressing the issue of climate change by increasing the supply of products with reduced environmental impact. These offerings include the FORBLUE™ FLEMION™ ion-exchange membrane used for brine electrolysis and AMOLEA™ next-generation environment-friendly refrigerants and solvents.

## FORBLUE™ FLEMION™

FORBLUE™ FLEMION™ is a fluorinated cation-exchange membrane developed by AGC for the highly energy-efficient manufacture of caustic soda, caustic potash, chlorine, and hydrogen. This product reduces environmental impact because, in comparison with other products, it enables one of the lowest levels of power consumption in the world.

## AMOLEA™

In response to global warming, burgeoning demand for new environment-friendly refrigerants and solvents with extremely low global warming potential is likely. By supplying the next-generation environment-friendly refrigerants and solvents of the AMOLEA™ series, we will help mitigate global warming.



## Ceramics Business



We aim to contribute energy-saving & resources-saving, and high levels of efficiency to protect the global environment through ceramics materials and products of AGC Ceramics Co., Ltd., for the supply to high-temperature equipment as well as functional products that utilize inorganic materials.

### Business Environment

#### Opportunity

- Stability of the refractory market and the potential of high-performance ceramics

#### Risk

- Growing expectations that industries with high-temperature equipment will help realize a carbon-free society by converting their manufacturing processes

### Strengths

- Extensive lineup of products with reliable quality accumulated since we began manufacturing refractory bricks for glass furnaces in 1916
- Proactive efforts to develop new materials, propose applications, design solutions, provide construction engineering, and support customers' operations

### Business Strategy



**Masaru Ota**

President of AGC Ceramics Co., Ltd.

We pursue an “ambidextrous” approach to business management that is based on refractories and high-performance ceramics. To enable appropriate allocation of management resources, we will revise and clarify our business portfolio.

Our aim is to further exploit the refractory market, whose firmness reflects the indispensability of these products in modern society. We not only develop, manufacture, and sell products as a manufacturer but also focus on supporting customers' facilities throughout their life cycles by

## Ceramics Business



Fused cast refractories for glass-melting furnace crowns



Monolithic refractory for industrial furnaces



Fine ceramics with excellent heat and corrosion resistance for the iron, aluminum, and electronics fields

### Overview

Though seldom seen, our mainstay products play a crucial role in the infrastructure of daily life. As well as being integral to the facilities of companies in such key industries as iron, cement, and glass manufacturing, AGC products are essential for the inner walls of power plants that have boilers and municipal waste incinerators. Moreover, we offer an array of high-performance products that save energy and resources and improve efficiency.

### Main Products

Fused cast refractories, monolithic refractories, bonded refractories, fine ceramics, and a ceramics molding agent for 3D printers

designing solutions, providing construction engineering, and supporting operations. The business will increase the profitability of production by introducing smart manufacturing processes to factories. At the same time, we will collaborate with our sites in China and our global network to strengthen supply chains.

Meanwhile, the efforts of the Ceramics Business to explore and create new value in the field of high-performance ceramics, which includes fine ceramics and 3D molding (additive manufacturing), promise to generate significant growth. To accelerate its progress, the business will utilize all of the AGC Group's resources and promote open innovation.

Increasingly, industries that use high-temperature equipment are expected to contribute to the creation of a sustainable society by innovating their manufacturing processes. By offering refractories suited to new processes and providing peripheral engineering services, we will benefit society and turn changes into opportunities for growth.

With quality, integrity, and pride as watchwords, we are committed to being a dependable partner for our customers.



## New Business Creation

### Initiatives of the Business Development Division

Through the tireless pursuit of ambitious innovation from a far-sighted perspective, the Business Development Division will propose and advance new businesses, thereby enabling the AGC Group to realize sustainable business growth and address social issues.



#### ► Missions of the Business Development Division

In 2011, the Business Development Division was established as a dedicated organization for the creation of businesses that allow the AGC Group to take maximum advantage of its comprehensive strengths in business areas and regions with considerable growth potential. The division has two missions: new business creation and human resource development. Further, the purpose of the former is to create businesses that will sustain the Group's growth. To this end, the business creation process includes exploring ideas for new businesses and analyzing the feasibility of commercialization (market research and analysis), developing businesses for incorporation into an in-house company (incubation), and handing over business management to in-house companies (transfer). As for the development of human resources, through flexible assignment the Business Development Division increases the number of personnel who gain experience of business creation. This approach simultaneously realizes the "incubation" of businesses and personnel and fosters numerous in-house entrepreneurs, who we refer to as "intrepreneurs."

#### ► Collaboration with Business Partners

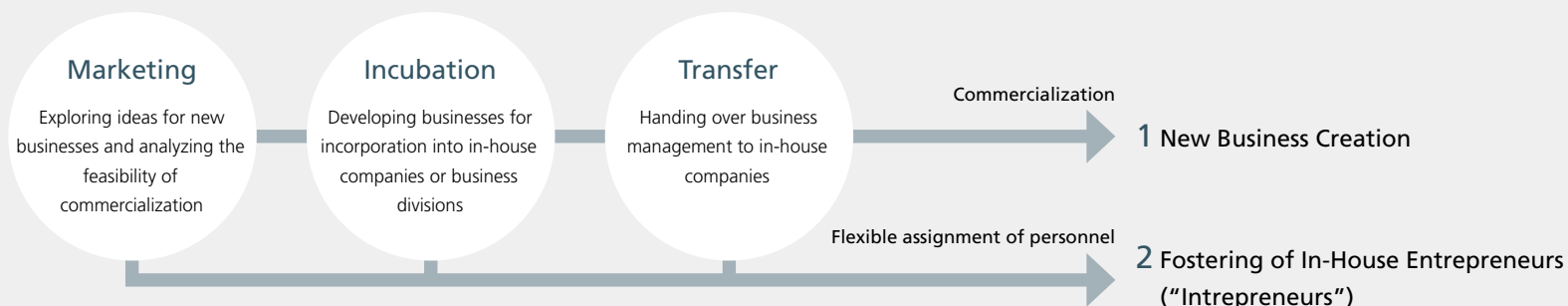
As well as analyzing macro trends to discover promising ideas, the Business Development Division analyzes the commercialization of projects that would be difficult for in-house companies to analyze. In preparing proposals for and advancing new businesses, the division

collaborates not only with various organizations in the Group—such as in-house companies and the Technology General Division—but also with external partners, including educational institutions and venture capital companies. Moreover, the division develops new businesses on a global scale by partnering with AGC Business Development Americas and AGC (China) Holdings Inc., the Group's sites in the United States and China, respectively.

#### ► Achievements and Outlook

Through the aforementioned activities, the Business Development Division has incubated new Strategic Businesses and then transferred their management to in-house companies. Currently, these businesses manufacture such products as biopharmaceuticals, EUV lithography photomask blanks, cover glass for car-mounted displays, and copper-clad laminate substrates for high-speed communications. At the same time, the division is proposing and advancing new businesses by undertaking market research and analysis and incubation for projects related to the Electronics, Mobility, and Life Science businesses, which are the Group's Strategic Businesses. Through the tireless pursuit of ambitious innovation from a far-sighted perspective, the Business Development Division will propose and advance new businesses, thereby enabling the AGC Group to realize sustainable business growth and address social issues.

#### Two Missions



# Strategies for Our Management Foundations

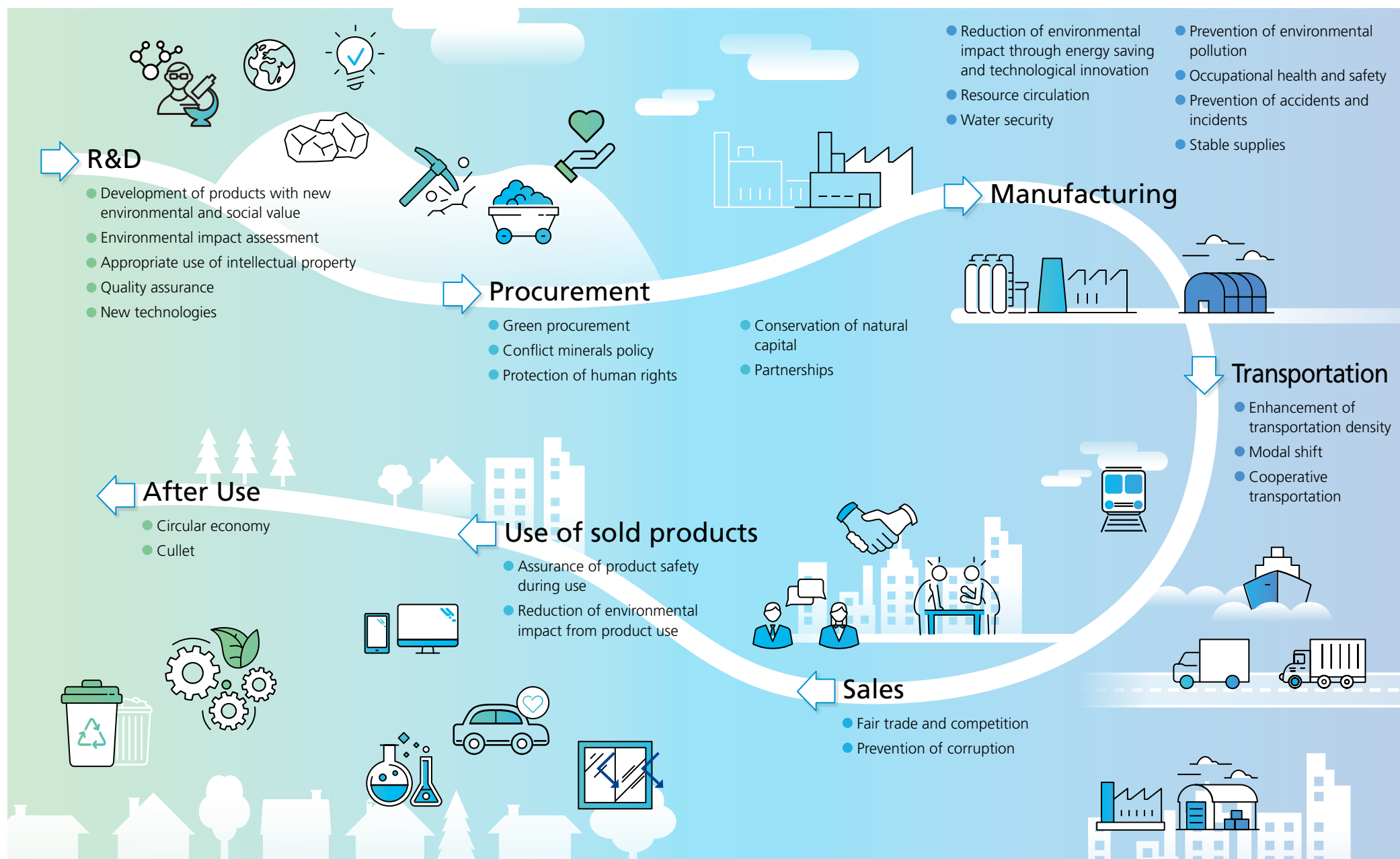
Here, we focus on initiatives that are cementing our management foundations.

- 59 Our Value Chain Mapping
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## Our Value Chain Mapping

Through its value chain, the AGC Group will continue initiatives that both enhance long-term corporate value and address social issues.





## Technology and Innovation

Anticipating the needs of society and customers,  
we are taking on the challenge of creating new value.

### The AGC Group's Technological Foundations

Since its founding in 1907, the AGC Group has placed particular emphasis on differentiated materials and technologies. By using these materials and technologies together, we have created an array of new products. Moreover, we have tirelessly honed the advanced production technologies needed to manufacture such products. Over the course of our history, we have developed core technologies—including materials technologies, functional design, and production technologies—for a wide range of business fields, such as glass, electronics, chemicals, and ceramics. Further, by combining these core technologies with our common basic technologies, including analysis, evaluation, and simulation technologies, we are able to provide high-value-added materials and solutions that cannot be achieved with a single technology. To *always be the company our customers call on first as well as an everyday essential part of our world*, we continue to take on the challenge of creating new value with our sights set on the future needs of customers and a sustainable society.

For information on the AGC Group's technology development, please visit the website below.

<https://www.agc.com/en/innovation/index.html>



### Strategy and Structure of Technology Development

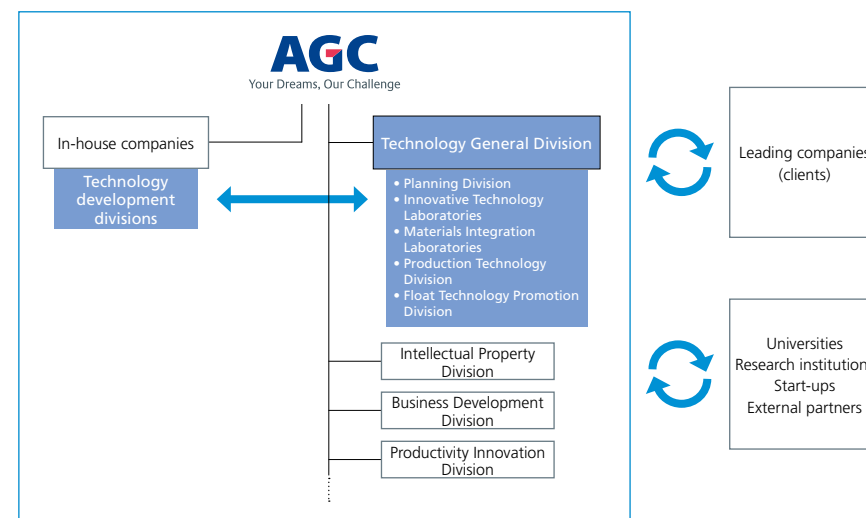
The AGC Group's Technology General Division advances technology development and innovation with the aim of creating value through materials and solutions. This division promotes ambidextrous development, which heightens the competitiveness of existing businesses through

“right-handed” development while creating new businesses and the future through “left-handed” development. In these efforts, the division works in close collaboration with corporate divisions, such as the Intellectual Property, Business Development, and Productivity Innovation divisions, as well as a range of other divisions, including the technology development divisions of in-house companies.

Furthermore, we have established a seamless technology development system by consolidating all technology development functions—from fundamental technologies through to materials development and mass production processes and equipment—at the AGC Yokohama Technical Center.

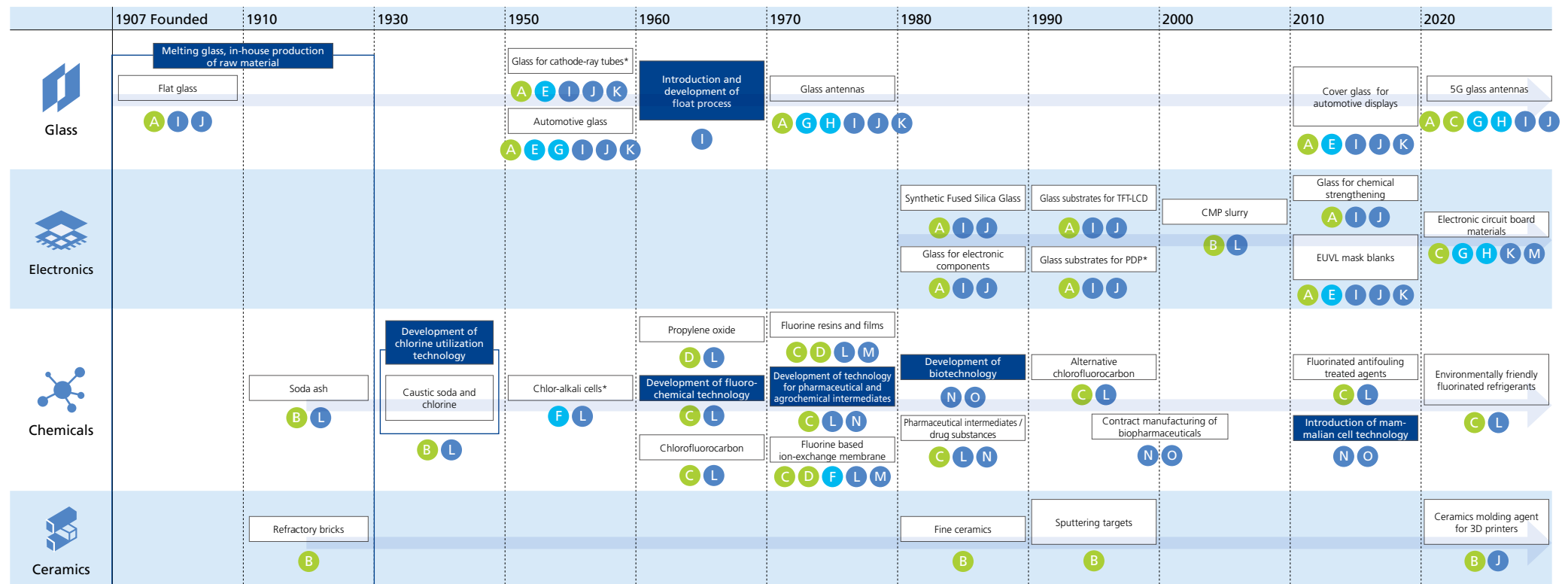
Also, to accelerate value creation even further, we are actively promoting open innovation. Specifically, in Japan and overseas we are conducting numerous joint research projects with academic institutions and start-ups with the aims of developing innovative technologies as well as complementing and evolving our technologies. These projects include large-scale industry–academia collaborative programs with the University of Tokyo, the Tokyo Institute of Technology, and Nagoya University. We also collaborate with other companies, including our customers, with a view to helping transform society through products.

Going forward, the AGC Group faces two important tasks. The first is to facilitate the realization of a sustainable society by implementing measures aimed at achieving *net-zero carbon emissions* and by reducing CO<sub>2</sub> emissions through the provision of environment-friendly products. The second task is to advance digital transformation throughout the Group's business activities, from development through to production and sales. Therefore, we will forge ahead with technology development initiatives aimed at accomplishing both tasks.

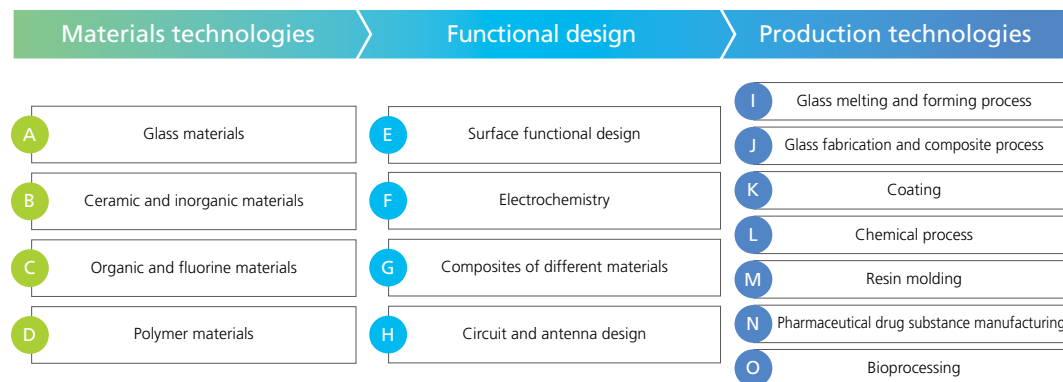


## History of Our Core Technologies

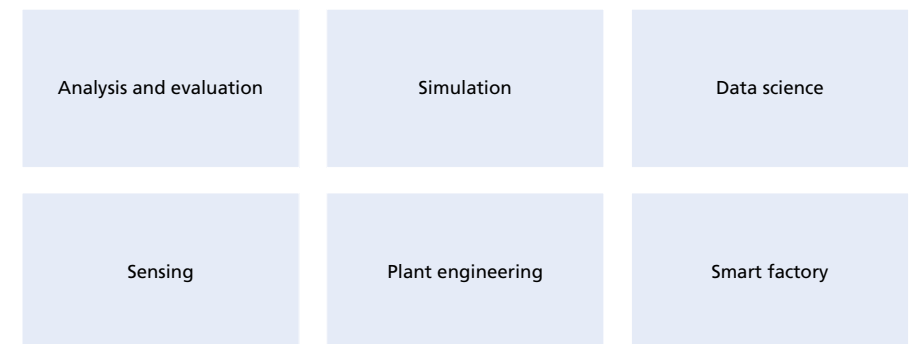
\* Business discontinued



## Core Technologies



## Common Basic Technologies



Using Comprehensive Strengths to Achieve *Net-Zero Carbon Emissions*

## Development of the Lacobel T Active BIPV Module

How can the AGC Group help achieve a sustainable global environment? To provide one example of the new products we are developing to help society realize carbon neutrality, this section focuses on the Lacobel T Active building-integrated photovoltaic (BIPV) module, launched in Europe in 2022.

### An Ambitious Initiative That Emerged from Training

BIPV modules are building materials that double as solar cells. Unlike conventional solar cell panels, which can only be installed in particular places such as rooftops, BIPV modules can be installed on any part of a building, including facades, roofs, walls, and interiors. For traditional BIPV modules, black, dark blue, and other dark colors are used to optimize power generation efficiency. Consequently, due to their limited aesthetic appeal, in reality these modules tend to only be used in certain parts of buildings. However, the Lacobel T Active has overturned this established practice. This new product's greatest benefit is that it comes in a much wider variety of colors, enabling the module to be used in many different areas of buildings thanks to its increased aesthetic appeal.

The development of Lacobel T Active began back in 2016. At the time, during a training program on technology marketing, attended by engineers from various divisions of the AGC Group, one team of trainees gave a presentation on colored BIPV modules. The idea was the brainchild of Yu Onozaki, who was engaged in development work related to the Life Science Business in the Chemicals Company. He suggested that it would be possible to coat BIPV modules in a way that would enable the addition of more colors to them while curbing the loss of power generation efficiency. Given its market potential, this idea was enthusiastically received by the judges, including President & CEO Yoshinori Hirai, who was the chief technology officer at the time, and a commercialization task force was thereafter established.



### The Power Generation Efficiency Barrier

Tomohiro Sakai, who was in the same training team as Onozaki and belonged to the New Product R&D Center, was a task force member. For his part, Sakai agreed with Onozaki's idea but at the same time appreciated the technical hurdles to be overcome. To bring out various colors, it's necessary to reflect part of the light needed for power generation. However, unless power generation efficiency was above a certain level, the product would not gain market acceptance. In grappling with this conundrum, Sakai recruited the help of other members of the New Product R&D Center. To determine which matrices and pigments would result in minimal reduction of power generation efficiency, they undertook the trial manufacture and evaluation of a number of samples one by one.

Meanwhile, looking ahead to the post-launch phase, Onozaki visited Masayuki Hayashi, who was in charge of the BIPV module business in the Building & Industrial Glass Company, to seek advice on BIPV module supply chains and sales channels. As involvement in the BIPV module business had made him aware that customers wanted BIPV modules with greater design flexibility and aesthetic appeal, Hayashi was very interested in Onozaki's idea and offered his full support. Thanks to the cooperation of Group company AGC Coat-Tech Co., Ltd., and the Coatings Business Group of the Chemicals Company, the trial manufacture and improvement of the sample products proceeded. Finally, the commercialization task force was able to manufacture large-scale prototypes of actual modules and measure their power generation efficiency.



Under the watchful eyes of Onozaki, Sakai, and Hayashi, a variety of prototypes were measured. During this phase, one material composition yielded results that surpassed expectations. This was the moment when brightly colored BIPV modules became much more than a pipe dream.

Note: All the aforementioned organization names are those used at the time of the project.

### Toward Launch in Europe

While continuing the trial manufacture of samples with a view to increasing the variety of colors, Onozaki and his task force moved on to the next phase and began exploring commercialization. At this juncture, the project abruptly changed direction. When members of the task force were reporting on their progress to the general manager of the Planning Division of the

Technology General Division, he pointed out that the market for this type of product is bigger in Europe. Further, the members had the opportunity to outline their project to Marc Van Den Neste, technology and innovation vice president at AGC Glass Europe S.A., who happened to be in Japan at the time. Realizing that the project had tremendous potential, Van Den Neste returned to Europe and explained to his team the concept of the new product being proposed by Onozaki and his collaborators. Moreover, around this time the European marketing team had been searching for just such a solution. As a result, a Japan–Europe partnership was immediately formed to bring colored BIPV modules to market in Europe under the product name Lacobel T Active.



**Tomohiro Sakai**

Inorganic Materials Group, Process Development Office  
Fundamental Technology Development Division  
Chemicals Company  
AGC Inc.

### A Trailblazing Product with Social and Aesthetic Value

The development of Lacobel T Active would not have been possible without the depth of the AGC Group's technological expertise. In-house technologies, knowledge, and human resources were critical in realizing Yu Onozaki's idea and moving the project forward. Organizationally, the New Product R&D Center, to which I belonged at the time, was well placed to serve as a hub connecting technologies and other assets, and I am proud to have been able to fulfill a facilitating role in the project.

When I first heard about Onozaki's colored BIPV modules, I was drawn to the idea of combining functionality that society will need with visual appeal that designers will want to make use of. Addressing climate change is becoming increasingly important, as evidenced by the AGC Group's declared goal of achieving *net-zero carbon emissions* by 2050. Nonetheless, functionality alone is not enough to make a product the first choice of customers. In the same manner as this project is doing, I want to further propose products that incorporate social and aesthetic value that cannot be measured simply in monetary terms. To be deployed in the next development, I hope that Lacobel T Active successfully leads the way in providing new forms of value.

**Masayuki Hayashi**

Smart Glass Division  
AGC Asia Pacific Pte. Ltd.



### Advancing the BIPV Module Business through Stepped-Up Coordination in the Group

The journey of the BIPV module business has by no means been smooth. I became involved in the development of BIPV modules in around 2010. From 2014, I began working in the business that handles these products. Unfortunately, BIPV modules were unable to grow beyond their small market niche, and generating sufficient profits remained challenging. I remember that this situation was largely unchanged in 2016, when Yu Onozaki told me about colored BIPV modules. In the five years since then, however, society's environmental awareness has heightened rapidly, and expectations of the BIPV module business have become very high, both internally and externally. At such a time, I think it is wonderful that we have been able to market an unprecedented BIPV module.

This project has been made possible by collaboration among people from many different divisions, businesses, and regions. I believe that we were able to bring Lacobel T Active to market due to the openness of our corporate culture, which is conducive to collaboration among business personnel, such as my team, and R&D personnel, such as Onozaki and Tomohiro Sakai. I want to continue advancing the BIPV module business by deepening this type of in-house collaboration and catering to emerging customer needs.

## Bringing Lacobel T Active to the European Market

By shifting its focus from Japan to Europe, the AGC Group made great strides toward the commercialization of Lacobel T Active. The five employees listed on the right—members of the project team that went on to launch the product in Europe—participated in a roundtable discussion recounting the project and discussing hopes for the new product.

### Mika Yokoyama

Global R&D Coordinator  
Technology & Innovation  
Architectural Glass Europe & Americas Company

### Yu Onozaki

Coatings Team Manager  
Functional Materials Division  
Materials Integration Laboratories  
Technology General Division

### Christine Deneil

R&D Project Leader—  
wet coatings  
Surfaces Department  
AGC Technovation Centre  
AGC Glass Europe S.A.

### Daphné Stassen

BIPV Project Leader  
Surfaces Department  
AGC Technovation Centre  
AGC Glass Europe S.A.

### Daniel Décroupet

Senior R&D Coordinator  
(Global) Technology & Innovation  
AGC Glass Europe S.A.

## Overcoming Challenges by Transcending Regions and Divisions

**Onozaki** Our efforts to launch Lacobel T Active in Europe began around 2018. Initially, we communicated with the European team mainly through Mr. Décroupet, the senior R&D coordinator.

**Décroupet** At the time, despite being in a market with growth potential, our building-integrated photovoltaic (BIPV) module business in Europe was not performing ideally because issues related to price and design were preventing orders from growing as hoped. Against this backdrop, Mr. Van Den Neste returned from Japan and told us about Mr. Onozaki's idea. I immediately informed the Europe marketing manager about the idea, who responded that he definitely wanted to bring the product to market in Europe. Ultimately, I became the intermediary between Japan and Europe.

**Onozaki** Then, with a view to a European launch, work began on the trial production of sample products. Once the prospect of starting up this production had come into view, we commenced marketing activities in Europe. It was at this stage that I began communicating with Ms. Stassen.

**Stassen** I was responsible for BIPV module development in the European R&D division. So, I knew the BIPV module business was having a hard time finding the breakthrough needed for growth. I had no inkling that a solution would come from Japan out of the blue and that I would become directly involved as the project leader in Europe. Although I felt the work was meaningful and was very happy, I understood that the project would be very challenging. Reducing the loss of power

generation efficiency while keeping the design unchanged would be difficult. What is more, we would have to form collaborations that transcended national borders and straddled divisions engaged in the fields of glass manufacturing technologies and coating technologies. In particular, as coatings are not my area of expertise, I realized that Ms. Deneil's cooperation would be essential.

**Deneil** I am mainly responsible for the development of coating-related products. Until recently, the coating materials themselves were not manufactured in Europe. Our manufacturing process in the region involved using externally procured coating materials to coat products. However, Lacobel T Active required us to develop coating materials in-house. Therefore, we moved forward with the project in collaboration with the AGC Yokohama Technical Center and the Chemicals Company. It was a challenging project that presented us with a host of issues to overcome because the Architectural Glass Europe & Americas Company lacked sufficient knowledge of the chemical regulations and standards pertaining to the manufacture and use of new coatings. Nonetheless, precisely because it was challenging, the project gave me the opportunity to take on a range of new tasks and provided me with valuable experience.

**Onozaki** Around the end of 2019, as collaboration between Japan and Europe was intensifying, Ms. Yokoyama, who is also an R&D coordinator, joined the project. Communication is extremely important for the smooth progress of a project involving such a diverse group of people. Without Ms. Yokoyama's cooperation, we would not have been able to launch Lacobel T Active with a short lead time.

**Yokoyama** Thank you. As an R&D coordinator, in addition to being involved in R&D matters, I provided support in relation to European regulations as well as importing and exporting by obtaining the cooperation of AGC Coat-Tech Co., Ltd., the Chemicals Company CSR office, and AGC Technology Solutions Co., Ltd. Lacobel T Active leverages a fundamental technology and the product's structure is deceptively simple. However, not everyone would have been able to come up with the idea for this product. Mr. Onozaki himself was very perceptive about the glass-manufacturing and coating technologies needed to develop Lacobel T Active, even though they were entirely outside his area of expertise. If I was of help in such a valuable project, it is an honor.

**Onozaki** As Ms. Yokoyama just said, I am a specialist in organic chemistry and belonged to the Life Science Business. Also, none of the initial project members were experts in the technologies directly related to the development of Lacobel T Active. As the project progressed, we received the cooperation of an array of people and in-house organizations, including everyone here, the Materials Integration Laboratories of the Technology General Division, the AGC Technovation Centre, the smart glass team responsible for the BIPV module business in the Asia Pacific region, the Chemicals Company, and AGC Coat-Tech. This concerted effort renewed my sense of the power of the AGC Group's diverse technologies and personnel.

**Décroupet** The creation of synergies across regions and divisions is extremely important for further enhancing the competitiveness of the AGC Group. In many cases, however, collaboration across regional and divisional boundaries does not produce concrete results due to differences in cultures and ways of thinking. I admire Mr. Onozaki for not being intimidated by such high hurdles and for taking the plunge into areas outside his expertise, division, and region.

## Opening Up the Future with Lacobel T Active

**Stassen** Yes, that's right. I think this project was made possible by the commitment in Japan to realizing the ideas of Mr. Onozaki and the rest of the team coupled with our enthusiasm in Europe about delivering this product to customers. For several years, colored BIPV modules have been sold in Europe. However, the products are rarely seen as they are very expensive and have unattractive designs. One reason for the high prices is that comparatively small companies are involved in this field, and no one company is able to produce both BIPV module components, namely, glass, which is the building material component, and solar panels, the photovoltaic cell component. By contrast,

the AGC Group can achieve outstanding price competitiveness because it can produce in-house not only glass and solar panels but also coating materials. Moreover, the design of Lacobel T Active is its principal appeal, and I am delighted that we can offer a product needed by the market.

**Deneil** For individual users, Lacobel T Active is an attractive product that can contribute to the realization of sustainable cities. With social issues such as climate change and energy scarcity expected to become more acute, this type of product will be increasingly in demand. I look forward to Lacobel T Active enabling the creation of aesthetically pleasing buildings that provide clean energy and thereby becoming a fantastic product for future generations.

**Yokoyama** While demonstrating great teamwork, individual project team members took on new challenges and fulfilled specific roles. I am very pleased that we trusted each other and were able to work together toward a single goal. I am also proud that I was part of the team and helped realize the project's goal. I hope that Lacobel T Active will be used around the world and incorporated into impressive buildings that become landmarks.

**Décroupet** By taking on the challenge of meeting conflicting requirements for design and power generation efficiency, the project to develop Lacobel T Active embodied AGC's founding spirit. However, the need for bold initiatives will remain. As the product's facilitation of power generation by buildings will become an important part of efforts to achieve carbon neutrality, delivery of the product to customers worldwide will contribute significantly not only to the growth of the BIPV module business but also to the resolution of social issues. I am convinced that Lacobel T Active has ample potential to realize both of these roles.

**Onozaki** The AGC Group has a culture that encourages people to tackle the challenges presented by new businesses and technologies. Earlier, Mr. Décroupet praised me. But, I would like to add that, when we went beyond regional and divisional boundaries in the course of our inquiries, without fail people responded cooperatively and proactively. In other words, the Group's culture allowed us to accelerate the project. There is no doubt that achieving the goal of carbon neutrality is extremely important for society. Lacobel T Active provides societies with one way of moving toward the achievement of this goal. I want to use the lessons learned from this project to take up the challenge of developing even more new products that help address social issues.



## Human Resources

Aiming to Realize Our Personnel Management Slogan,  
*AGC People: the driver of our growth!*

### Basic Approach to Human Resource Management

To continue developing as a truly excellent corporate group, the AGC Group is aligning human resource management with business strategies.

Since introducing a global in-house company system in 2002, we have established frameworks and personnel systems that reflect the globalization of management. These include the creation of human resource functions at each in-house company and the implementation of leadership development programs with a focus on succession planning in 2003.

To achieve Vision 2030, our long-term management strategy, organizational resilience is essential. In other words, we need an organization with functions and teams of employees that

#### *AGC People: the driver of our growth!*

It is the status in which each of us maximizes our abilities and works together to build a strong organization, and as a result, we will pursue and achieve business strategies and organizational goals as well as growth of the Company and the individuals.

Continuously growing and evolving by advancing diversity,  
developing personnel, and taking steps to enhance engagement

Pursuing diversity

Strengthening the individual

Improving engagement

can respond flexibly to changes in the business environment. Based on this belief, we have formulated three basic human resource strategies: *pursuing diversity*, *strengthening the individual*, and *improving engagement*. Through cohesive reforms extending from our human resource systems through to workstyles and the organizational culture along with measures to spread these reforms, we will realize our personnel management slogan, AGC People: the driver of our growth!

### Strengthening the Individual

#### Leadership Development Programs

In developing the management personnel who will lead us into the future, we organically link Groupwide and global leadership development programs with divisional and regional programs.

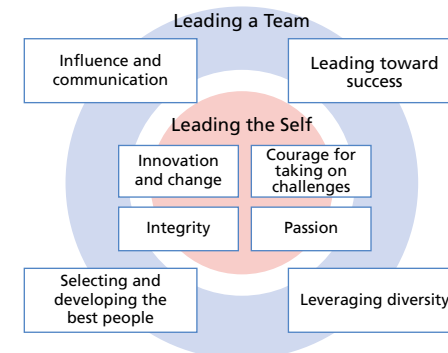
The aforementioned programs are underpinned by the AGC Leadership Competency model, which clarifies the capabilities and qualities required of leaders in the AGC Group. In the two areas of self-development and team leadership, the model defines eight competencies and 43 concrete types of behavior.

In light of the AGC Leadership Competency model, we select and step up the training of candidate leaders from divisional and regional sites. From among such employees, candidates for Groupwide and global management positions in the coming generation are chosen and then provided with additional training.

At the core of our management personnel development is the concept of “stretch assignments,” which promote the growth of individuals by assigning them to challenging positions calling for levels of ability that are slightly beyond the current skill sets of the relevant individuals. Also, overall management personnel development plans are optimized through the cross-divisional assignment of the aforementioned candidates to key positions throughout the Group. Moreover, we heighten the effectiveness of management personnel development by conducting training programs at a Groupwide and global level as well as on divisional and regional sites. For example, we provide Global Leadership Sessions and the Global Leadership Journey for business managers and

#### AGC Leadership Competencies

There are eight AGC Leadership Competencies, shown in the chart below, with 43 attached behaviors.



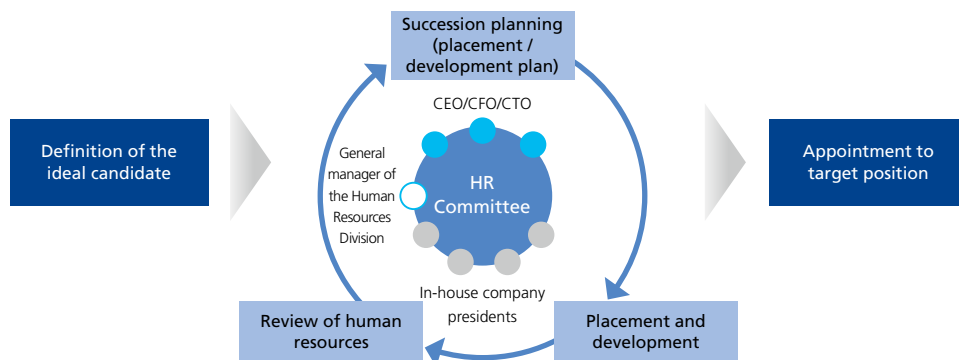
senior management, while offering AGC University and AGC Management College courses in each region.

In the ways mentioned above, the AGC Group encourages candidates to acquire the experience and knowledge necessary for management through planned assignments, training, and other developmental activities while reviewing the levels of performance and leadership qualities displayed by candidates in their current positions and tailoring placement and development plans for the following year based on the candidates' progress. Furthermore, members of the management team participate directly in the discovery and development of next-generation management personnel. The HR Committee—comprising chief officers, the general manager of the Human Resources Division, and the presidents of in-house companies—is involved in the personnel development cycle, and outside directors give lectures at training programs.



A training session by Outside Director Hiroyuki Yanagi for next-generation management personnel

#### Group Management Personnel Development Cycle



#### Skills Map

The AGC Group has been operating a skills map since 2010 with the goal of promoting cross-divisional human resource placements and communication. This map visualizes the skills of AGC Group employees in Japan and overseas, and employees register their own skills from among 41 specialist skills categories (29 technical categories and 12 sales and administrative categories).

Making use of this skills map, we launched Cross-Divisional Network Activities (CNAs) in 2011. Centered on skills leaders appointed for each category, the AGC Group encourages cross-divisional activities among employees possessing the same skills. These activities include the holding of workshops, in-house seminars, and study groups in their respective communities.

Initially held only in Japan, we currently operate these activities on a global basis and are developing them to include activities spanning multiple skills as well as activities that are carried out jointly with external companies.

#### Cross-Divisional Network Activities—Evolving as a Third Place

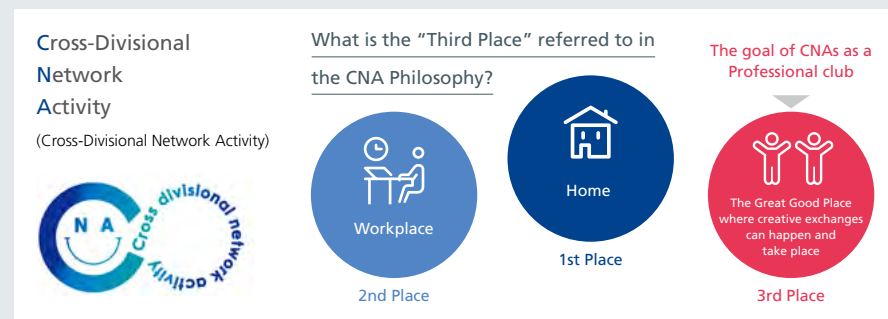
Developed based on the skills map, CNAs provide platforms that promote learning by individuals, innovation in organizations, a sense of Group unity, and an ambitious corporate culture. In 2011, CNAs were launched based on the philosophy that AGC's corporate culture should incorporate exchanges and technological advances transcending divisional and international boundaries. To encourage greater autonomy and freedom in the pursuit of CNAs, we changed their status to that of "a professional club" in 2015. Also, in 2018 the club was externally evaluated as being a Third-Place platform for communities of practice, which provides employees with opportunities for autonomous learning and interaction. In 2020, we established a new CNA philosophy.

The term "third place" signifies a comfortable space for individuals, distinct from their home (first place) and workplace (second place). In addition to skills development CNAs, we have begun *JUKU\** CNAs, which are grouped under such themes as design, art, and other right-brain subjects and strategies for standardizing operations. The AGC Group will continue supporting CNAs to establish them as part of an organizational culture that transcends divisions, countries, and regions. As of 2021, we host 45 CNAs, of which nine are international or interregional activities.

\* Japanese word meaning "tutoring school," in this case a theme-based activity as opposed to a skills-based activity

#### • The CNA Philosophy

CNA is aimed at achieving a Third Place in which individuals and the organization can grow and evolve together as a Professional club.



#### The Global Expansion of CNAs

In November 2021, we held the first CNA open seminar for AGC Group employees worldwide, followed by the holding of a second such seminar in February 2022. Both themed on sustainability, the first and second seminars attracted 214 and 154 participants, respectively, from sites in the Americas, Europe, and Asia.

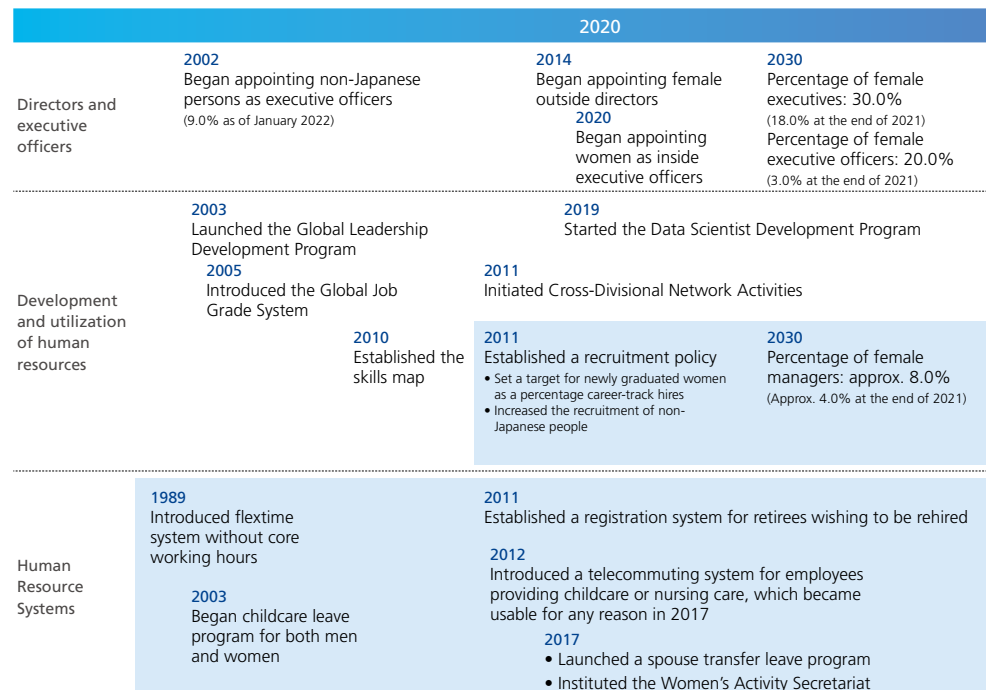
#### Comments from participants

- The content was interesting! I hope for more of these types of learning events in the future.
- It was a great event for employees from different parts of the AGC Group to share knowledge and learn from each other.
- I was able to learn about the differences in attitudes to sustainability among employees in Europe and Asia.
- CNAs make good use of the AGC Group's advantages as a global organization.

## Pursuing Diversity

Diversity is one of the four key values set forth in the AGC's Group Vision **"Look Beyond."** As well as being one of the foundations of Group companies, diversity is the source of the Group's competitive superiority. Our business management encourages innovation and value creation by providing opportunities for diverse personnel to realize their full potential. We endeavor to create systems and environments in which diverse personnel can work comfortably, and we strive to operate a fair human resource and compensation system that emphasizes ability and achievement. In these efforts, we not only consider diversity in terms of gender, age, ethnicity, nationality, the presence or absence of disabilities, sexual orientation, religion, principles, and values but also diversity in relation to careers, experience, and workstyles. Moreover, we also ensure the diversity of the Board of Directors.

### ● Developing Systems That Realize Diversity and Foster Personnel



Non-consolidated AGC initiatives

## Developing Personnel to Advance Digital Transformation

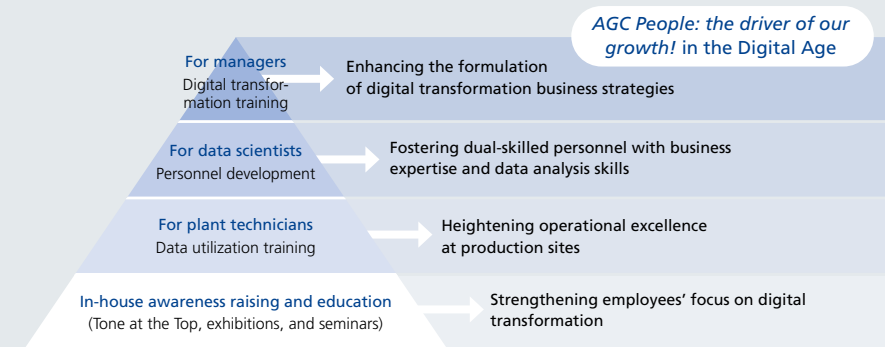
We define digital transformation as the exploitation of digital technologies to make our existing operations more efficient and to realize innovative business processes and business models that advance operations dramatically. In promoting such digital transformation, we have been developing dual-skilled personnel who possess both expertise in their particular business areas as well as digital technology skills.

In our view, digital transformation should be not only the task of digital technology experts but also tackled with a sense of ownership by all employees. That is why we have established a multi-layered training curriculum tailored to each employee's job.

Developed during 2018 and 2019, Data Science Plus is a program designed to foster data scientists. The program's introductory course provides a general education on data science, while the basic and applied course helps employees master data science methods and programming languages. As of 2020, 1,600 employees have completed either the introductory course or both courses. In addition, 40 employees have completed the advanced course, enabling them to solve problems in their own departments through the application of advanced knowledge and skills. By 2025, we will increase advanced course graduates to 100 employees. In 2022, we also began conducting the basic and applied course in Thailand and China, where we have numerous production sites.

Other digital transformation initiatives include the 2021 launch of Digital Transformation Training for Managers, which targets the senior managers of in-house companies, and Data Utilization Training for Plant Technicians. The former is a program aimed at developing leaders who can exploit digital technologies to implement corporate transformation that aligns with the strategies of in-house companies. AGC plans to have 100 employees complete this program by 2023. The latter program heightens operational excellence at manufacturing sites by promoting the utilization of data to visualize sites, complementing the intuition, know-how, and experience of plant technicians.

Furthermore, to strengthen employees' focus on digital transformation, we are inviting outside experts to conduct seminars as well as holding in-house exhibitions that allow employees to learn about digital transformation based on case studies from other in-house companies in Japan and overseas.





## Improving Engagement

In 2005, the AGC Group began conducting employee engagement surveys with two focuses: the synergistic relationship between highly-motivated employees and the company that fosters a better organizational climate. Since conducting a second survey in 2007, we have carried out the surveys every three years and followed a cycle in which we conduct surveys, analyze results, identify issues, and make improvements.

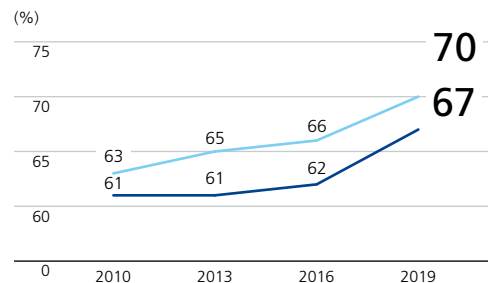
In 2019, we implemented the sixth employee engagement survey, which covered all Group employees and received responses from approximately 42,000 employees, or approximately 90.0% of the total workforce, in 43 countries and regions. Previous surveys were paper- and online-based. However, switching to an entirely online survey has increased the response percentage and shortened lead times for calculating and analyzing results from three months to one. The 2019 survey results improved in all categories compared with those of the 2016 survey, with noteworthy increases in the percentages of positive responses for “employee engagement” and “employee enablement.” On the other hand, as the percentages of positive responses were relatively low for “achievement of ambitious targets,” “level of recognition for work,” and “resources to carry out work effectively,” we have been making improvements in such areas.

After the compilation of the survey results, they were used to prepare the *Engagement Survey Report*, which included analysis of survey results and a message from the CEO. We issued the report in 22 languages and distributed it to all Group employees. In light of the survey results, employees, managers, and senior management have been holding dialogues to explore ways of addressing areas in need of improvement. Based on the conclusions of these dialogues, personnel at all levels of the Company have been implementing measures to create a better organizational culture. The next employee engagement survey is scheduled for the second half of 2022.

### ● Overview of the Results of the 2019 Employee Engagement Survey

Among the multiple survey question categories, “employee engagement” and “employee enablement” are key categories with respect to engagement. Survey results have been improving steadily in both of these categories since 2010.

Percentages of Positive Responses in the Past Four Employee Engagement Surveys



## Holding of a Global Event

To mark the 114th anniversary of our founding, in September 2021 we held the One Day at AGC Group Sites Global Tour online. The event encouraged pride in being an AGC Group employee by making visible the connectedness and diversity of the Group's more than 50,000 employees worldwide. During the event, we shared a video depicting a typical day at each Group site, with montages comprising not only offices, meetings, manufacturing sites, and employees beginning their working day but also the local dishes on the menus of company cafeterias and social contribution activities. In addition, a presenter used an app to conduct a quiz in real time, and there were appearances by the Group president & CEO, chief financial officer, and chief technology officer, making for an hour that brought AGC Group employees together from around the world.



At the start of the working day in Thailand, employees pray for a safe day, and the national anthem is played.

## An Example of Engagement Improvement Activities

Based in Guangdong Province, China, AGC Automotive (Foshan) Inc. manufactures laminated, tempered, and acoustic glass for automobiles and assembles components. Due in part to its high concentration of manufacturing sites, the region has a very mobile workforce. For this reason, in 2018 the company began full-fledged initiatives to retain employees.

One initiative has been to improve workplace conditions by strengthening the “vertical” ties between the company and its employees. We identified factors that significantly impact employee motivation through overall consideration of multiple factors, such as temperature, noise, number of employees, employee turnover rate, and the results of interviews at each work site. Based on these results, we have improved the on-site environment by installing air-conditioners and soundproofing and by automating certain tasks.

Another initiative has been the strengthening of “horizontal” ties between employees and those around them, including coworkers, families, and employees of other companies. The aim of this initiative is the cultivation of a stronger sense of attachment to the company among employees. As part of these efforts, the company's human resources department has taken the lead in organizing employee roundtable discussions and family days, when employees invite their friends and families to workplaces.

The aforementioned initiatives have borne fruit. The 2019 employee engagement survey showed increases in the percentages of positive responses in all question categories compared with those of the 2016 survey, with a particularly marked improvement in the “employee enablement” category.



A family day

## A Roundtable Discussion among Human Resource Managers

The AGC Group is optimizing its human resource functions by business and region. The four human resource managers on the right, who work in Japan, Thailand, the Czech Republic, and the United States, met to discuss region-specific human resource measures, the human resource issues faced by countries and regions, and related initiatives going forward.



**Jingjing Yap**

AGC Inc.  
Global HR Strategy Group  
Human Resources Division  
Senior Staff



**Lukas Vavrina**

AGC Automotive Czech a.s.  
Head of Development & WC  
Recruiting Department



**Jay Larkin**

AGC Automotive Americas Co.  
Talent Management  
Manager



**Yosita Wanyanaporn**

AGC Chemicals (Thailand) Co., Ltd.  
Human Resources Department  
Assistant Department Manager

## Summarizing the Challenges of Each Country and Region

**Yap** At the AGC head office in Japan, I am responsible for the global employee engagement surveys and employer branding. Enhancing employee engagement promises to produce a range of benefits, including higher work quality and lower employee turnover. Moreover, increased employee engagement will heighten employee satisfaction and help the Company reach its goals. The AGC Group conducts employee engagement surveys every three years, with the next survey scheduled for the second half of 2022. Through extensive dialogues and taking into account the feedback received from our employees in these surveys, I am committed to creating better workstyles and workplaces. In addition, attracting talented personnel is an important goal of employer branding, and I am constantly exploring how best to communicate the AGC Group's appeal. From my various business trips to Southeast Asia and work in Singapore, where I am originally from, I feel that issues remain with respect to AGC's employer branding outside of Japan. What do all of you think?

“ I am constantly exploring how best to communicate the AGC Group's appeal. ”

**Wanyanaporn** Yes, I agree. I belong to AGC Chemicals (Thailand) Co., Ltd. In Thailand, the AGC Group's employer branding lacks impact. In particular, more effort is needed to secure technical personnel. The Group has been operating in Thailand for more than 60 years. However, despite this long history, recognition of the Group's brand is comparatively weak. To overcome this issue, we have been working on an AGC brand project in collaboration with the AGC head office in Japan for the past three years. We are trying to increase the visibility of AGC through social networking sites and other media. Recent hiring activities have revealed a growing awareness of AGC among candidates, but I believe the fruits of our efforts will emerge going forward.

**Vavrina** Securing technical personnel is also an issue at AGC Automotive Czech a.s., where I work. In fact, for the past several years the Czech Republic's unemployment rate has been the lowest in the European Union, hovering between 2.0% and 3.0%. This makes hiring new employees difficult in the country. So, we have to look to other Eastern European countries and other regions. Meanwhile, in Asia we have been able to recruit personnel from Mongolia, who are interested in moving to the Czech Republic to work, and we expect to hire more personnel from this country. Another issue is how to deal with short-term fluctuations in demand for human resources. Especially during labor shortages, it is important to know how to attract talented personnel to our factories.

**Larkin** I completely sympathize with what Mr. Vavrina said. In the United States, not only the AGC Group but all kinds of companies are struggling with chronic labor shortages. Of course, there are many other human resource issues, but labor shortages are the biggest problem at this time.

## Tackling the Common Issue in Terms of Human Resources

**Yap** Based on the information everyone shared earlier, attracting talented personnel seems to be a common issue regardless of the region. By the way, in my home country employees commonly change jobs after three or four years to gain more experience and expertise. However, the concept of developing one's career is rather different at AGC. Here, the Company values and enables personal growth from within the organization. For example, I studied engineering at university, but now I work in the Human Resources Division. Such a career development can be difficult to achieve in a job change where experience in the previous job is important. Irrespective of the previous experience of employees, however, the AGC Group enables them to pursue ambitions and transfer to different positions. In their new departments, employees receive thorough training. Moreover, the Group's operation of businesses in various fields gives employees a particularly wide range of options.

“ I feel that we must welcome the changes in current needs and update our human resource systems accordingly. ”

**Vavrina** I agree. In fact, at the AGC Group, I have known and seen the effectiveness of cases where people were transferred from development to quality departments or from quality to process engineering departments. As employees can feel reluctant to continue in the same line of work, the availability of many different options makes career development of great interest to employees. Being able to gain experience and grow in different fields throughout our lives while still belonging to the same corporate group is a great advantage for us as employees.

**Larkin** Employee engagement and leadership development are key to employee retention. When we focus on these two important areas, the results are very impactful for employees. Thus, we will continue to target these areas.

**Wanyanaporn** For example, in Thailand, where I live, an employee who joins a company to work in human resources generally remains in human resources until retirement. This is because gaining extensive experience and becoming a professional is seen as paramount. However, looking at the younger generation today, I do not think they necessarily see it that way. The comments made so far in our discussion have left me feeling that we must welcome the changes in current needs and update our human resource systems accordingly.

**Yap** I hope our discussion will be a good stimulus for you, Ms. Wanyanaporn. Since joining the Company, I have worked with people from different countries, regions, and backgrounds. I believe that teams comprising people with diverse perspectives and different ways of thinking can adopt multifaceted approaches to difficult issues and come up with creative solutions. The participants in today's roundtable discussion represent just such a team.



**Larkin** Yes, you are right. Despite regional and cultural differences, we have many things in common, and I have been listening to what everyone has had to say today with great interest. I hope that opportunities like this one will strengthen our relationships with each other and enable us to work together more often.

“ Society is changing at a rapid pace, and the demands on human resource departments are also changing. With this in mind, I will go on developing my skills. ”

## Pursuing Aspirations as Human Resource Professionals

**Yap** Lastly, what do you hope to achieve as human resource professionals?

**Vavrina** At the beginning of our discussion, Ms. Yap mentioned global employer branding. When I talk with employee candidates, they really seem to like the fact that the AGC Group has a corporate culture based on cooperation among coworkers. This is actually true, and I want to ensure that we convey this type of appeal to those outside the Company. Another attractive aspect of the Group is that it provides many materials and components for familiar products that are indispensable for society, such as buildings and cars. I am also glad that, through the field of human resources, I can help with the development of such a company. For me, human resources is a very interesting field. Going forward, I will continue promoting measures that heighten employees' appetite for proactively taking on ambitious initiatives.

**Wanyanaporn** The AGC Group enables employees to experience and learn about a wide variety of work as well as to broaden their horizons. Through events such as today's roundtable discussion, the Group provides me with opportunities to meet coworkers not only from Thailand but also from other countries. I am really grateful to be able to learn new things from each of these coworkers. Like Mr. Vavrina, I would like to contribute to the Group in my capacity as a human resource professional. Society is changing at a rapid pace, and the demands on human resource departments are also changing. With this in mind, I will go on developing my skills.

**Larkin** When I talk to prospective employees and tell them that I have been with the AGC Group for 28 years, they invariably ask me what I like about AGC. I always reply that AGC is attractive to me because of the outstanding employees it has worldwide. I have visited AGC's automotive glass production plants in Japan, the Czech Republic, and North America. The great personalities and cooperativeness of the AGC Group coworkers I meet at these plants never fail to impress me. Wherever I go, they are welcoming and helpful. It makes me proud to be a part of AGC. As a human resources manager, I will focus on developing the next generation of leaders and I hope to leave AGC better than it was when I joined.

**Yap** For me, there are so many appealing things about working at AGC that I cannot list them all. But if I had to choose one, it would be the people who work in the AGC Group, as Mr. Larkin said. I have been truly blessed with the people I have worked with, from my supervisor when I first joined the company through to my coworkers. While remaining professional, they have always been very kind and helpful in teaching me many things. To repay their kindness, I would like to pass on the wonderful culture of the AGC Group to the next generation by further enhancing and utilizing my knowledge as a human resource professional. Finally, allow me to conclude by thanking all of you for the great discussion today.

## The Environment

### Contributing to the Creation of a Sustainable Society in Harmony with Nature

#### Climate Action

Climate change and other global environmental issues are material issues for sustainability management for us. Opportunities and risks associated with climate change are factors that can have significant impacts across our entire value chain, from procurement of raw materials to manufacturing, logistics, sales, and waste and end-of-life products treatment, while also affecting value creation models and business strategies.

AGC endorses the principles of the Task Force on Climate-related Financial Disclosures (TCFD), which was established by the Financial Stability Board, and properly discloses information about our opportunities, risks and analyses of climate change.

#### Governance

##### Management Structure

In the medium-term management plan, **AGC plus-2023**, management has identified as material issues for the AGC Group major opportunities and risks that may impact its corporate value and the long-term direction of management at AGC, taking into account future trends in global social issues and risks, as well as social issues that its customers are trying to resolve. Accordingly, AGC has set sustainability targets that aim to deal with risks while taking advantage of opportunities.

Addressing climate change is a material issue for us. The Board of Directors, which meets once a month, in principle, receives reports on progress addressing climate change. Guided by proposals made by the Board of Directors, the Company devises countermeasures to climate change, creates strategic plans, and evaluates, approves, and monitors progress on these initiatives and plans.

Chaired by the CEO and comprising the CTO, CFO, and the general managers from each division as members, the Sustainability Committee is a decision-making organization for sustainability initiatives that meets four times a year. The Sustainability Committee is positioned on equal footing as the Management Committee, and under the supervision of the Board, it is responsible for deciding and monitoring the execution of sustainability-related matters, including climate actions. The Sustainability Committee deliberates on policies to address climate change based on the identified opportunities and risks arising from climate change for the entire AGC Group, the results of monitoring greenhouse gas emissions, and related issues.

Based on the decisions made by the Sustainability Committee, the CFO and CTO are responsible for executing climate actions in accordance with their duties. The Strategy Meeting for Climate Change, which is led by the general manager of the Sustainability Division in the Corporate Planning General Division, deliberates in a timely fashion our actions to risks and evaluates strategies in light of changes inside and outside the Company that result from climate change. The AGC Group Greenhouse Gas Emissions Reduction Framework Committee, which is led by the general manager of the EHSQ General Division, works closely with specialist entities in the organization on data management, technological innovation, energy management, and supply chain management with the aim of reducing greenhouse gas emissions around the world and across the entire business.

#### Strategy

Since our founding, we have tackled social issues and responded to the needs of society in each era through R&D and commercialization activities from a long-term perspective, based on a foundation of trust with our customers. With the medium-term management plan positioned as the second phase toward realizing Vision 2025, AGC has accumulated five strengths since its establishment that are core to its value creation model (see on page 6) while executing a cycle of resolving social issues with its business foundation supporting ongoing efforts to advance measures.

### Identification of Climate Change-Related Opportunities and Risks

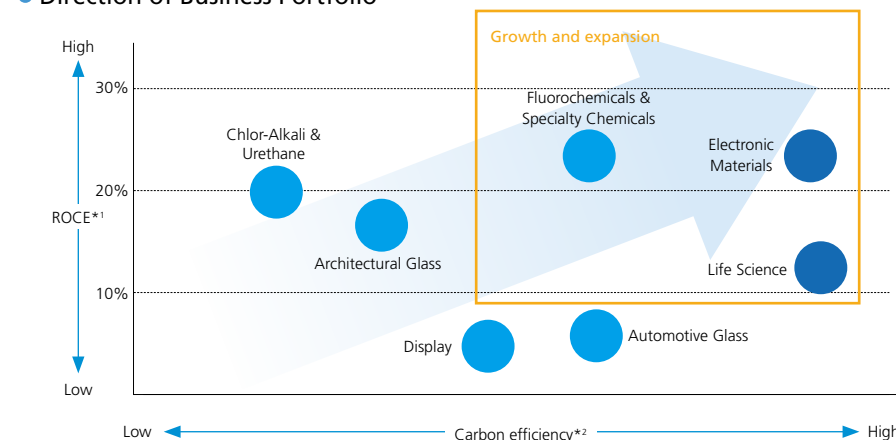
From the short term to long term, various changes brought about by global environmental issues, including climate change, present opportunities and risks for the AGC Group. The Group defines the short term as until next year, medium term as three years from now, and long term from 2030 onward. We identify and assess climate change-related opportunities and risks that may have an impact on our operations, taking into consideration the perspectives of both the mitigation of and adaptation to climate change, while evaluating the possibility of underlying changes in operations, earnings, and expenses.

#### Opportunities and Risks Likely to Have Major Long-Term Impacts

Strategy	Details	
Transition risks	Policies, laws, and regulations	Cost increases due to carbon pricing, such as a carbon tax, and other expanded regulations on GHG (greenhouse gas) emissions
	Technology	Increased costs to realize the transition to low-carbon technology, such as establishment of manufacturing methods that do not require fossil fuels
	Markets	Decrease in demand for existing products due to changes in consumer preferences
Physical risks	Short-term	Effects on operations and logistics due to natural disasters such as heavy rainfall, floods, and droughts
	Long-term	Effects on operations and logistics due to inundations caused by long-term rising sea levels, greater frequency of storms, and typhoons stemming from an average global temperature increase
		Heatstroke in hot workplaces during the summer due to the rise in average global temperature
Opportunities	Resource efficiency	Cost reductions through more efficient use of mineral and water resources Diversification of raw material options by utilizing recycled resources such as glass cullet and recovered fluorite
	Products	Development and sale of products that contribute to the alleviation of and adaptation to climate change, such as Low-E double-glazing glass, alternative fluorocarbons with low global warming potential, and ion exchange membranes that contribute to the production of drinking water and water reuse
	Markets	Access to new markets leveraging the strengths of the Group's technologies

Based on these observations, we strive to expand Strategic Businesses with high carbon efficiency and asset efficiency and formulate business plans to take advantage of opportunities while reducing risks through initiatives to improve the carbon and asset efficiency of Core Businesses.

#### Direction of Business Portfolio



\*1 ROCE = Operating profit forecast of the current fiscal year ÷ Operating asset forecast at the current fiscal year-end (based on fiscal 2023 targets)

\*2 Based on actual emission intensity per unit of sales in 2020

#### Analysis of Climate Change Scenarios

AGC performed a scenario analysis for the Automotive Glass Business based on the TCFD framework, taking into consideration the impacts that climate change might have on its value creation model and decisions about business strategies. Based on this scenario analysis, we drew up plans to mitigate risks and tap into opportunities in order to maintain the resilience of the AGC Group against the impacts of climate change.

Since the AGC Group has a business presence around the world, our scenario analysis referenced the International Energy Agency's (IEA) 2 °C Scenario (B2DS), the IEA's Sustainable Development Scenario (SDS), the IEA's New Policies Scenario (NPS), the IEA's Current Policies Scenario (CPS), and Nationally Determined Contributions (NDCs).

Using a multidimensional matrix to categorize in terms of procurement, markets, customers, government, investors, and society, we estimate the level of opportunities and risks in terms of quantitative and qualitative impact, as well as the likelihood of their materialization. We screened for events that would have a high estimated impact if an opportunity or risk actually materialized.

For the AGC Group, an important factor under the 2 °C Scenario is how much costs will increase due to government policy for the transition to carbon pricing. Under the 4 °C Scenario, it is important to evaluate and take countermeasures for the potential impact on production sites and suppliers if climate change causes increases in flooding, high tides, and higher ocean levels that have catastrophic effects on property.



### Climate-Related Opportunities

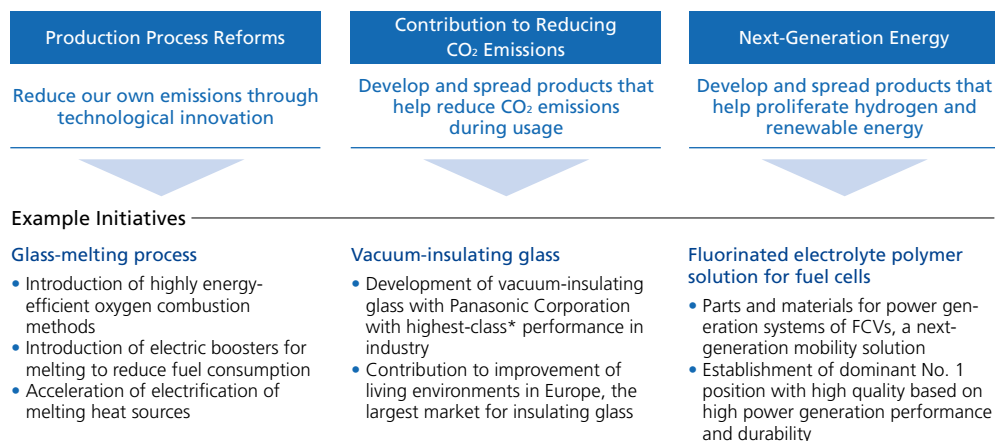
We view contributing to reducing greenhouse gases in society as a business opportunity for the AGC Group and are advancing the development and proliferation of products that help reduce greenhouse gas emissions during use.

In the Glass Segment, we expect demand to strengthen for products that can reduce energy consumption when final products are used, such as eco-glass. We aim to increase sales of environmentally friendly products, such as vacuum-insulating glass, and develop glass production technologies that help conserve energy.

In the Chemicals Segment, we anticipate stronger demand for new environmentally friendly coolants with low global warming potential (GWP). Based on the idea of considerably reducing GWP while maintaining the performance of coolants and solvents, AGC is helping reduce greenhouse gas emissions across society by expanding sales of AMOLEA™, a next-generation coolant and solvent that lowers GWP below 1 and ozone depletion potential (ODP) to roughly zero.

Beginning with SELEMION™, an ion-exchange membrane used to produce drinking water by filtering out salt and nitrogen from well water, AGC endeavors to develop and spread products that mitigate the impact of climate change.

Moreover, as an environment and energy business, we are keen to develop and spread products that facilitate the proliferation of hydrogen and renewable energy. One such product is our fluorinated electrolyte polymer solution for fuel cells, which features both high power generation performance and durability as a material used in power generation systems of fuel-cell vehicles (FCVs), a next-generation mobility solution. In both Core and Strategic Businesses, AGC is accelerating the development of technologies and businesses in the environment and energy domains.



\* Heat transmission coefficient for 6-millimeter vacuum-insulating glass is 0.7 W / (m<sup>2</sup> · K). As of October 15, 2018. AGC survey

### Climate-Related Risks

AGC anticipates a rise in costs to address transitional risks as stakeholders increasingly demand more contributions to decarbonization through business activities, while countries and regions strengthen regulations to combat climate change and set goals to reduce greenhouse gas emissions to comply with the Paris Agreement, among other international initiatives. A growing number of suppliers intend to increase energy efficiency throughout their supply chains, and if customer expectations are not met, demand for existing products might weaken.

If regulations become stricter around the world to keep temperatures rising as little as possible and if countries introduce carbon-pricing, the potential long-term impact is on the order of several billion yen. AGC will fine-tune its analysis to quantitatively assess the impact on its profits, costs, assets, and liabilities along different timelines.

AGC also assesses water risks due to climate change. At sites in regions identified to have a high likelihood of natural disasters caused by torrential rainfall, flooding, or drought, based on the results of our assessments, we calculate the impacts on operations and formulate business continuity plans and countermeasures for facilities in a bid to reduce potential damage.

In addition to the direct impact from climate change, we conduct evaluations of the impact on natural capital in terms of water use, energy use, land use, and waste generation.

## Risk Management

### Process for Identifying and Assessing Climate-Related Risks

We have created the AGC Group Enterprise Risk Management Basic Policies for the AGC Group's risk management systems for short- and medium-term risks, and we maintain a framework for managing risks and responding to crises.

For long-term risks, we strive to understand various opportunities and risks that could arise from climate change and aim to minimize risks and reinforce our competitiveness by continuing to evaluate the appropriateness of our strategies based on scenario analysis.

### Process for Management of Climate-Related Risks

The Board of Directors and the Management Committee regularly monitor identified climate-related risks and perform the management thereof. Corporate divisions, in-house companies, and strategic business units (SBUs) analyze risks and examine countermeasures for each business and project. If necessary, such risks are deliberated on by the Board of Directors and the Management Committee.

### Integration of Risk Management Processes with Climate-Related Risk Identification, Assessment, and Management Processes

Risks likely to have a major impact on the operations of the AGC Group if they were to materialize are classified as “major risk factors,” and the management team maintains and operates a framework for monitoring the Groupwide management of these risks. For climate change risks deemed as major risk factors, AGC has created the AGC Group Risk Management Implementation Rules to guide management on how to regularly self-inspect the level of risk management in their organizations and monitor the results.

### Addressing of Climate-Related Risks

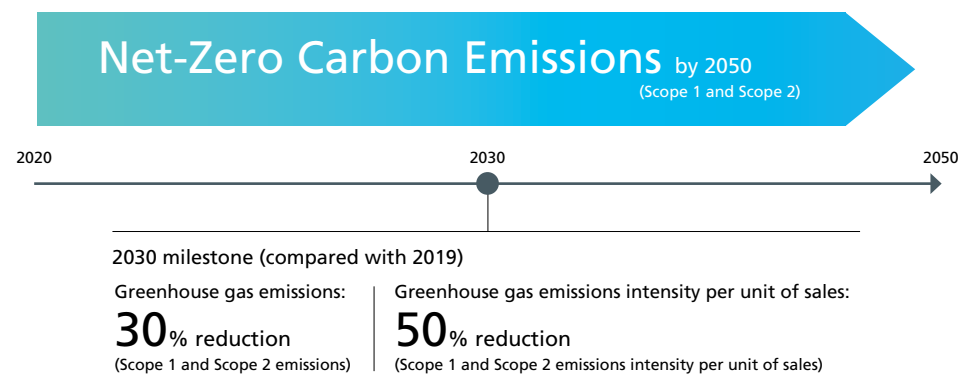
As frameworks for reducing greenhouse gas emissions (Scope 1 and Scope 2) associated with its business activities, while preparing to respond if countries and regions enhance or introduce carbon-pricing schemes like those identified in our scenario analysis, in 2020 the AGC Group introduced carbon cost simulations (calculating net present value (NPV) per unit of greenhouse gas emissions in investment projects) and, in 2022, rolled out an internal carbon-pricing scheme. The Group has set ¥6,500/t-CO<sub>2</sub> as a benchmark for business investments and capital investments for reducing greenhouse gases.

Additionally, we are reducing energy use through measures to conserve energy and switching from fossil fuels to non-fossil fuels as sources of energy. For glass-melting processes that are already highly efficient in terms of carbon emissions, we are introducing oxygen combustion methods with even higher energy efficiency, introducing electric boosters for melting that reduce fuel consumption, accelerating the electrification of melting heat sources, and conducting trials with ammonia combustion.

As a strategy to counter physical risks, we envision what impacts abnormal weather could have on our production processes and sales operations, as well as predicting possible impacts on costs, product transportation, and raw material procurement. Moreover, the AGC Group newly calculated the expected amount of damage natural disasters inflict on its operations, and will reflect this in its capital investment plans while moving to reduce procurement risks.

## Metrics and Targets

In order to create five types of social value through its business activities and core initiatives for the environment, the AGC Group's climate-related targets are based on greenhouse gas emissions as a key performance indicator. With the aim of achieving *net-zero carbon emissions* by 2050, AGC has set milestone targets for reducing greenhouse gas emissions by 30% and greenhouse gas emissions intensity per unit of sales by 50% by 2030, compared with 2019 levels (Scope 1 and Scope 2). In addition, AGC aims to help the world become *net-zero carbon emissions* through its products and technologies.



In terms of initiatives before 2020, in 2014 AGC advanced initiatives to reduce greenhouse gas emissions under the slogan of “aiming to reduce annual CO<sub>2</sub> emissions (Scope 1 and Scope 2) through energy-conserving and energy-creating products by six times our own emissions by 2020.” In 2019, the amount of greenhouse gases reduced as a result of our energy-conserving and energy-creating products sold that year totaled 63.7 million t-CO<sub>2</sub>-e, 5.6 times the AGC Group's annual greenhouse gas emissions of 11.37 million t-CO<sub>2</sub>-e (Scope 1 and Scope 2) that same year.

In addition to Scope 1 and Scope 2 emissions, AGC has set targets for reducing Scope 3 emissions and is taking steps to reduce greenhouse gas emissions across society and lessen the impact of climate change. Alongside reducing greenhouse gas emissions, in order to manage identified risks, we refer to water use and cullet use as management indicators and analyzes this impact in a timely manner. AGC works to reduce emissions by forecasting and keeping track of actual greenhouse gas emissions every year. The next page shows our actual greenhouse gas emissions (Scope 1, Scope 2, and Scope 3) from 2019 to 2021.

### Greenhouse Gas Emissions (Scope 1, Scope 2, and Scope 3) (2021)

#### Greenhouse Gas Emissions: Scope 1, Scope 2, and Scope 3

(Thousands of t-CO<sub>2</sub>-e)

	2019	2020	2021
Scope 1 (direct emissions)	6,165	6,429	6,986
Scope 2 (indirect emissions from purchased energy)	5,271	4,634	4,621
Scope 3 (other indirect emissions)	13,175	11,601	11,527
Total	24,611	22,664	23,135

**Coverage of Scope 1 and Scope 2 emissions** AGC Inc. and its consolidated subsidiaries (a total of 133 manufacturing and non-manufacturing sites as defined by the Company's standards)

**Coverage of Scope 3 emissions** AGC Inc. and its consolidated subsidiaries (a total of 238 manufacturing and non-manufacturing sites as defined by the Company's standards)

#### Greenhouse Gas Emissions: Scope 3

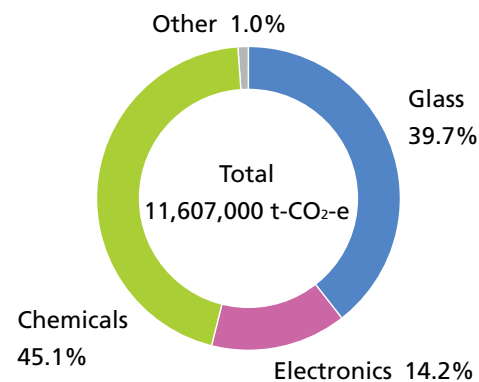
(Thousands of t-CO<sub>2</sub>-e)

	2019	2020	2021
Category 1 Purchased goods and services	2,942	3,716	3,406
Category 2 Capital goods	389	684	685
Category 3 Fuel- and energy-related activities (not included in Scope 1 or Scope 2)	1,776	1,102	2,266
Category 4 Upstream transportation and distribution	1,197	1,007	1,293
Category 5 Waste generated in operations	12	35	14
Category 6 Business travel	19	43	18
Category 7 Employee commuting	21	51	20
Category 8 Lease assets (upstream)	—	—	—
Category 9 Transportation and distribution (downstream)	—	—	—
Category 10 Processing of sold products	282	269	261
Category 11 Use of sold products	2,398	1,945	1,681
Category 12 End-of-life treatment of sold products	3,971	2,581	1,716
Category 13 Lease assets (downstream)	167	167	167
Category 14 Franchise	—	—	—
Category 15 Investments	—	—	—
Total	13,175	11,601	11,527

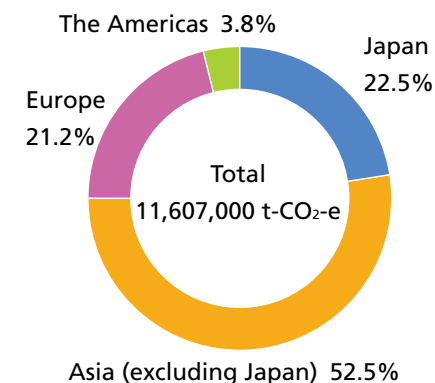
**Scope of coverage:** AGC Inc. and its consolidated subsidiaries (a total of 238 manufacturing and non-manufacturing sites as defined by the Company's standards)

**Scope of calculations:** Categories 10, 11, and 12 refer only to AGC Inc.

### By Business Segment Greenhouse Gas Emissions (Scope 1 and Scope 2) (2021)



### By Region Greenhouse Gas Emissions (Scope 1 and Scope 2) (2021)



### By Business Segment Actual Greenhouse Gas Emissions (Scope 1 and Scope 2) intensity per Unit of Sales (2021)

Business Segment	1,000 t-CO <sub>2</sub> -e/¥100 million
Glass	0.63
Electronics	0.54
Chemicals	0.83
Other	0.15

For more information on our climate actions, refer to the AGC Sustainability Data Book.

<https://www.agc.com/en/csr/book/index.html>







## Making the AGC Group's Environmental Activities More Visible

**Seigo Iwakura**  
General Manager of the  
Purchase & Logistics  
Division

**Shigekuni Inoue**  
General Manager of the EHSQ  
General Division, General Manager  
of the AGC Yokohama Technical  
Center

The AGC Group's past and future environmental activities were discussed by Shigekuni Inoue, general manager of the EHSQ General Division, and Seigo Iwakura, general manager of the Purchase & Logistics Division.

### Considering the Status of Environmental Activities

**Inoue** Roughly 50 years ago, companies' environmental activities comprised measures to prevent factories from polluting the air and water. As we have both been engaged in manufacturing for many years, we also became involved in environmental activities from a relatively early stage.

**Iwakura** Yes, that is right. As pollution became a social issue, the first priority was achieving compliance with the various environmental laws and regulations established to curb pollution.

However, in the pursuit of profits, manufacturing sites were also required to improve productivity and reduce costs, and I doubt there were many who thought about proactively advancing environmental protection beyond the level needed for compliance with said laws and regulations.

**Inoue** Today, by contrast, we are in an era when business activities are not viable unless companies act on their own to address a wide range of social issues and tasks, such as climate change, the establishment of a circular economy, and the preservation of natural capital. In Japan, we are feeling the effects of climate change, including an increase in wind and flood damage. Consequently, social awareness of the environment is rapidly rising. Accordingly, I believe that the EHSQ General Division must also tackle environmental activities with a completely different mindset than that of the past.

**Iwakura** Under such circumstances, more than ever we must consider not only the environmental impacts during manufacturing processes but also the environmental impacts before and after manufacturing processes. That is to say, we have to think in terms of entire product life cycles. The Purchase & Logistics Division, which I manage, is responsible for the procurement of raw materials before manufacturing and the transportation of products after manufacturing, in other words, the "entrance" and "exit" of manufacturing operations. For this reason, I have firsthand experience of the steadily increasing severity with which institutional investors and other stakeholders view environmental impacts. At the exits, we have already begun working on a modal shift from transportation by trucks and other gasoline-powered vehicles to railways and other modes that place less burden on the environment.

**Inoue** The AGC Group's management team consistently emphasizes to employees that safety, environment, quality, and legal compliance are the preconditions of business activities. Traditionally, in-house awareness of safety has been very high, and the "No Production without Safety" policy has become firmly rooted in operations worldwide. Going forward, however, "No Production without Environment" could become a Groupwide motto. The current medium-term management plan, **AGC plus-2023**, sets as long-term goals for 2050 the achievement of *net-zero carbon emissions* from business activities and the leveraging of products and technologies to help realize *net-zero carbon emissions* globally. Further, as a milestone, we have set a target for reducing GHG (greenhouse gas) emissions by 2030 compared with those of 2019.

## Making Environmental Activities Visible

**Iwakura** The AGC Group's founding business is glass manufacturing, which requires a lot of energy. Traditionally, heavy oil was used as the main fuel in this manufacturing. In recent years, however, we have been switching to natural gas, which is more expensive than heavy oil but produces lower GHG emissions and less air pollution. Further, in 2020 we completely revised the AGC Group Purchasing Policy, which now clearly states a commitment to fulfilling our responsibility with respect to the realization of a sustainable global society as well as to conducting environment-friendly procurement.

**Inoue** The concept of recognizing environmental impacts as a cost is gaining ground. I believe that one of the reasons for this change is the progress in visualization. First of all, we have made targets visible by setting out numerical targets for the AGC Group's GHG emissions as key performance indicators (KPIs). In addition, we will set KPIs not only in relation to addressing climate change but also for environmental issues, such as building a circular economy and conserving natural capital. Then, we will prepare action plans to achieve these KPIs. Moreover, to make initiatives visible, we are focusing on environmental information disclosure. In recognition of these efforts, in 2021 the CDP\* gave us an A- evaluation in the climate change field, our highest ever-rating.

\* CDP is a non-profit organization whose main activities entail seeking from companies and municipal authorities disclosure of their measures for climate change mitigation, water resource protection, forest conservation, and other environmental issues that is consistent with the requirements of highly environmentally conscious institutional investors and major purchasing companies worldwide as well as using this disclosure to encourage such measures.

**Iwakura** As well as enabling our stakeholders to see and understand the progress of our efforts more easily, the external disclosure of KPIs raises in-house awareness. In February 2022, we introduced internal carbon pricing. I hope that this initiative will make environmental impacts more readily understandable to each employee and thereby further advance our efforts to reduce GHG emissions. As the establishment of a circular economy, which was mentioned earlier, is strongly related to the Purchase & Logistics Division, I would like to work closely with the EHSQ General Division to establish KPIs.

**Inoue** Regarding climate action, Scope 2 and Scope 3 GHG emissions have a particularly direct relationship to the Purchase & Logistics Division, which is one of the reasons why we coordinate so closely with your division. The role of the EHSQ General Division is to set specific numerical targets and formulate measures, but business divisions are responsible for pursuing

these targets and putting measures into practice. Although a corporate division, the Purchase & Logistics Division has many opportunities to collaborate with business divisions in the course of its daily operations. For this reason, collaboration with the Purchase & Logistics Division is indispensable in enhancing the effectiveness of business divisions' environmental activities.

**Iwakura** Aiming to create economic and social value, the whole AGC Group has identified the five types of social value the AGC Group wants to create, one of which is environmental value. However, there are times when I feel that, overall, the Group is still focused on economic value. Of course, this is not surprising, since the business divisions are engaged in operations directly related to economic value. On the other hand, the role of corporate divisions such as the EHSQ General Division is to seek a balance between economic value and social value in corporate activities. With a greater focus on social value, we will work in partnership with business divisions and help realize this balance.

**Inoue** Without a cross-divisional approach, we would not be able to move forward with environmental initiatives. As I mentioned earlier, making issues and progress visible is an important way of encouraging business divisions to advance initiatives as one cohesive team. For example, we are considering making two key areas visible. The first is whether environmental rules and frameworks are in place, with the second being whether environment-friendly attitudes and awareness are being fostered. Visualization of these two areas will enable us to grasp the current status of each operating site and to seek high levels of achievement in both key areas at all sites.

Further, given the large amounts of energy used by the AGC Group and its peers, the materials industry is often thought of as negatively affecting the environmental component of social value. However, many of our products are essential to society because they provide health, safety, and various other benefits. In other words, the Group also delivers positives in terms of social value. If these positives outweigh the negatives, we will be nature positive. I would like to take on the challenge of making our positives visible as well. This is an ambitious goal. Nonetheless, I am convinced that the social value provided by products of the AGC Group is larger than the negative effects of its energy consumption, and I would like to convey this message to society. Given that even closer collaboration between our divisions will be essential in establishing and communicating the Group's social value, let us redouble our efforts and continue working in partnership.

## Corporate Governance

### How AGC Works to Achieve Sustainable Growth and Raise Corporate Value over the Medium to Long Term

#### Fundamental Approach

The AGC Group has established the AGC Group Corporate Governance Basic Policy and strives to strengthen and improve its corporate governance while operating in a manner that transcends the boundaries of the parent and its subsidiaries, in order to achieve sustainable growth and improve corporate value for the Group over the medium to long term. The Group has transitioned to a Company with an Audit & Supervisory Board corporate governance system and works to strengthen the management oversight function through the clear separation of the management oversight and business execution functions. Meanwhile, for business execution the Group's basic policy is to accelerate business execution by clearly dividing the Group's corporate function and the business operation function.

For further details, please refer to the Corporate Governance Report submitted to the Tokyo Stock Exchange.

<https://www.agc.com/en/company/pdf/governance.pdf>



#### Framework for Management Oversight

##### Composition and Role of the Board of Directors

Comprising seven directors, each appointed to a one-year term, the Board of Directors of AGC is responsible for approving the AGC Group's basic policies and performing oversight of its business execution. Three of the aforementioned directors, one of whom is female, are outside directors registered with the Tokyo Stock Exchange as independent officers who have satisfied AGC's own criteria for independence.\*1 The Board of Directors convened on 14 occasions in 2021. At these meetings, the Board performed oversight of the

business execution of the AGC Group while determining candidates for director, nominating and determining executive officer positions for the upcoming year, and approving important matters such as the acquisition and disposal of important assets and budgets.

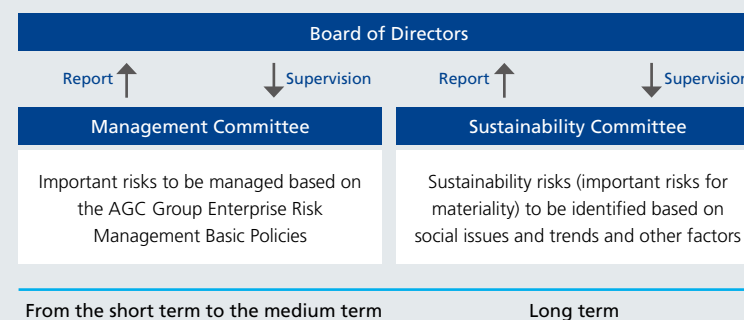
The appointment of candidates for director is decided by the Board of Directors based on the recommendations of the Nominating Committee after deliberations. Candidates for director are people who have track records, experience, and insight that are key to approving important matters for business execution at AGC and for supervising business execution. Candidates are screened and determined after due consideration is paid to the balance and diversity of specializations of Board members.

Outside directors monitor issues concerning the Group's business management and offer advice to the Board of Directors from an independent and objective standpoint, based on their extensive experience in global corporate management and knowledge of corporate governance-related issues. In principle, meetings of the Board of Directors, Nominating Committee, and Compensation Committee are chaired by an outside director.

\*1 As of March 30, 2022

#### AGC's Risk Management System

AGC defines important risk factors pertaining to the Group and regularly deliberates on the status of risk management at meetings of the Board of Directors. Under the AGC Group Enterprise Risk Management Basic Policies, the Company maintains risk management and crisis response systems for short- to medium-term risks while, in regard to sustainability risks (long-term risks) identified based on social issues and trends and other factors, the Sustainability Committee ascertains the status of progress on sustainability targets and maintains a management system aimed at achieving these targets through such activities as deliberating future measures in light of the status of progress.

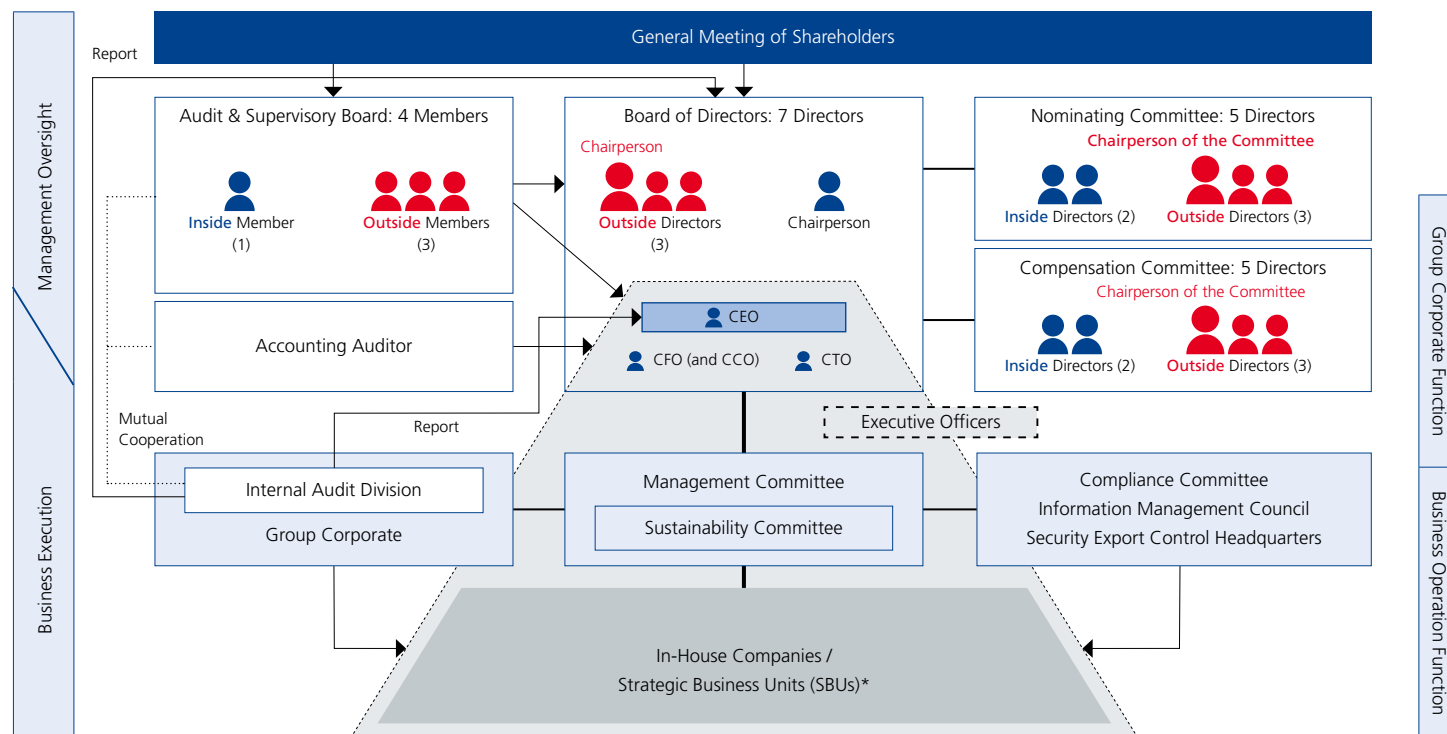


For information on risk pertaining to the AGC Group:  
<https://www.agc.com/en/ir/policy/risk/>





The AGC Group's Corporate Governance System (as of March 30, 2022)



● : Inside directors or inside Audit & Supervisory Board members  
 ● : Outside directors or outside Audit & Supervisory Board members who satisfy AGC's criteria for independence of outside officers

\* An in-house company is defined as a business unit that has net sales exceeding ¥200.0 billion and which conducts its business globally. At present, there are five In-House Companies: the "Architectural Glass Asia Pacific Company", "Architectural Glass Europe & Americas Company", "Automotive Glass Company", "Electronics Company" and "Chemicals Company". Business units of a smaller size than this are defined as SBU (strategic business unit), and currently there is AGC Ceramics Co., Ltd.

### Structure and Roles of the Nominating Committee and Compensation Committee

AGC has established the Nominating Committee and the Compensation Committee, both of which are composed of mainly outside directors, as voluntary advisory committees to the Board of Directors, in order to improve objectivity regarding the evaluation, appointment, and compensation of directors and executive officers. Both committees are chaired by outside directors.

Composition of Committees / Topics of Discussion / Number of Meetings Held (2021)

	Nominating Committee		Compensation Committee	
Members	Inside	Outside	Inside	Outside
Yasuchika Hasegawa* (Retired on March 30, 2022)		○		○
Hiroyuki Yanagi		◎		○
Keiko Honda		○		◎
Takuya Shimamura	○		○	
Yoshinori Hirai	○		○	
<b>Number of members</b>	5 directors (of whom 3 are outside directors)		5 directors (of whom 3 are outside directors)	
<b>Topics of discussion</b>	Selection of director and Audit & Supervisory Board member candidates and their recommendation to the Board of Directors; and deliberations on the criteria for appointing directors and executive officers and their roles, assignment, and development		Revision of performance-linked compensation and stock-based compensation for directors and executive officers; determination of amounts of performance-linked compensation for executive officers and establishment of their performance targets for the next year; deliberations on analysis and review of compensation levels for directors, Audit & Supervisory Board members, and executive officers; and proposals to the Board of Directors	
<b>Number of meetings held</b>	11 times		8 times	

\* Chairperson of the Board of Directors ◎: Committee chairperson ○: Committee member

## Activities of the Sustainability Committee

The Sustainability Committee meets four times a year with the CEO, CFO, CTO, Audit & Supervisory Board members, and general managers of all divisions present. The committee's deliberations are reported to the Board of Directors twice a year. Additionally, the Sustainability Division under the Corporate Planning General Division acts as the administrative office for the Sustainability Committee to lead the formulation and execution of sustainability management strategies for the entire AGC Group.

### Agenda of the Sustainability Committee in 2021

- Initiatives to combat climate change, such as an internal carbon-pricing system
- Issues and initiatives related to diversity & inclusion
- Activities to achieve sustainability targets

## Evaluation of the Effectiveness of the Board of Directors

AGC believes that continuously strengthening and enhancing its corporate governance is vital to achieving sustainable corporate growth and raising corporate value over the medium to long term. As part of these efforts, the Company carries out an annual analysis and evaluation of the effectiveness of the Board of Directors based on the AGC Group Corporate Governance Basic Policy, with the goal of improving the effectiveness of the Board and increasing stakeholder trust in AGC's corporate governance.

### Evaluation Method

AGC has evaluated the effectiveness of its Board of Directors every year since 2016. The overall evaluation score has improved each year thanks to efforts to remedy issues identified in the evaluation.

From 2016 to 2018, AGC conducted self-evaluations of effectiveness; however, in 2019 the Company enlisted the help of a third party to incorporate new viewpoints and enhance objectivity. We plan to have external organizations help with these evaluations periodically in the future.

### Evaluation Process in 2021

#### 1 Self-evaluation based on questionnaires answered by directors and Audit & Supervisory Board members (November–December 2021)

The highlights of the evaluation are as follows:

- Role of the Board of Directors and the state of deliberations, etc.
- Size and composition of the Board of Directors: number of people, diversity, skills, etc.
- Administration of the Board of Directors: frequency of meetings, length of discussions, agenda setting, support structure for outside directors, etc.
- State of advisory committees (Nominating Committee, Compensation Committee): size, composition, administration, collaboration with the Board of Directors, etc.
- Role of Audit & Supervisory Board members and expectations placed on them

#### 2 Interviews of directors and Audit & Supervisory Board members (December 2021)

Each of our seven directors and four Audit & Supervisory Board members were interviewed to verify their answers to the questionnaire and elicit additional opinions.

#### 3 Discussion by the Board of Directors (January 2022)

Based on the results of the self-evaluations, we compare the outcome with the results of the previous year's evaluation and verify the status of initiatives underway since last year. The Board of Directors analyzes and evaluates its overall effectiveness and sets policies for further improvement.

## Review of Evaluation Results and Future Initiatives

### Review of Evaluation Results for 2020

Regarding issues related to management strategies and business execution, we confirmed that the Board of Directors appropriately addresses such issues with lively discussions in an open atmosphere involving a small number of people.

### Implementation of Improvement Measures

- 1. Reverified roles and responsibilities of directors and Audit & Supervisory Board members**  
Through deep discussions, the roles and responsibilities of directors and Audit & Supervisory Board members were reverified via regular communication.
- 2. Strengthened administrative support for the Board of Directors while improving practices**  
We worked to clarify the materials presented to the Board of Directors and augment the pre-briefing materials given to outside directors.
- 3. Expanded use of off-site meetings**  
We expanded opportunities to use off-site meetings as a venue for directors to freely discuss important matters related to Companywide management, such as medium-term management plans, the business portfolio, non-financial indicators, and internal controls.

### Review of Evaluation Results for 2021

AGC has sustained diversity in the composition of its Board of Directors. Based on their unique knowledge and experience, each Board member voiced their opinions on matters related to strategies for increasing corporate value over the medium to long term, such as the business portfolio and non-financial indicators, as well as matters related to Groupwide internal controls and risk management. Lively discussions were held in an open atmosphere in small group settings. The overall effectiveness of the Board of Directors was verified.

### Future Initiatives

- 1. Further strengthen corporate governance**
  - The Company will refine its method of setting agendas to enable more lively discussions by the Board of Directors on matters that are important to Group management, such as strengthening the business portfolio, sustainability management, and internal controls.
  - The Company will continue to discuss the diversity of the Board of Directors.
- 2. Further strengthen administrative support for the Board of Directors and continue to improve practices**
  - The Company aims to improve the efficiency of administration and the quality of discussions by working to improve the composition and content of briefing materials, as well as decide how they are presented prior to meetings of the Compensation Committee and Board of Directors.
  - The Company intends to help outside directors understand AGC better by continuing to hold off-site meetings and improve communication among directors in a bid to enliven discussions further.

## Composition and Role of the Audit & Supervisory Board

Audit & Supervisory Board members audit the performance of directors by attending important meetings, including meetings of the Board of Directors and the Management Committee, and by holding regular meetings with representative directors. In 2021, the Audit & Supervisory Board convened on 14 occasions, at which it worked to conduct audits systematically and efficiently in accordance with the Corporate Policy over Internal Control, in order to properly oversee and verify whether the Group's internal control system and its components—such as the compliance system, risk management system, and the system for ensuring the accuracy of the consolidated financial statements—have been adequately established and are functioning appropriately, as set out in the basic policy concerning the Group's internal control system.

The Audit & Supervisory Board works in collaboration with the accounting auditor and the Internal Audit Division, which executes the internal audit function, to improve the effectiveness of audits by confirming audit results and information and exchanging views. There are four Audit & Supervisory Board members, three of whom (including one female member) are outside Audit & Supervisory Board members.\*

\* As of March 30, 2022

## The Support System Provided for Outside Directors and Outside Audit & Supervisory Board Members

The Corporate Planning General Division, the secretariat of the Board of Directors, notifies Outside Directors that Board of Directors' meetings will be held, delivers related materials to them, and when needed, explains agenda items of the meetings to them in advance. The Secretariat of the Audit & Supervisory Board is tasked with assisting the duties of the Outside Audit & Supervisory Board members, including the convening of the Audit & Supervisory Board, participation in important meetings, and coordinating meetings with the Representative Directors, the Outside Directors, the Internal Audit Division, and the Accounting Auditor. Under the above support system, the members of the Board of Directors and the Audit & Supervisory Board supervise the business management of the Company by actively making questions and proposals based on their specialized experiences.

## Framework for Management Execution

At the AGC Group, the management execution function is the responsibility of executive officers below the president & CEO. As an advisory committee to the president & CEO, the Company established the Management Committee and discusses business management monitoring and decisions regarding business execution.

A system of in-house companies (quasi-subidiaries within the Group) has been introduced and a global consolidated management system has been adopted with regard to business execution. Much of the responsibility and authority for business execution has been delegated to in-house companies and strategic business units.

## Compensation System

### Basic Philosophy on Compensation System

In its Compensation Principles, the AGC Group sets out its basic stance and philosophy on overall compensation for officers as follows.

- The compensation system shall be one that enables the Company to attract, secure, and reward diverse and talented personnel, in order to establish and expand the Company's competitive edge over its peers.
- The compensation system shall be one that promotes continued improvement of corporate value, thereby allowing shareholders and management to share gains.
- The compensation system shall be one that engenders motivation to achieve performance goals related to management strategies for the AGC Group's continuous development.
- The decision-making process of determining compensation shall be objective and highly transparent.

### Compensation Determination Method

The Compensation Committee deliberates on matters such as the compensation system and compensation amounts for directors and executive officers based on the Compensation Principles, makes proposals in that regard to the Board of Directors, and verifies the results of compensation payments in order to increase the objectivity and transparency of the compensation determination process.

## Compensation to Directors and Audit & Supervisory Board Members (2021)

	Number of recipients	Total payment (millions of yen)		Number of recipients	Total payment (millions of yen)
All directors*	8	764	All Audit & Supervisory Board members	4	100
Outside directors only	3	56	Outside Audit & Supervisory Board members only	3	64

\* Includes one director who retired in March 2021

### Composition of Compensation

For the AGC Group, which provides materials and solutions that aim to realize product development from a long-term perspective, medium- to long-term technological development and investments in human resources and equipment are sources of competitiveness, in addition to the Group's single-year business strategy. Accordingly, the Group has introduced an incentive system as one of the means for AGC's executive officers to take a balanced view of the short, medium, and long terms and to further motivate them to achieve their goals for each time frame.

In addition to bonuses linked to organizational performance in a single year, the Group has introduced stock-based compensation, in which the number of shares granted is determined on the basis of performance and other factors within the period of a given medium-term management plan. Under the stock-based compensation system, executive officers granted shares must retain them during their terms of office, with the aim of motivating them to contribute to the improvement of corporate value over the medium to long term and to create shared interests between executive officers and shareholders.

In February 2021, the Company made the following changes to improve the effectiveness of its compensation system, in accordance with its Compensation Principles.

- In view of the importance of asset efficiency as well as business profitability, the performance indicator for bonuses was changed from operating profit to return (operating profit) on capital employed, and the status of the improvement of non-financial capital, progress on business portfolio conversion, and other indicators were added as evaluation items.
- In order to further increase the willingness of executive officers to contribute to the improvement of corporate value and promote the steady implementation of the new medium-term management plan, the performance evaluation method for stock-based compensation was changed to evaluate performance based on factors including the level of achievement of performance targets for each year.

### Composition of Executive Compensation

	Fixed compensation		Monthly compensation	
	Variable compensation		Bonuses	Stock-based compensation
Board members President & CEO	40%		30%	30%
Directors concurrently serving as executive officers (Excluding the president & CEO)	50%		25%	25%
Directors who do not concurrently serve as executive officers (Representative directors and chairperson)	60%			40%
Independent directors		90%		10%

Note: If none of the above applies, the matter is discussed within the Compensation Committee and the Board of Directors makes a resolution.



## Variable Compensation

	Bonuses	Stock-based compensation
<b>Overview</b>	An amount according to each executive officer's position is adjusted in accordance with the level of consolidated performance indicators for a single year, in order to further enhance their motivation to achieve performance goals for a single year.	The plan is intended to enhance the motivation to contribute to medium- to long-term improvements in corporate value and to promote a sharing of interests with shareholders, as well as to further enhancing the motivation to achieve the performance goals in the medium-term management plan. Compensation under the plan consists of a performance-linked component, whereby the Company issues AGC shares—the number of which varies in accordance with each executive officer's position and their level of achievement of the consolidated performance indicators in the medium-term management plan—and a fixed component, whereby a fixed number of AGC's shares are issued in accordance with each executive officer's position.
<b>Performance Indicators</b>	Performance indicators shall be return (operating profit) on capital employed (calculated by dividing operating profit by operating assets) and cash flows, given the importance of improving business profitability and asset efficiency, as well as of generating cash flows.	Performance indicators shall be return (operating profit) on capital employed (calculated by dividing operating profit by operating assets) to encourage achievement of the target for ROE—an important performance target in the new medium-term management plan—and EBITDA, in consideration of the importance of achieving sustainable corporate profitability. Return (operating profit) on capital employed and EBITDA each account for 50% of the performance-linked component.
<b>Variable Elements</b>	The amount shall vary in accordance with the level of achievement of the target for return (operating profit) on capital employed and the level of improvement of cash flows compared with the previous year. Further, the amount shall vary within a range of 0% to 200% of the standard payment amount, in principle, with consideration for factors including the improvement of non-financial capital and progress on business portfolio conversion as well as individual performance.	The performance-linked component is calculated as a weighted average with prescribed ratios (25% for the first year, 25% for the next year, and 50% for the final year) regarding the level of achievement of these indicators in each year during the medium-term management plan. In principle, the amount shall vary within a range of 0% to 200% of the standard amount. Executive officers shall continue to hold AGC shares acquired through the stock-based compensation system following the conclusion of the medium-term management plan until they retire from office.
<b>Results for Compensation Based on 2021 Performance Indicators</b>	<ul style="list-style-type: none"> <li>Operating profit divided by operating assets was 10.9%, surpassing the target of 5.3%.</li> <li>The cash flow indicator increased markedly compared with the previous year.</li> <li>Based on these two indicators and the Groupwide extraordinary evaluation, the amount of bonuses to be paid to directors serving concurrently as executive officers was set at 153% of the standard payment amount.</li> </ul>	<ul style="list-style-type: none"> <li>Return (operating profit) on capital employed was 11.1% in 2021, the first fiscal year of the medium-term management plan.</li> <li>EBITDA totaled ¥372.9 billion in 2021, the first fiscal year of the medium-term management plan.</li> </ul>
<b>Target for 2022</b>	The target for the return (operating profit) on capital employed indicator is 9.4% or more.	New Medium-Term Management Plan (2023) Targets Levels of return (operating profit) on capital employed and EBITDA generally equivalent to an ROE of 8%, a 2023 target in the new medium-term management plan, are set as the baseline for targets. The target for return (operating profit) on capital employed is 7.0% or higher, while the EBITDA target is ¥344.0 billion or more.

## Improvements in Corporate Governance

AGC has been working to strengthen and enhance its corporate governance since 2002. The Company added two outside directors in 2002. The AGC Group established a voluntary Nominating Committee and Compensation Committee in 2003, and in 2005 it implemented progressive activities such as appointing three independent directors. In 2011, an independent director was appointed as chairperson of the Board of Directors in order to further enhance the objectivity and transparency of management. Since then, the Group's corporate governance system has continuously evolved.

## History of AGC's Governance Reforms



## The AGC Group's Corporate Governance System

The AGC Group has set forth the promotion of sustainability management as one of its strategies in **AGC plus-2023**, its new medium-term management plan. In this sight, the Group is working to further strengthen its corporate governance. Specifically, to prevent scandals and compliance violations at its subsidiaries, the AGC Group has established management regulations on the governance and internal control systems thereof and implements any measures deemed necessary. The Group's basic approach is for the parent company, AGC, to resolutely carry out management oversight of its subsidiaries while emphasizing the autonomous functioning of the Board of Directors and internal control system of each subsidiary. The system for ensuring appropriate operations is as follows.

- With respect to governance, AGC conducts management oversight and supervision with objectivity and independence by dispatching an individual who previously served as president (or of a similar executive position) at a subsidiary and who also belongs to one of the corporate divisions of AGC to major subsidiaries in Japan and overseas as a temporary director-cum-auditor.
- In its risk management system, AGC manages downside risks, such as those related to legal and regulatory compliance and information security, in addition to business risks at subsidiaries based on the AGC Group Enterprise Risk Management Basic Policies. Specifically, after gauging the status of risk management at subsidiaries through periodic self-inspections, the divisions and business divisions under the jurisdiction of a certain corporate division collaborate to strengthen and implement measures in response to risks, thereby helping make improvements for the next year. As for crisis response, the Group has established a crisis response reporting line and maintains a system facilitating prompt and appropriate initial responses.
- Regarding its compliance system, AGC implements initiatives for ensuring observance of the AGC Group Code of Conduct and for raising awareness of and providing education on the code. The Group has also established a helpline, the operational conditions and status of consultations of which are reviewed and reported to the Board of Directors. In addition, the AGC Group maintains its compliance system by periodically carrying out compliance awareness surveys.

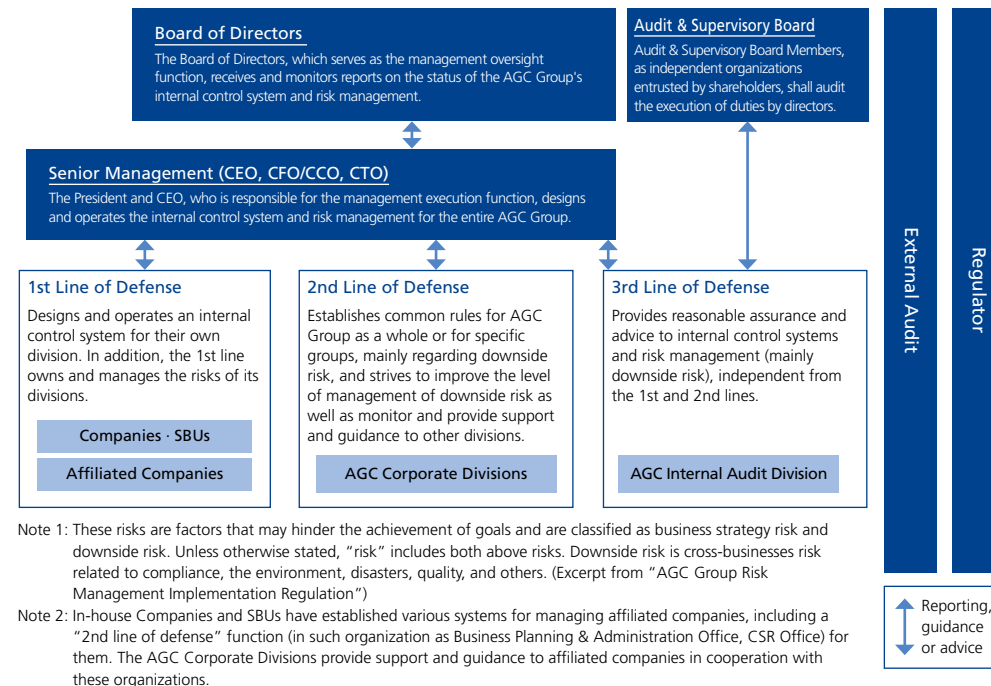
For information on the AGC Group's compliance system:  
<https://www.agc.com/en/csr/integrity/coc.html>



For information on the AGC Group's Corporate Policy on Internal Control:  
<https://www.agc.com/en/company/internalcontrol/>



## AGC Group Three Lines of Defense Model



## Post-Merger Integration in Mergers and Acquisitions

Since formulating its **AGC plus** Management Policy in 2015, the AGC Group has expanded its business through proactive mergers and acquisitions (M&As) in Strategic Businesses. With a view to making use of M&As, the Group has also laid out a strategy in **AGC plus-2023** of accelerating business growth in Strategic Businesses and searching for new businesses. Regarding M&As, it is vital to achieve a smooth post-merger integration (PMI) process that helps deliver business synergies and maximize corporate value for the Group. In everything from management policy formulation to governance, management resources, and risk management, the AGC Group has established Group common practices and functions as important matters that make up its Groupwide foundations, which serve as common guidelines when implementing PMIs. Based on these practices and functions, business divisions and other bodies within the Company gradually integrate companies acquired through M&As, beginning with key functions such as finance and accounting, sales systems and branding, quality assurance, and management accounting. We engage in dialogue with acquired companies and generally complete the integration process in less than six months, following which we periodically monitor the status of integration. In addition, we improve organizational knowledge as a group by carrying out reviews at meetings of the Management Committee and the Board of Directors, which include progress on PMI status for important projects within one to two years following integration.

## Board of Directors, Audit & Supervisory Board Members, and Executive Officers (As of April 1, 2022)

### Board of Directors and Audit & Supervisory Board Members



**Takuya Shimamura**  
Director, Chairperson

Apr. 1980 Joined Asahi Glass  
Jan. 2009 Executive Officer and GM of Planning & Coordination Office, Chemicals Company  
Jan. 2010 Executive Officer and Chemicals Company President  
Jan. 2013 Senior Executive Officer and Electronics Company President  
Jan. 2015 President & CEO  
Mar. 2015 Representative Director and President & CEO  
Jan. 2021 Director and Chairperson (current position)



**Yoshinori Hirai**  
Representative Director,  
President & CEO

Apr. 1987 Joined Asahi Glass  
Jan. 2012 Executive Officer and GM of Business Development Office  
Jan. 2014 Senior Executive Officer and GM of Technology General Division  
Mar. 2014 Director and Senior Executive Officer and CTO, GM of Technology General Division  
Jan. 2016 Director and Senior Executive Officer, CTO, GM of Technology General Division  
Jan. 2018 Director and Executive Vice President and CTO, GM of Technology General Division  
Jan. 2021 Representative Director and President & CEO (current position)



**Shinji Miyaji**  
Representative Director and  
Senior Executive Vice  
President,  
CFO, CCO  
GM of Corporate Planning  
General Division

Aug. 1990 Joined Asahi Glass  
Jan. 2010 Executive Officer and Group Leader of Corporate Planning Group, Office of the President  
Nov. 2012 Executive Officer and Senior Vice President of AGC Flat Glass North America, Inc.  
Feb. 2013 Executive Officer and Regional President of North America, Glass Company  
Oct. 2013 Executive Officer and GM of Strategy Office, Glass Company  
Jan. 2014 Executive Officer and GM of Electronics General Division, Electronics Company  
Jan. 2015 Senior Executive Officer and GM of Office of the President  
Mar. 2015 Director and Senior Executive Officer and GM of Office of the President  
Jan. 2016 Director and Senior Executive Officer, CFO and GM of Corporate Planning Division  
Jan. 2018 Director and Executive Vice President, CFO and CCO  
Oct. 2019 Director and Executive Vice President, CFO and CCO, GM of Corporate Planning General Division  
Mar. 2020 Representative Director and Senior Executive Vice President, CFO, CCO and GM of Corporate Planning General Division (current position)



**Hideyuki Kurata**  
Representative Director,  
Executive Vice President,  
CTO,  
GM of Technology General  
Division,  
GM of Business  
Development Division

Apr. 1987 Joined Asahi Glass  
Jan. 2018 Executive Officer and GM of Life Science General Division, Chemicals Company  
Jan. 2019 Senior Executive Officer and GM of Technology General Division  
Jan. 2021 Senior Executive Officer, CTO, and GM of Technology General Division  
Mar. 2021 Director, Senior Executive Officer, CTO, and GM of Technology General Division (current position)  
Jan. 2022 Director, Executive Vice President and CTO, GM of Technology General Division  
Mar. 2022 Representative Director, Executive Vice President and CTO, GM of Technology General Division  
Apr. 2022 Representative Director, Executive Vice President and CTO, GM of Technology General Division, GM of Business Development Division (current position)



**Hiroyuki Yanagi**  
Outside Director,  
Chairperson of the Board of  
Directors,  
Member of Nominating  
Committee and  
Compensation Committee

Apr. 1978 Joined Yamaha Motor Co., Ltd.  
Mar. 2007 Executive Officer of said company  
Mar. 2009 Senior Executive Officer of said company  
Mar. 2010 President & CEO and Representative Director of said company  
Jan. 2018 Chairperson and Representative Director of said company  
Mar. 2019 Director at AGC (current position)  
Jan. 2022 Director, Yamaha Motor Co., Ltd.  
Mar. 2022 Advisor of said company (current position)



**Keiko Honda**  
Outside Director,  
Chairperson of Nominating  
Committee,  
Member of Compensation  
Committee

Apr. 1984 Joined Bain & Company Japan Incorporated  
May 1986 Joined Shearson Lehman Brothers Securities Co., Ltd.  
Jul. 1989 Joined McKinsey & Company, Inc., Japan  
Jul. 1999 Partner of said company  
Jul. 2007 Director (Senior Partner) of said company  
Jul. 2013 Executive Vice President & CEO of Multilateral Investment Guarantee Agency, World Bank Group  
Oct. 2019 Retired from said agency  
Jan. 2020 Adjunct Professor of Columbia University in the United States (current position)  
Mar. 2020 Director at AGC (current position)



**Isao Teshirogi**  
Outside Director,  
Chairperson of  
Compensation Committee,  
Member of Nominating  
Committee

Apr. 1982 Joined Shionogi & Co., Ltd.  
Jun. 2002 Director of said company  
Apr. 2004 Director and Executive Officer of said company  
Apr. 2006 Director and Senior Executive Officer of said company  
Apr. 2008 Director, President & CEO of said company (current position)  
Mar. 2022 Director, AGC (current position)



**Yoshiyuki Morimoto**  
Audit & Supervisory Board  
Member (Outside)

**Apr. 1981** Joined Bridgestone Tire Co., Ltd.  
(currently Bridgestone Corporation)  
**Mar. 2008** Vice President and Officer of said company  
**Mar. 2011** Vice President and Senior Officer of said company  
**Mar. 2012** Director and Vice President and Senior Officer of  
said company  
**Jan. 2013** Director and Senior Vice President,  
CTO Responsible for Technology of said company  
**Mar. 2015** Executive Vice President  
**Mar. 2016** Advisor of said company  
**Dec. 2017** Retired from said company  
**Mar. 2019** Audit & Supervisory Board Member (current position)



**Tetsuo Tatsuno**  
Audit & Supervisory Board  
Member

**Apr. 1982** Joined AGC  
**Jan. 2009** Executive Officer and GM of Finance & Accounting Center  
**Jul. 2009** Executive Officer and Deputy GM of Finance & Control  
Office  
**Apr. 2010** Executive Officer and Vice President, Planning and  
Coordination, Glass Company  
**Jan. 2013** Executive Officer and GM of Finance & Control Office  
**Jan. 2015** Senior Executive Officer and GM of Finance & Control  
Office  
**Jan. 2016** Senior Executive Officer and GM of Finance & Control  
Division  
**Jan. 2017** Senior Executive Officer and Assistant to CEO  
**Mar. 2017** Audit & Supervisory Board Member (full-time)  
(current position)



**Yaeko Takeoka**  
Audit & Supervisory Board  
Member (Outside)

**Apr. 1985** Registered as an Attorney (Daini Tokyo Bar Association)  
**Jan. 2007** Joined KOHWA SOHGOH LAW OFFICES (current position)  
**Mar. 2019** Audit & Supervisory Board Member (current position)



**Tatsuro Ishizuka**  
Audit & Supervisory Board  
Member (Outside)

**Apr. 1978** Joined Hitachi, Ltd.  
**Apr. 2011** Vice President and Executive Officer of said company  
**Apr. 2013** Senior Vice President and Executive Officer of said company  
**Apr. 2014** Executive Vice President and Executive Officer of said  
company  
**Apr. 2015** Director and Deputy Chairperson, Hitachi Europe Ltd.  
**Jul. 2016** Director and Chairperson, Hitachi Research Institute  
**Apr. 2017** Executive Officer and Chairperson, Hitachi Construction  
Machinery Co., Ltd.  
**Jun. 2017** Director, Executive Officer and Chairperson of said company  
**Apr. 2019** Director of said company  
**Jun. 2019** Retired from said company  
President, The Hitachi Global Foundation (current position)  
**Mar. 2022** Audit & Supervisory Board Member (current position)

## Executive Officers

### President & CEO

**Yoshinori Hirai**

### Senior Executive Vice President

**Shinji Miyaji**

CFO, CCO, GM of Corporate  
Planning General Div.

### Executive Vice Presidents

**Masao Nemoto**

President of Chemicals Company

**Kenzo Moriyama**

President of Electronics Company

**Hideyuki Kurata**

CTO,  
GM of Technology General Div.,  
GM of Business Development Div.

### Senior Executive Officers

**Shigekuni Inoue**

GM of EHSQ General Div.,  
GM of AGC Yokohama Technical Center

**Toshiro Kasuya**

GM of Finance & Control Div.

**Yoshio Takegawa**

President of Automotive Company

**Junichi Kobayashi**

GM of Human Resources Div.

### Executive Officers

**Seigo Washinoue**

GM of Display Glass General Div.,  
Electronics Company

**Tatsuo Sugiyama**

GM of Technology Office, Automotive Company

**Jean-Marc Meunier**

Regional President for Europe, Automotive Company

**Naoki Sugimoto**

GM of Materials Integration Laboratories,  
Technology General Div.

**Philippe Bastien**

Regional President for Europe, Architectural Glass Europe &  
Americas Company

**Toshihiro Ueda**

Chief Representative of AGC Group for China

**Atsushi Ichikawa**

Senior Vice President, Architectural Glass Europe &  
Americas Company

**Satoshi Takada**

GM of Multi-Material General Div., Electronics Company

**Nobuyuki Suzuki**

GM of Electronic Materials General Div., Electronics  
Company

**Hiroki Kamiya**

GM of Innovative Technology Laboratories, Technology  
General Div.

**Shinya Mine**

GM of Production Technology Div., Technology General Div.

**Naoko Araki**

GM of Internal Audit Div.

**Tadashi Murano**

GM of Strategy & Planning Div.,  
Corporate Planning General Div.

**Masaru Ota**

President of AGC Ceramics Co., Ltd.

**Noriyuki Komuro**

GM of Life Science General Div., Chemicals Company

**Takashi Narushima**

GM of Global OEM Management Office,  
Automotive Company

**Davide Cappellino**

President of Architectural Glass Europe & Americas  
Company, Regional President for Europe

**Hiroyuki Ohtani**

Regional President for Asia, Automotive Company

**Shigeki Yoshiba**

President of Architectural Glass Asia Pacific Company

**Shunsuke Yokotsuka**

GM of Planning Div., Technology General Div.

**Seigo Iwakura**

GM of Purchase & Logistics Div.

**Tatsuo Momii**

GM of Performance Chemicals General Div., Chemicals  
Company

**Yasuyuki Ueda**

GM of Technology Management General Div.,  
Chemicals Company

**Yoshihisa Horibe**

GM of Essential Chemicals General Div.,  
Chemicals Company



## Skills of Directors and Audit &amp; Supervisory Board Members

Name	Position	Global corporate management	Legal affairs and internal controls	Finance and accounting	Sales and marketing	Production and R&D	IT and digital transformation	Sustainability	Business development
Takuya Shimamura	Representative director	○			○			○	
Yoshinori Hirai	Representative director, president & CEO	○			○	○	○	○	○
Shinji Miyaji	Representative director CFO, CCO	○	○	○			○	○	○
Hideyuki Kurata	Representative director, CTO	○			○	○	○		○
Yasuchika Hasegawa	Outside director	○			○			○	
Hiroyuki Yanagi	Outside director	○			○	○	○	○	
Keiko Honda	Outside director	○		○				○	
Yoshiyuki Morimoto	Full-time Audit & Supervisory Board member (outside)	○	○			○		○	
Tetsuo Tatsuno	Full-time Audit & Supervisory Board member	○	○	○					
Akio Sakumiya	Audit & Supervisory Board member	○	○						
Yaeko Takeoka	Audit & Supervisory Board member (outside)		○						○

Note: Period of appointment: from April 2021 to March 2022

## Reason for Selection of Each Skill and Definitions of Skills

The AGC Group uses a skills matrix for the purpose of verifying whether human resources are being properly selected by providing a visual representation to determine if the compositions of the Board of Directors and Audit & Supervisory Board are well balanced in terms of knowledge, skills, and experience. There are eight skill categories that relate to corporate governance, strategic coherence, and business characteristics. The Company examines whether it is necessary to reassess these skills when the corporate governance structure changes and when new medium-term management plans are formulated.

## Perspectives

## 1 Corporate Governance

Aligned with functions required by the Board of Directors (advisory and monitoring)

## 2 Strategic Coherence

Key strategies of **AGC plus-2023**

- Pursuing Ambidextrous Management
- Promoting Sustainability Management
- Gaining Competitiveness by Accelerating Digital Transformation

## 3 Business Characteristics

Includes diverse specialized skills

	Skills	Definitions of skills
Basic specialized skills	<b>Global corporate management</b>	The ability to manage a corporation from a global perspective, the perspective of business portfolios, and human resource management
	Global management	The ability to manage a corporation from a global perspective
	Business portfolio management	The ability to optimally allocate management resources while considering an optimal balance of businesses
	Human resource management	The ability to nurture and manage human resources related to management strategy
	<b>Legal affairs and internal controls</b>	The ability to properly understand and manage risks with knowledge of legal matters and internal controls
Diverse specialized skills	<b>Finance and accounting</b>	The ability to propose financial strategies linked to management strategies with knowledge of financial and accounting matters
	<b>Sales and marketing</b>	The ability to propose sales and marketing strategies while understanding the needs of customers
	<b>Production and R&amp;D</b>	The ability to develop new products through research and technological innovation, as well as to operate and improve production systems
	Production	The ability to manage and reform production organizations with knowledge of manufacturing technologies, as well as of production and quality management
	R&D	The ability to develop new products using research and technological innovation
	<b>IT and digital transformation</b>	The ability to reform business models and business processes using data and digital technologies
	<b>Sustainability</b>	The knowledge of sustainability necessary to balance the sustained growth of a corporation and the sustained growth of the planet and society
	Environment	The knowledge necessary to balance a sustainable global environment with the sustainable growth of a corporation
	Non-environment	The knowledge necessary to balance the sustainable growth of a corporation with domains other than a sustainable global environment
	<b>Business development</b>	The ability to create and promote new businesses while understanding the needs of customers



## Yasuchika Hasegawa

Until retiring as a director of AGC in March 2022, Yasuchika Hasegawa served as the chairperson of the Board of Directors. He has also served as the director, president & CEO as well as the director and chairperson of the board of Takeda Pharmaceutical Company Limited. Drawing on his wealth of experience in the corporate management of this company, which is proactively advancing business management globalization in the life science market, he provided recommendations on the overall business management of AGC, including the globalization of its business management. Years of service as a director: Five (retired on March 30, 2022)

## Discussion between the Chairperson of the Board and the CEO

Yasuchika Hasegawa and Yoshinori Hirai, AGC's president & CEO, recently had a wide-ranging discussion on the progress being made in strengthening the governance of the AGC Group as well as the challenges it faces going forward.



## Yoshinori Hirai

Representative Director,  
President & CEO

## Progress Being Made in Strengthening Governance

### Steadily Evolving and Bolstering Governance in Line with the AGC's Group Vision

**Hasegawa** Article 2 of the AGC Group Corporate Governance Basic Policy states, "The purpose of the Basic Policy is to reinforce and improve the Company's corporate governance, so that the AGC Group may achieve both sustainable growth and medium to long-term enhancement of corporate value under the AGC's Group Vision that sets forth Our Mission, Our Shared Values, and Our Spirit." As I recall, the Group's efforts to strengthen corporate governance have been exactly in accordance with these words. Moving forward steadily, the Group has not focused on the strengthening of governance as an end in itself but has instead focused on the advancement of management strategies that enhance corporate value.

**Hirai** Looking back, 2002 was a watershed year. At the time, we were facing a slump in the profits of the Architectural Glass Business, which was and still is a mainstay business. In response, we transitioned to a strategy of expanding the Display, Electronic Materials, and Fluorochemicals & Specialty Chemicals businesses. Then, to speed up business management, the AGC Group introduced an executive officer system and shifted to an in-house company system. At the same time, we separated the supervision and execution of business management and strengthened supervision by reducing the number of directors from 20 to seven and appointing two outside directors. Since then, we have steadily bolstered governance, as you said, and evolved it through the establishment of the voluntary Nominating and Compensation committees, the appointment of an additional outside director, and the decision to appoint an outside director as chairperson of the Board of Directors. We place particular emphasis on the type of people we ask to serve as outside directors, and some of the outside directors we have appointed, like you, have firsthand experience in managing businesses in the global manufacturing sector. I am very grateful for the frank, and sometimes critical, opinions provided by the outside directors who have worked with us. In addition to their valuable input on governance matters, I appreciate their advice on overall business management, including such issues as how best to transform the Group's business portfolio.

**Hasegawa** When strengthening governance in my capacity as chairperson of the Board of Directors, I have found the annual evaluations and analysis of the Board's effectiveness very helpful, as they highlight trends in governance-related issues and clarify the improvement measures required. The AGC Group Corporate Governance Basic Policy stipulates, "Outside directors shall hold meetings consisting of outside directors and exchange information on and share their

recognition of matters concerning the corporate governance of AGC and other matters based on their independent and objective standpoints.” In 2021, however, we were unable to hold such meetings due to the COVID-19 pandemic. Many audits had to be conducted online rather than on-site, and after Board of Directors’ meetings the chairperson, the CEO, and the three outside directors were unable to meet and further discuss matters in a less formal atmosphere, as they did previously. I feel that the aforementioned evaluations will prove useful in underscoring issues that have arisen as a result of this reduction in in-person meetings due to the COVID-19 pandemic.

**Hirai** I became a director in 2014, and we began evaluating the Board of Directors’ effectiveness in 2015. At the time, the AGC Group was performing poorly. Operating profit had been trending downward for four fiscal years. With these business results as a backdrop, we initially evaluated the Board’s effectiveness by calling a non-boardroom meeting that was dedicated to discussing the Group’s governance. This meeting was held before we had begun annual questionnaire-based surveys. In 2018 and 2021, we convened similar meetings, which were very fruitful. Moreover, the introduction of such meetings led to the holding of meetings designed to encourage uninhibited discussions on the AGC Group’s long-term strategic direction among inside and outside directors. At venues other than the boardroom, we convened discrete meetings tasked with debating the long-term management strategy and medium-term management plans.

**Hasegawa** You mentioned the long-term management strategy, Vision 2030. Both internally and externally, the AGC Group has clearly set out Vision 2030 and worked toward its realization. This management approach appropriately reflects the emphasis on long-term perspectives that has long been characteristic of the Group. In addition, goals that are overly specific and detailed can make business management rigid; however, goals that are too vague can diminish the sense of urgency to achieve them. In this respect, I think the Group’s balanced approach to

setting goals has been prudent and succeeded in giving business management useful flexibility.

**Hirai** Thank you. The basis of our long-term perspective is the AGC’s Group Vision **“Look Beyond”**, which we established in 2002. The excerpt from the AGC Group’s Corporate Governance Basic Policy that you quoted at the beginning of our discussion shows that this vision also guides the reinforcement and improvement of our corporate governance. In particular, Our Shared Values—Innovation &

Operational Excellence, Diversity, the Environment, and Integrity—are founded on a commitment to governance reform. I believe that the setting out of common values for all Group employees in 2002, when we dramatically changed our approach to business management, is one reason why we have made steady progress in strengthening governance.

## Future Challenges

### Increasing Diversity to Continue Innovation

**Hasegawa** One of the AGC Group’s governance tasks is to increase the diversity of the management team. In recent years, the promotion of female and non-Japanese employees in the Group has not tangibly improved. However, the December 2021 setting of numerical targets for increasing the percentages of female directors, executive officers, and managers to be achieved by 2030 is a step in the right direction.

An increase in the hiring and promotion of female and non-Japanese personnel is a prerequisite for management team diversification. According to projections, by 2065 there are likely to be decreases of about 30% in the overall population of Japan and 40% in its working-age population compared with current levels. Therefore, workforce diversification presents an unavoidable challenge not only for the AGC Group but for all domestic companies. Meanwhile, few Japanese manufacturers are adequately responding to this challenge, and I am well aware that many of them are struggling with it. Nonetheless, I hope that you will refer to the examples provided by those companies that are successfully tackling this challenge and endeavor to take even a half-step forward.

**Hirai** I also see diversity as a major issue. The AGC Group has been concentrating on *business portfolio transformation*. However, the medium-term management plan, **AGC plus-2023**, which we announced in 2021, clearly establishes the *promotion of sustainability management* as another important focus of our efforts. In sustainability management, diversity is a component particularly relevant to our governance.

Further, in advancing *business portfolio transformation*, the AGC Group has announced both internally and externally the goal of recapturing its founding spirit to create a culture that encourages ambitious initiatives. By demonstrating that I have taken it upon myself to take on the challenge of developing new businesses, we have initiated a virtuous cycle in which employees have a real sense of change and develop an appetite for new ventures.



Now, we are taking the next step in *business portfolio transformation*. To enable this coming advance, we need a culture based on diversity. I believe this because a combination of bold initiatives and diversity is essential for continued innovation. In particular, I feel that innovative ideas are less likely to be produced by a workforce that mainly comprises personnel with similar backgrounds. Accordingly, a culture that further empowers non-Japanese and female employees is essential. We have set the numerical targets you mentioned, such as increasing the percentage of female directors, not only to signal our intentions to investors but also to change the mindset of our employees.

**Hasegawa** With respect to non-Japanese employees, one of the AGC Group's main overseas market is Asia, and there are many excellent technical personnel in such countries and regions as Southeast Asia, China, and India, which is expected to grow. Therefore, we should first focus on recruiting and promoting talented personnel from these countries and regions. This will take time, but I believe that the Group will be able to take the next step in its globalization if a cycle can be established in which the Group hires talented personnel who then strengthen businesses and thereby attract additional talent.

Further, as discussions on the quantification of non-financial information intensify, a trend toward quantifying the value of human resources has emerged. As you mentioned earlier, providing investors with supporting numerical targets and data is set to become more important than ever.

**Hirai** I agree.

## Expectations of the AGC Group

### Increasing Corporate Value Continuously through Ambidextrous Management

**Hasegawa** In analyzing corporate entities like the AGC Group that straddle diverse industries, overseas investors tend to arrive at valuations influenced by the conglomerate discount phenomenon. Of course, the AGC Group is one of the few companies that have succeeded in practicing ambidextrous management, based on its Core and Strategic Businesses. However, to gain the understanding of non-Japanese investors, the Group should offer systematic analysis based on performance numbers and in-depth explanations that show conglomerate discounts to be inappropriate for valuing the Group. In fact, the term "conglomerate premium" is applicable to the Group's current situation. I would like the AGC Group to increase its corporate value continuously through the maintenance of ambidextrous management and the accompanying conglomerate premium. Doing so would be a brilliant achievement that would overturn conventional management wisdom.

I lived in Chicago for about 10 years. At the time, the city was home to an extraordinary basketball player named Michael Jordan, who I remember made a comment about winning being contagious. That is to say, no matter how small the victory, it leads to subsequent victories and ultimately prepares the way for major victories. To achieve even the smallest victory, we must begin by taking up a challenge. Earlier, you mentioned a culture that encourages ambitious initiatives. I believe that this culture has fostered small victories, which have in turn led to the AGC Group's current achievements.

Planted by you, the seeds of these small victories have sprouted and become flowers in full bloom. In other words, the seeds have produced the Strategic Businesses. I look forward to seeing you accelerate the growth of these Strategic Businesses even further so that they generate half of the ¥300.0 billion in operating profit that the Group aims to realize by fiscal 2030. I also hope that you sow the seeds of new victories and cultivate them into Strategic Businesses that become mainstays in the period beginning 2030.

**Hirai** The AGC Group uses a combination of technologies related to the fields of inorganic chemistry, organic chemistry, and biotechnology (biochemistry), and there are very few corporate groups with a comparable mix of competencies. For example, the Electronics Business, which is a Strategic Business, is combining inorganic and organic technologies to increase its lineup of differentiated products. I believe that accumulating successful examples through the creation of such products is a precondition for demonstrating the advantages that we enjoy as a conglomerate. Your expectations coincide with my own sense of mission. For this reason, I am fully prepared to live up to such expectations by continuing to forge ahead with bold initiatives. In closing, I would like to thank you for taking time out of your busy schedule to discuss and offer valuable insight on a wide range of important matters.







## A Message from the Chairperson of the Nominating Committee

### Hiroyuki Yanagi

Chairperson of the Nominating Committee (currently chairperson of the Board of Directors)

Hiroyuki Yanagi has served as the president, CEO and representative director as well as the chairperson and director of Yamaha Motor Co., Ltd. Based on his abundant experience in the corporate management of this company, which is proactively advancing global expansion in the mobility market, he provides recommendations on the overall business management of AGC, including the strengthening of the development of the Company's global businesses. Years of service as a director: Three (as of March 30, 2022)

## Evaluating Nomination Processes from Five Viewpoints

The primary role of the Nominating Committee is to nominate the CEO and other directors. In the nomination process, I believe in the importance of increasing transparency, including during the processes leading up to nomination. When evaluating the adequacy and appropriateness of these processes, I focus on five viewpoints. First, has a system for fostering management personnel been built? Second, are personnel nomination processes based on objective, unbiased evaluations that include quantitative evaluations? Next, I examine the processes in the context of society's current expectations and standards. The fourth viewpoint pays particular attention to whether personnel nomination processes occasionally lead to innovative disruption, rather than simply perpetuating existing approaches. The last consideration is differentiation. In other words, do the processes reflect AGC's unique characteristics?

## Integrating Human Resource Strategies and Nomination Processes

When I assessed AGC's nomination processes from the aforementioned five viewpoints, the diversity of directors emerged as an issue. From the third viewpoint of holding up said processes against society's current expectations and standards, AGC has not made sufficient progress in appointing non-Japanese personnel to the senior management team,

despite being a corporate group that operates globally. The Company needs to increase the presence of non-Japanese personnel while establishing a better-balanced mix of personnel from such countries and regions as the United States, Europe, and Asia. In addition, not enough female personnel are being promoted, an area in which many Japanese manufacturers are falling short. The above issues also speak to my fourth viewpoint, which asks if personnel nomination processes engender innovative disruption. With this in mind, I feel AGC should be more decisive in promoting non-Japanese, female, and junior personnel.

Based on this view of the issues, the Nominating Committee has been involved with human resource strategies and efforts to integrate them with nomination processes. In 2021, the committee began full-fledged discussions on human resource strategies, mainly discussing the empowerment of female personnel and making recommendations as appropriate. I have shared with AGC's directors the example of the three overseas subsidiaries of Yamaha Motor headed by female presidents, and I believe it is important to establish examples of female empowerment that are unique to AGC.

## Achieving Innovation through Proactive Governance

Innovation is born when different elements combine, including combinations of different people, technologies, and values. The more diverse the combinations, the easier it is to innovate. This is why companies need many kinds of diversity. Moreover, the diversity of directors is an important facet of the diversity companies must have.

Three years have passed since I became an outside director at AGC. During this time, I have had opportunities to talk not only with management but also with frontline employees. As a result, I have come to realize that, at all levels of the Company, employees are extremely passionate about technology. I also get a sense of this enthusiasm within the Board of Directors. Often, the defensive aspects of governance are emphasized. However, I hope AGC strengthens proactive governance that accelerates innovation. Under such governance, the passion of AGC employees will drive innovation.



## A Message from the Chairperson of the Compensation Committee

### Keiko Honda

Chairperson of the Compensation Committee  
(Currently chairperson of the Nominating Committee)

Before becoming an adjunct professor specializing in environmental, social, and governance (ESG)-related investment at Columbia University in the United States, for many years Keiko Honda was engaged in consulting work on corporate strategy, M&As, and alliances at McKinsey & Company, Inc., and other firms, in addition to serving as the representative of a multinational organization. Utilizing her extensive knowledge on the management of corporations and global organizations, she provides expert recommendations on the AGC's overall business management.

Years of service as a director: Two (as of March 30, 2022)

### Seeking a Compensation System That Maximizes Corporate Value

I would like to establish a compensation system that motivates the senior management team to maximize the corporate value of the AGC Group. In the enhancement of corporate value, profit growth is not the sole important factor. Raising asset efficiency to generate returns that exceed the cost of capital and thereby generate positive cash flows is also essential. The importance of such factors has been discussed at meetings of the Board of Directors and other forums. Directors have taken these discussions to heart, and return on capital employed (ROCE) has become a key element in the determination of compensation.

Thanks to the efforts of directors and employees, in fiscal 2021 consolidated ROCE improved markedly year on year, from 4.1% to 11.0%. Consequently, ROE reached 10.2%, above the cost of capital. Thus, in the fiscal year in question the Company made considerable progress toward maximizing corporate value.

### Developing a Compensation System That Reflects the Growing Importance of Sustainability

Sustainability is becoming increasingly important in corporate management. In 2021, the Intergovernmental Panel on Climate Change reported that climate change is advancing faster than previously expected. As the AGC Group operates businesses that require a

great deal of energy in their manufacturing processes, addressing climate change is one of the Group's most important management issues. Mindful of this, the Board of Directors spends a reasonable amount of time discussing sustainability issues. Given the various environmental issues, I would like the Compensation Committee to consider incorporating sustainability factors into the compensation system.

Further, as the compensation system is meant to motivate the senior management team, we are also considering whether the system can be made more readily understandable. In addition, the AGC Group is a global company, with certain directors based in Japan and others based overseas. Although employment regulations differ from country to country, as far as possible we need to create a compensation system that is fair for all directors.

### Transforming the Business Portfolio

At an early stage, the AGC Group began comprehensive efforts to strengthen governance. In Japan, it is one of the few corporate groups with independent outside directors serving as the chairpersons of the Board of Directors and the Nominating and Compensation committees. Moreover, I am not the first female director appointed to the Board. I also feel that the Group has excellent governance and a culture that welcomes the expression and discussion of diverse opinions at Board meetings.

At present, the Group is reaping the benefits of an "ambidextrous" approach to business management and is steadily transforming the business portfolio. However, the management of businesses that are at various stages in their life cycles is not easy. Which businesses should management resources be allocated to? How much should be allocated? How much capital should be earmarked for R&D expenditures and capital investments? In grappling with such dilemmas, the achievement of properly functioning governance will be more important than ever, presenting directors with a new challenge. My hope is that, by realizing even more sophisticated governance, directors can further grow the Group's Strategic Businesses and transform the business portfolio.

## Financial Data

Organizations covered in the report: AGC Inc. and its consolidated subsidiaries  
Reporting period: January 1 to December 31

	2013	2014	2015	2016	2017	2018	2019	2020	(Millions of yen) 2021
<b>Business Results</b>									
Net sales	¥1,320,006	¥1,348,308	¥1,326,293	¥1,282,570	¥1,463,532	¥1,522,904	¥1,518,039	¥1,412,306	¥1,697,383
Operating profit	79,894	62,131	71,172	96,292	119,646	120,555	101,624	75,780	206,168
Profit before taxes	44,381	41,163	84,522	67,563	114,424	128,404	76,213	57,121	210,045
Recurring profit	19,023	20,475	46,287	53,362	79,297	101,991	55,515	41,164	159,062
Profit for the year attributable to owners of the parent	16,139	15,913	42,906	47,438	69,225	89,593	44,434	32,715	123,840
Depreciation	135,751	137,200	137,381	121,803	128,226	121,668	143,361	143,716	166,756
CAPEX	138,480	118,170	125,103	126,025	165,095	230,598	207,661	241,348	216,503
Research and development expenses	46,882	44,758	38,927	39,212	43,912	45,755	47,450	46,444	49,444
Cash flows from operating activities	167,371	135,790	187,170	203,637	203,504	189,287	191,906	225,392	326,713
Cash flows from investing activities	(145,978)	(108,754)	(115,951)	(113,596)	(209,560)	(194,450)	(182,636)	(230,248)	(123,787)
Free cash flow	21,392	27,035	71,218	90,041	(6,055)	(5,162)	9,269	(4,855)	202,926
<b>Major Investment Indicators</b>									
Market value	¥ 755,867	¥ 680,791	¥ 804,604	¥ 920,461	¥1,102,752	¥ 758,663	¥ 869,552	¥ 796,764	¥1,216,595
Return on equity attributable to owners of the parent* <sup>1</sup>	1.6%	1.4%	3.9%	4.3%	6.1%	7.7%	3.9%	2.9%	10.2%
Return on assets* <sup>2</sup>	4.0%	3.0%	3.5%	4.8%	5.7%	5.4%	4.4%	3.1%	7.9%
Price/earnings ratio (PER) (times)	46.81	42.77	18.75	19.40	16.15	8.59	19.57	24.35	9.82
Price/book value ratio (PBR) (times)	0.70	0.61	0.74	0.84	0.93	0.67	0.75	0.71	0.93
Return on invested capital* <sup>3</sup> (ROIC)	1.0%	0.9%	2.6%	2.9%	4.1%	5.0%	2.4%	1.6%	5.9%
EBITDA* <sup>4</sup>	186,570	185,905	228,381	195,767	249,880	259,425	231,857	208,459	383,226
Earnings per share* <sup>5</sup> (yen)	68.65	67.90	184.85	204.25	300.65	397.58	199.95	147.24	557.10
Cash dividends per share* <sup>5</sup> (yen)	90.00	90.00	90.00	90.00	105.00	115.00	120.00	120.00	210.00
Consolidated dividend payment ratio	128.8%	130.7%	48.5%	43.9%	34.8%	28.8%	59.7%	81.2%	37.6%



	2013	2014	2015	2016	2017	2018	2019	2020	(Millions of yen) 2021
<b>Asset and Efficiency Indicators</b>									
Total assets	¥2,120,629	¥2,077,338	¥1,991,262	¥1,981,451	¥2,228,560	¥2,235,776	¥2,335,415	¥2,534,458	¥2,666,031
Property, plant and equipment	1,059,946	1,066,193	982,296	937,869	1,060,601	1,108,934	1,177,691	1,246,885	1,323,868
Inventories	236,611	239,497	235,374	227,284	261,708	277,014	291,224	274,835	330,101
Trade receivables	260,901	262,091	241,294	241,476	260,497	260,111	264,102	266,177	295,161
Total asset turnover* <sup>6</sup> (times)	0.65	0.64	0.65	0.65	0.70	0.68	0.66	0.58	0.65
Fixed asset turnover* <sup>7</sup> (times)	1.31	1.27	1.29	1.34	1.46	1.40	1.33	1.16	1.32
Inventory turnover* <sup>8</sup> (months)	2.7	2.8	2.9	3.0	2.8	2.9	3.1	3.2	3.1
Receivables turnover* <sup>9</sup> (months)	2.3	2.3	2.3	2.3	2.1	2.1	2.1	2.3	2.0
<b>Indicators of Stability</b>									
Shareholders' equity* <sup>10</sup>	¥1,087,216	¥1,113,126	¥1,094,172	¥1,095,438	¥1,184,034	¥1,137,204	¥1,157,097	¥1,115,142	¥1,314,161
Shareholders' equity ratio	51.3%	53.6%	54.9%	55.3%	53.1%	50.9%	49.5%	44.0%	49.3%
Debt-to-equity ratio* <sup>11</sup> (times)	0.50	0.42	0.40	0.37	0.38	0.43	0.47	0.63	0.41

\*1 Return on equity = Profit for the year attributable to owners of the parent / Equity attributable to owners of the parent

\*2 Return on assets = Operating profit / Total assets

\*3 Return on invested capital = Profit for the year attributable to owners of the parent / Average invested capital\* \* Invested capital = Total equity + Interest-bearing debt

\*4 Earnings before interest, tax, depreciation, and amortization (EBITDA) = Profit before taxes + Depreciation + Interest expenses

\*5 The Company consolidated its common shares at a ratio of 5 shares to 1 share on July 1, 2017. Accordingly, per-share data is calculated on the assumption that the consolidation of shares was conducted at the beginning of 2007.

\*6 Total asset turnover = Net sales / Total assets

\*7 Tangible fixed asset turnover = Net sales / Tangible fixed assets (Property, plant and equipment)

\*8 Inventory turnover = Inventories / (Cost of sales / 12)

\*9 Receivables turnover = Trade notes and accounts receivable (Trade receivables) / (Net sales / 12)

\*10 Shareholders' equity = Net assets – Treasury shares – Minority interests

\*11 Debt-to-equity ratio = Interest-bearing debt / Net assets (equity)



## External Evaluations

The major socially responsible investment (SRI)- and environmental, social, and governance (ESG)-related indices for which the AGC Group has been selected, as well as the main external recognition of the Group's ESG activities, are as follows.

### ► Inclusion in SRI and ESG Investment Indices

AGC has been selected for the FTSE4Good Index Series, an SRI index created by FTSE Russell (headquartered in the United Kingdom), for the FTSE Blossom Japan Index, an integrated ESG index that acknowledges the excellent performance of Japanese companies in ESG activities, also created by FTSE Russell; and for the newly created FTSE Blossom Japan Sector Relative Index.\*

\* The FTSE Blossom Japan Sector Relative Index was designed to measure the performance of Japanese companies with excellent track records in ESG activities relative to their sectors. For companies that emit large amounts of greenhouse gases, in order to facilitate the transition to a low-carbon economy, the index uses Transition Pathway Initiative management quality scores to screen for such companies that are undertaking initiatives to reduce their emissions.



The Climate Disclosure Project, which scores the environmental initiatives of companies and local governments and discloses this information to investors, gave AGC a Climate Change 2021 rating of A-.



### ► External Recognition of AGC's ESG Activities

In sustainability assessments by EcoVadis (headquartered in France), AGC's Kashima Plant has received the Gold rating, which is awarded to companies in the top 5% in the overall assessment, every year since 2017, and the plant received the Platinum rating, awarded to companies in the top 1%, in 2020 and 2021. AGC's Chiba Plant and Group companies AGC Si-Tech Co., Ltd., AGC Pharma Chemicals Europe, S.L.U., AGC Biologics' Copenhagen facilities, and Vinythai Public Company Limited all received high scores.



AGC was awarded an overall QualityScore of 1, the highest possible rating, with scores of (2)\* for Board of Directors' composition, (2) for shareholder rights, (1) for executive compensation, and (1) for auditing and risk management in the 2022 governance assessment conducted by Institutional Shareholder Services (ISS), an advisory company for exercising voting rights.

\* Figures in parentheses are scores ranging from 1 to 10, with lower scores indicating lower governance risk.

AGC was recognized as a "White 500" company for the third consecutive year under the 2022 Certified Health & Productivity Management Outstanding Organizations Recognition Program, organized by the Ministry of Economy, Trade and Industry (METI) and Nippon Kenko Kaigi, in recognition of its efforts to strategically implement health management for employees. In addition, AGC Display Glass Yonezawa Co., Ltd., was recognized under the same program for a second straight year in 2022.



In 2022, AGC was selected for the seventh time and the fifth consecutive year among the Clarivate Top 100 Global Innovators 2022, as determined by Clarivate plc (headquartered in the United Kingdom). This global information services company analyzes intellectual property trends based on its own patent data to select the 100 most innovative companies and research institutions in the world.



AGC was one of 33 companies selected by METI and the Tokyo Stock Exchange as a Digital Transformation (DX) Stock 2022, which recognizes companies' achievement of outstanding utilization of digital technologies and establishment of internal systems for the promotion of DX that helps enhance corporate value.



AGC received four stars in the Fifth Nikkei Smart Work Management Survey, organized by Nikkei Inc. to highlight advanced companies aiming to drastically improve productivity through workstyle reforms.



## The Asahi Glass Foundation

Creating a Truly Rich Society by  
Supporting Trailblazing Research and Fostering Talent

### af THE ASAHI GLASS FOUNDATION

In 1933, the AGC Group established the Asahi Glass Foundation to support research in the field of applied chemistry, where AGC first began. Since then, the foundation has extended the scope of its support with the aim of enriching society at large. Today, the organization's activities encompass contributions to the next generation through scholarships and grants for leading-edge research as well as the commendation of individuals and groups that have helped greatly in addressing global environmental problems.

The expansion of the foundation's activities reflects an ongoing effort to meet society's expectations through generations. Honoring individuals and groups in Japan and overseas that are engaged in tackling global environmental problems, the Blue Planet Prize was founded in 1992, coinciding with the holding of the Earth Summit. The Prize is presented annually to individuals or groups in recognition of outstanding achievements. Furthermore, the provision of scholarships (launched domestically for Japanese students in 1958) was broadened in 1990 to include international students studying in Japan. Through this scholarship program, we are fostering individuals who will play key roles in the creation of a sustainable society and civilization.

Going forward, the Asahi Glass Foundation will keep abreast of each generation's needs and continue sponsoring the betterment of society.

The inspiration for the name "Blue Planet Prize" came from the words of the first person to view the Earth from space, cosmonaut Yuri Gagarin, who simply said: "The Earth is blue." The name also expresses our hope that the Earth will forever remain an invaluable asset shared by humanity.



#### Dr. Syukuro Manabe Receives the Nobel Prize in Physics

In 2021, one of the winners of the first Blue Planet Prize, Dr. Syukuro Manabe, was awarded the Nobel Prize in Physics in recognition of his pioneering research on climate models and other aspects of global warming.



The first Blue Planet Prize award ceremony

### Commendation Program

- Conducting the Questionnaire on Environmental Problems and the Survival of Humankind as well as reporting the time on the Environmental Doomsday Clock
- Conducting Survey on the Sense of Environmental Crisis among Japanese People
- Presentation of the Blue Planet Prize, an international environmental award



Contributing towards the resolution of global environmental problems

### Research Grant Program

- Research grants for universities in Japan, Thailand, Indonesia, and Vietnam

Provision of  
approx. **¥11.4 billion**  
covering **5,570 grants**



Seeking to build the foundations for the next-generation's society

### Scholarship Program

- Scholarships for Japanese and international students studying at graduate schools in Japan

Provision of  
approx. **¥3.4 billion**  
covering **4,315 scholarships**



Fostering future leaders throughout society

## Corporate and Stock Information (As of December 31, 2021)

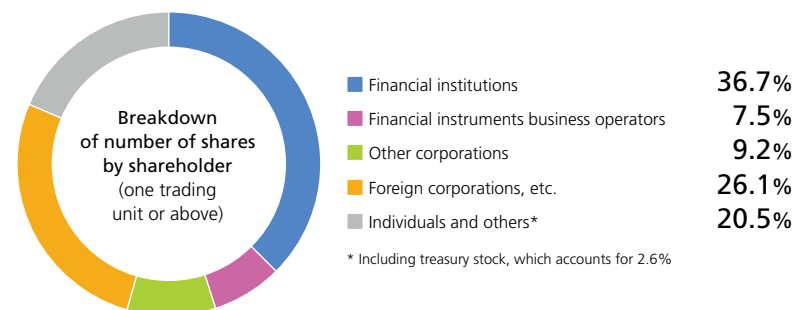
### Corporate Information

Head office	1-5-1, Marunouchi, Chiyoda-ku, Tokyo 100-8405, Japan
Company name	AGC Inc.
English company name	AGC Inc.
Founded	September 8, 1907
Incorporated	June 1, 1950
Representative	Yoshinori Hirai, Representative Director, President & CEO
Capital	¥90,873 million
Number of consolidated subsidiaries	206 (including 169 overseas)

### Stock Information

Stock listing	Tokyo Stock Exchange
Industry	Glass and ceramic products
Securities code	5201
Trading unit	100
Fiscal year	January 1 to December 31
Ordinary General Meeting of Shareholders	March
Stock authorized	400,000,000 shares
Stock issued	227,441,381 shares
Total number of shareholders	69,586

### Stock Information



### Major Shareholders

	Number of shares held (Thousand shares)	Shareholding ratio (%)
The Master Trust Bank of Japan, Ltd. (Trust Account)	32,811	14.79
Custody Bank of Japan, Ltd. (Trust Account)	15,987	7.20
Meiji Yasuda Life Insurance Company (Standing Proxy: Custody Bank of Japan, Ltd.)	8,654	3.90
The Asahi Glass Foundation	6,141	2.77
Barclays Securities Japan Limited	6,064	2.73
Asahi Glass Business Partner Shareholding Association	4,446	2.00
Japan Securities Finance Co., Ltd.	3,926	1.77
Mitsubishi Estate Co., Ltd.	3,703	1.67
Nippon Life Insurance Company (Standing Proxy: The Master Trust Bank of Japan, Ltd.)	3,662	1.65
SMBC Nikko Securities, Inc.	3,594	1.62

Notes 1. In addition to the above, AGC Inc. holds treasury stock of 5,517,627 shares.

2. The shareholding ratio is calculated excluding treasury stock.