



Integrated Report 2017

For the year ended December 31, 2017

GLASS FOR FUTURE



Nippon Electric Glass



On the Publication of the Integrated Report 2017

Since fiscal 2015, we, Nippon Electric Glass (NEG), have been making conscious efforts in our annual reports to indicate the connection between the creation of corporate value and corporate activities that include non-financial aspects. For fiscal 2017, we aim to further enrich our ESG information by publishing it in this format under the title “Integrated Report.”

In our Integrated Report 2017, we have disclosed the progress and challenges of our EGP2018 medium-term business plan, the strengths of our group and value creation process, and our CSR and governance initiatives, among other information. We hope it will help you more thoroughly understand our group.

Motoharu Matsumoto, President

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At Nippon Electric Glass, our corporate philosophy is a reflection of our founding mission, a statement of our devotion to creating products infused with the very best of human civilization for the betterment of society.

Our corporate philosophy

We strive to build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing.

Firmly rooted in the traditions of our founding mission, the NEG corporate philosophy plots a path for our quest for sustainable growth. Thanks to material design, melting, forming, and processing technologies, glass can be infused with different properties for a broad range of functions.

We are dedicated to unlocking glass's potential to make life better and more comfortable for people and communities the world over.

Our slogan

GLASS FOR FUTURE

Our vision

The world's leading manufacturer of special glass

Our goal is to become the world's leading manufacturer of special glass, with the best talent, the best technology, and the best creative manufacturing ability. At the same time, we strive to run our company in a way that inspires pride among our workers and enables us to make a genuine contribution to the community. The way we see it, creative manufacturing is achieved through state-of-the-art technological development, the highest quality standards, efficient production, and a steady supply of products, all underpinned by a fundamental dedication to environmental sustainability.

Our values

● **Customer first**

Everything is based on accurate understanding and complete satisfaction of customers' requirements.

● **Get the job done**

We are dedicated to completing every task properly.

● **Broad minds and open communication**

We think beyond existing norms and encourage frank communication among all departments and generations.

● **High ethical standards**

We are bound to act ethically and in good faith in all situations.

● **Consideration for the environment**

We are constantly aware of the need to be considerate of the environment, and strive to reduce our footprint.

Editorial Policy

● **Organizations Covered**

The Nippon Electric Glass Group's 12 domestic companies and 15 overseas companies are covered in this report. In cases where the coverage area of the data differs, we have indicated the appropriate coverage areas respectively.

● **Period of Reporting**

Fiscal 2017 (January 2017 to December 2017)
Some qualitative information regarding fiscal 2018 has also been included in this report.

● **Publication, Next Scheduled Publication**

Issued in May 2018. Next scheduled issue in May 2019.

● **Editorial Guidelines**

IIRC International Integrated Reporting Framework and others

● **Disclosure Policy**

The Group Code of Conduct stipulates that our group will disclose necessary corporate information in a timely and appropriate manner to enhance communication with concerned parties. Following this policy, we will continue to disclose important information related to our group's activities to all stakeholders, including shareholders and investors, in a timely and appropriate manner.

● **Caution Concerning Forward-Looking Statements**

Statements in this Integrated Report with respect to our group's plans, outlooks, strategies, and other statements that are not historical facts, are forward-looking statements involving risks and uncertainties.

At Nippon Electric Glass, we strive to build a brighter future for the world through creative manufacturing based on our founding mission.

Nippon Electric Glass was established in 1949 in Seiran, Otsu—a town next to Lake Biwa in Shiga Prefecture. The company started with about 90 employees and only a few batch-type furnaces. Since our foundation, we have been pursuing continuous technological innovation. Our product line-up has expanded to diverse fields such as displays, automobiles, ICT, and medical care.



Preserving our experience-based philosophy as commonly shared values in our group

As a growing world leader in manufacturing special glass, our operational activities are rooted in our founding mission—a statement of our devotion to creating products infused with the very best of human civilization for the betterment of society. We wish for current employees—especially the younger generations—to fully grasp the essential spirit of our group and carry it forward. That is why we reviewed our previous corporate philosophy and in 2015 formulated our corporate philosophy structure encompassing our corporate philosophy, our vision, and our values.

I believe a philosophy arises from numerous actual experiences—including failure. For example, the idea expressed in our values of “Consideration for the environment” didn’t arise solely from a general concern for environmental protection. It also reflected our specific experience of dealing with and recovering from pollution at our Fujisawa Plant in the early 1970s. Meanwhile, the concept of “Broad minds and open communication” is

based on our corporate culture. The former Presidents of our group have made a point of visiting plants to freely and frankly exchange opinions with employees.

My generation, including myself, have an important role to play in using our experience to flesh out the background of the words in our corporate philosophy structure.

Expanding the unlimited possibilities of glass through on-site trial and error

Our corporate philosophy reflects our desire for a brighter future through the pursuit of the unlimited possibilities of glass. Glass has the property of absorbing almost any element, allowing it to take on various characteristics, including electric and optical characteristics. This makes glass a substance with unlimited potential. We use advanced melting, forming, and processing technologies to give our special glass the characteristics and shape required for its intended application. Each of our production facilities has very unique know-how relating to process technology. Accumulated over nearly 70 years, this know-how is now our greatest strength.

It is our vision to be the world's leading manufacturer of special glass. How do you determine "the world's leading manufacturer"? One criterion would be quality. Japan has recently seen a number of quality issues that could affect the country's great reputation for manufacturing. Almost all of these issues have been related to the production process. So, to achieve the world's best quality, we need to build the world's best manufacturing processes. Our R&D base is called P&P Technology Center (P&P stands for "Process and Product"). Our philosophy on the development of technology can be summarized as follows: "Development of novel technologies and processes must be valued, and the accumulated results of development will be reflected in the quality of our products."

Another criterion is care for the environment. We can reduce water and energy consumption by having more products meet quality standards and by minimizing manufacturing waste. Membership of our in-house 99 Club requires a 99% process yield rate. This is one way we spread the idea throughout our group that world-leading production efficiency leads to world-leading eco-friendly manufacturing.

As mentioned, we aim to be the world's leading manufacturer of special glass. This is, however, decided by our customers. As AI and IoT technologies evolve, we expect ever-more customer requests for glass materials. In order to be the first choice for our customers' new demands, we will devote ourselves to improving process technology, quality, and product development.

We will keep striving to be a company recognized as being indispensable to society

We believe a company can exist only with the permission of local communities and by making continuous economic contributions to society. Based on these ideas, our group engages in various social action programs in the fields of welfare, employment, and education. As a global company, we also pursue the United Nations' Sustainable Development Goals (SDGs). We address issues in the context of each country in an effort to bring about safer, more affluent, and more comfortable societies.

We wish to express our sincere gratitude for the support we receive from our shareholders, investors, customers, business partners, employees, and other stakeholders. We look forward to your continued support for the future growth of our business.

Masayuki Arioka
Chairman of the Board
Nippon Electric Glass Co., Ltd.



Our History of Creating Value

Amid the chaos following the Second World War, Nippon Electric Glass (NEG) was established in 1949 in Otsu, Shiga Prefecture, with a total of some 90 employees. We started out with the production of vacuum tube bulbs for radios. Then our product line-up expanded to glass tubing for fluorescent lamps and pharmaceutical and medical use, glass for cathode-ray tubes (CRTs), glass fiber for reinforcing high-function engineering plastics, glass for optical communication and electronic devices, and glass for flat-panel displays (FPDs). Over the years, our line-up has grown and evolved to match the needs of the times and to develop and provide glass products that contribute to the betterment of everyday life. We will continue with our efforts to uncover the unlimited possibilities of glass and seek to create new value for society through advanced creative manufacturing.



From 1949

Creating NEG's foundation

In 1949, the company separated from NEC Corporation as an independent company. Initially, we produced hand-blown vacuum bulbs for radios and communication equipment. We later succeeded in automating production of glass tubing, which enabled us to mass produce glass tubing for fluorescent lamps. After that, we began production of glass tubing with the use of tank furnaces, which stabilized our business foundation.

Business/Products

- 1951 Successfully began use of the Danner process to automate glass tubing production.
- 1954 Started production of glass tubing for pharmaceutical and medical use.
- 1958 Started production of glass for radiation shielding.



From 1960

Becoming a specialized glass manufacturer with a focus on CRT glass business

In 1965, we accomplished our aim of entering the CRT glass business. Entrance to the rapidly growing TV market helped expand our business even further. This was also when we started new businesses to offer products to various industries, such as glass-ceramics, glass fiber, and glass for electronic devices.

Business/Products

- 1962 Started production of super-heat resistant glass-ceramics.
- 1965 Started production of black-and-white CRT glass. (Started production of color CRT glass in 1968.)
- 1973 Started production of glass-ceramic building material.
- 1976 Started production of glass fiber and glass for reed switches.
- 1987 Developed a glass substrate for liquid crystal displays (LCDs) (alkali-free glass for TFT LCDs).
- 1988 Launched a joint CRT glass business in the U.S.



CSR

- 1971 Established the Notogawa Plant, installed with cutting-edge environmental facilities (a model plant in harmony with nature).
- 1974 Started operation of an all-electric melting furnace that emits no CO₂ from the combustion process.
- 1980 Established a special-purpose subsidiary in response to the Act on Employment Promotion of Persons with Disabilities. This was the 6th such company in Japan.

From 1990

The age of overseas business development

In the 1990s, to meet the increase in global demand for CRTs, we created a worldwide supply network, thus becoming one of the leading manufacturers of CRT glass. In the late 1990s, to adapt to the market shift to FPDs, we entered the FPD glass business.

Business/Products

- 1991 Established a plant in Malaysia for CRT glass production.
- 1993 Acquired 100% ownership of a U.S. joint venture company.
- 1995 Established a CRT glass production plant in the U.K.
- 1997 Established a CRT glass production plant in Shijiazhuang, China.
- 1998 Started production of glass substrates for plasma display panels (PDPs) using the float process. Started production of glass fiber in Malaysia.
- 1999 Developed the overflow process.



CSR

- 1992 Codified our Environmental Charter.
- 1993 Introduced Japan's first oxy-fuel combustion system in a melting furnace, resulting in reduced CO₂ emissions and improved thermal efficiency.
- 1994 Acquired ISO 9002 certification in three product areas, including powdered glass of the Electronic Products Group.
- 1998 Established our corporate philosophy. Completed the recycling system of glass cullet produced from used televisions.
- 1999 Acquired ISO 14001 certification for all manufacturing sites collectively.

From 2015

For further growth

To seek further growth, we revised our corporate philosophy in 2015 and embarked on a three-year medium-term business plan in 2016. Under these circumstances, to expand our glass fiber business, we acquired a European business in 2016 and an American business in 2017 from PPG Industries. As a result, glass fiber has joined FPD glass as one of our main businesses supporting the company.

2018

From 2010

Creating a new business pillar for growth

With the deceleration of FPD glass sales, we expanded our glass fiber for reinforcing high-function engineering plastics, and glass tubing for pharmaceutical and medical use. We also launched various new products, such as glass for solar cells, cover glass for smartphones, and phosphor-glass composite. We also made progress in developing unique products, such as glass-ribbon and glass with a CTE (coefficient of thermal expansion) of zero.



From 2000

The age of FPDs

To meet the rapid increase of the FPD market, we started producing glass substrates for LCDs using the overflow process. We made efforts to match the advanced requirements of the FPD market, such as making larger and higher-quality glass substrates.

Business/Products

- 2001 Started production of glass substrates for PDP with ITO conductive films.
- 2002 Established an LCD glass processing plant in Gumi, South Korea.
- 2003 Established an LCD glass processing plant in Taiwan.
- 2005 Established a joint-venture LCD glass processing plant in Paju, South Korea.
- 2006 Established a joint-venture LCD glass processing plant in Shanghai, China.



CSR

- 2000 Launched the Environmental Business Plan.
- 2006 Acquired ISO 17025, an international certification regarding analysis of trace amounts of environmentally hazardous substances. Concluded the agreement of CO₂ emissions trading with a Japanese company, which was the first approach in Japan.
- 2007 Concluded a framework agreement of university-industry collaboration with the University of Shiga Prefecture.
- 2008 Developed an LCD substrate glass that contains no environmentally hazardous substances. Achieved significant reduction in CO₂ emissions due to promoted fuel shift (from heavy oil to LPG or LNG).
- 2009 Donated to Shiga Prefecture part of the cost of building a new ship for studying the environment of Lake Biwa.



Business/Products

- 2010 Started production of glass for solar cells.
- 2011 Started production of cover glass for smartphones. Started production of glass tubing for pharmaceutical and medical use in Malaysia.
- 2012 Glass-ribbon adopted as microchip material for micro total analysis systems. Established the P&P Technology Center Otsu.
- 2013 Developed Zero glass with a CTE of zero. Established an FPD glass melting and forming plant in Paju, South Korea.

CSR

- 2011 Launched a system for converting captured exhaust emissions into raw materials at domestic plants. Made donations in the wake of the Great East Japan Earthquake. Achieved a 3.6% employment rate for people with disabilities in Japan (double the statutory requirement).



Business/Products

- 2015 Established an FPD substrate glass melting and forming plant in Xiamen, China.
- 2016 Formulated the EGP2018 medium-term business plan. Acquired glass fiber operations in Europe from PPG Industries. Developed glass frit for laser-sealing of ceramic packages.
- 2017 Acquired glass fiber operations in the U.S. from PPG Industries. Developed flat glass fiber for reinforcement of thermoplastic resin. Developed a new glass tubing material for pharmaceutical and medical use. Developed an all-solid-state Na-ion secondary battery using a glass-ceramic cathode.

CSR

- 2015 Enacted our new corporate philosophy structure. Gave a visiting lesson at an event organized by Otsu City.
- 2016 Agreed to extend our university-industry collaboration with the University of Shiga Prefecture and continue the endowment course. Made donations in the wake of the Kumamoto Earthquake.
- 2017 Established an endowment course at Zhejiang University in China.

Established on Dec.1, 2015

Corporate Philosophy
We strive to build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing.

Our vision
The world's leading manufacturer of special glass

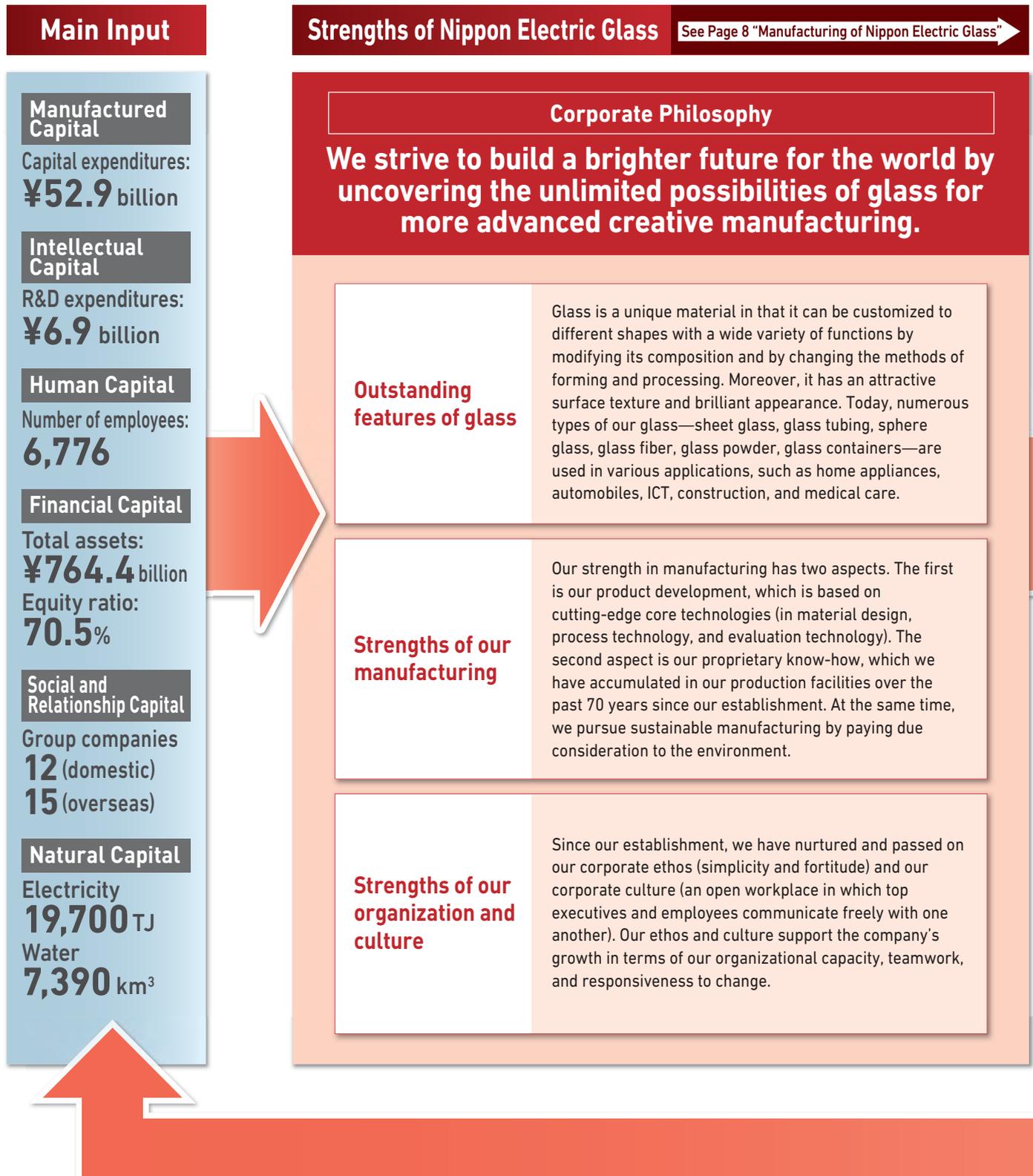
Our values

- Customer first
- Get the job done
- Broad minds and open communication
- High ethical standards
- Consideration for the environment

GLASS FOR FUTURE


Value Creating Process

Utilizing six resources of capital for our business operations, we pursue the unlimited possibilities of glass while providing value to society through our innovative products. We will continue our efforts to achieve sustainable societies.



Product Markets

	Automotive and Transportation
	ICT and Semiconductors
	Medical Care
	Displays
	Lighting
	Energy
	Social Infrastructure
	Home Appliances and Housing Equipment

Value Provided to Society

Reduction of environmental burden

Utilizing natural energy

Innovations in ICT

Advancement in medical care

Improvements in safety and comfort of daily life

Advancement in transportation

Creating a robust and durable social infrastructure



As a global company, we also pursue the United Nations' Sustainable Development Goals (SDGs). We address issues in the context of each country in an effort to bring about safer, more affluent, and more comfortable societies.

Reinvestment

Manufacturing of Nippon Electric Glass

Over the years, we have developed a wide range of core glass technologies used for material design and evaluation, melting, forming, and processing. These technologies are brought together in our production facilities, where we have also been developing new applied technologies. Our technologies give rise to unique, high-function glass products.

Cutting-edge Core Technologies

Material design

Glass is a material that can incorporate almost any element. We seek to make high-performance glass by considering the features of each element and adjusting its composition. To create optimally functional glass, we repeatedly carry out each stage of production—modifying the composition, test melting, processing, and evaluating.

Process technology

Melting

Our melting technology and the design of our melting furnaces involve advanced and precise furnace operations—for example, controlling combustion and temperature while reducing environmental burdens. These technologies help us to produce high-quality glass.

Forming

One thing that sets our group apart from the competition is our wide range of forming technologies. These technologies enable us to achieve high dimensional accuracy and high productivity. We can use the most suitable forming method for each product and respond to the various needs of our customers.

Processing

New functions and features are given to glass through a variety of working processes. These processes include reforming by heating and softening, crystallizing by firing, coating films, precision cutting and polishing, and compounding with crystals or organic substances.

Evaluation technology

We developed technology for analyzing traces of RoHS-designated hazardous substances contained in glass. In 2006, we acquired ISO/IEC 17025 testing laboratory certification. Analysis results obtained in our accredited testing laboratory meet global standards, thereby ensuring the quality of our products.

Applied Technologies

- Precision processing
- Ultra-thin substrate forming
- Hybrid technologies (use of thin film and laminating with other materials)
- Ultra-large substrate manufacturing
- Crystallization

Value Chain

Planning



R&D



Production

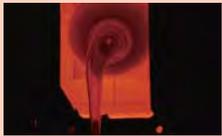


Sales

Glass with a Variety of Forms and Functions



Substrate



Tube



Sphere



Fiber



Powder



Molded



Hybrid products

Functions of special glass

- Optical** → Light absorption, wavelength conversion, optical thin film
- Electromagnetic** → Insulation, dielectric, conductive film
- Thermal** → Heat resistance, fire prevention, low-temperature sealing
- Mechanical** → High strength by chemical strengthening or crystallization
- Chemical** → Acid resistance, alkali resistance, sustained release of chemicals
- Others** → Gas barrier, plastic and cement reinforcement

Business Areas

Expansion and reinforcement areas



Automotive and Transportation



- Lightweight materials
- Vehicle lighting
- Displays
- Vehicle cameras
- Electronic devices



ICT and Semiconductors



- High-speed, large-capacity optical communication devices
- Next-generation semiconductors (compact and high definition, advanced functions)



Medical Care



- Advanced pharmaceutical containers
- Advanced medical equipment and facilities



Displays



- Next-generation displays (high definition, thin and lightweight, flexible)

Strategic development areas



Lighting



- Next-generation lighting (energy saving, high luminance, high output)



Energy



- Natural energy systems (solar power, wind power, etc.)
- Secondary batteries



Social Infrastructure



- High-function fire-protective equipment
- High-performance structural materials (safe, durable, lightweight)



Home Appliances and Housing Equipment



- High-function home appliances
- Housing materials, multifunction wall materials

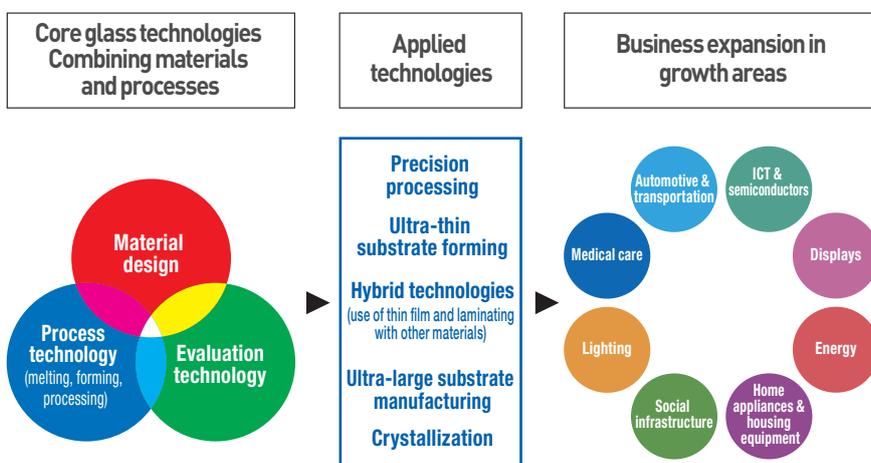
Uncovering the Unlimited Possibilities of Glass

Glass is a unique material in that it can be customized to different shapes with a wide variety of functions by modifying its composition and altering the various forming and processing methods used. We develop a wide range of glass technologies and create various high-function glass products using our hybrid technologies.

R&D Policy

We develop new products using our core glass technologies in areas including material design, evaluation, process design, and development of processing methods. We build on these core technologies by combining applied technologies including precision processing, ultra-thin substrate forming, and ultra-large substrate manufacturing. We aim to develop glass products that provide value for society, as we focus on expanding business in growth areas such as automotive, ICT, medical care, and displays.

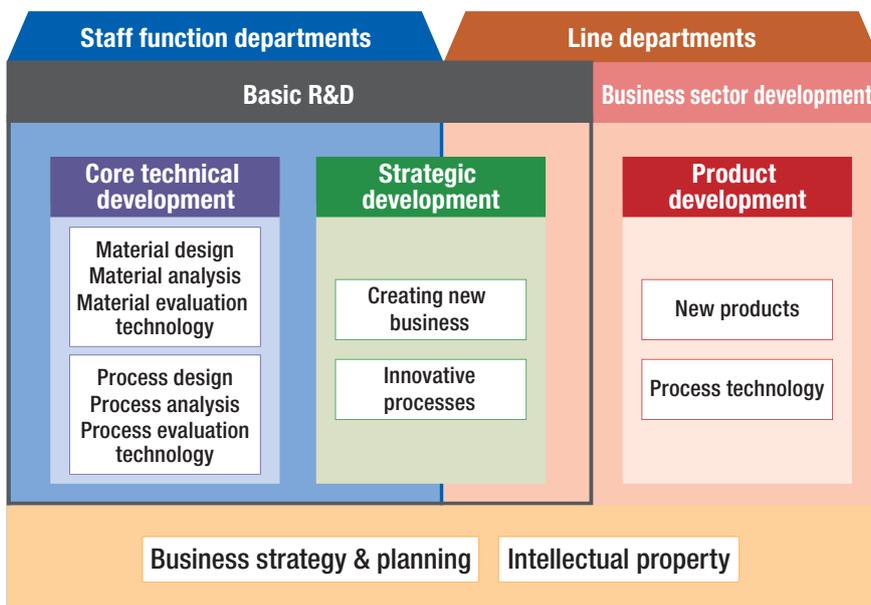
Core Glass Technologies and Business Development



R&D Organization

Our staff function departments engage in core areas of basic R&D such as the design of materials and processes, and the development of evaluation technologies. Meanwhile, the line departments carry out business sector development (practical development), which includes improving products and devising advanced functions. The two departments collaborate closely on strategic development to create next-generation business.

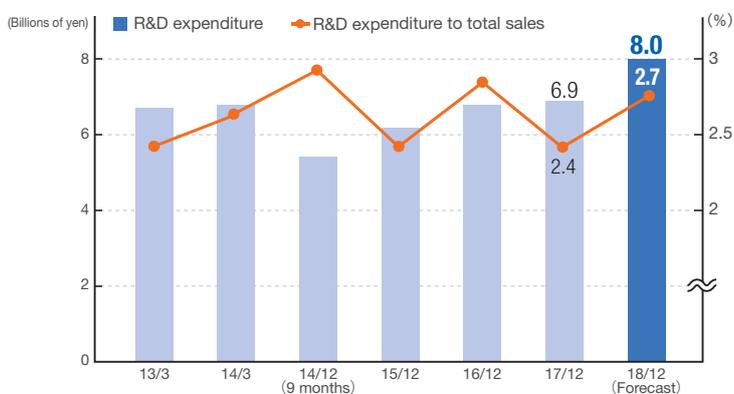
Collaboration between Departments



R&D Investment

We are working tirelessly in R&D in order to realize our corporate philosophy: "We strive to build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing." We also aim to integrate and evolve our manufacturing processes and product development, and reflect the results in our management strategy in order to realize medium-to-long-term growth. Our recent R&D expenditure is on the rise: we spent 6.9 billion yen in fiscal 2017 and expect to exceed that amount in fiscal 2018.

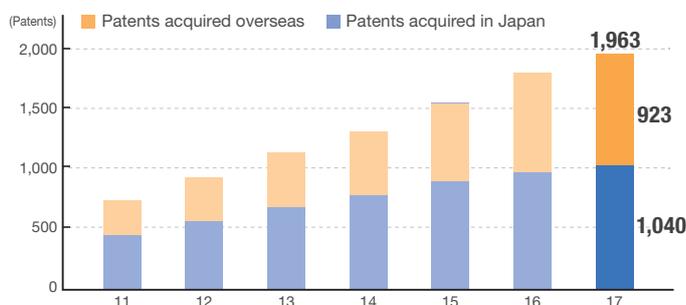
R&D Expenditure



Intellectual Property

Enhancing our strength in intellectual property is as a keystone of our business strategy. Focusing on key business areas and future business development, we are steadily increasing the number of patents we own in Japan and overseas, and actively utilizing cross licenses and other agreements.

Number of Acquired Patents



R&D Topics

Development and shipment of new material (with high light-shielding properties) for pharmaceutical glass tubing (released on November 6, 2017)

To expand sales in the European, American, and Asian markets, we have begun shipping glass tubing that we developed for pharmaceutical and medical use that has higher light-shielding properties than required under Japanese standards. We aim to expand sales in the growth area of pharmaceutical and medical glass tubing through aggressive sales promotion of new products around the world.



Newly developed glass tubing for pharmaceutical and medical use (below) and current model (above)

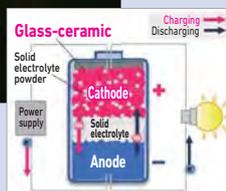
Development of all-solid-state sodium (Na)-ion secondary battery using glass-ceramic cathode, and successful operation at room temperature (released on November 8, 2017)

In order to solve problems with lithium (Li)-ion secondary batteries that use an organic electrolyte, such as safety issues and unstable raw material supply, we made a prototype of an all-solid-state Na-ion secondary battery using a Na-based glass-ceramic cathode. We succeeded in operating this battery at room temperature, a first in the world.



Lighting test in the form of a cell battery

Structural drawing of an all-solid-state Na-ion secondary battery

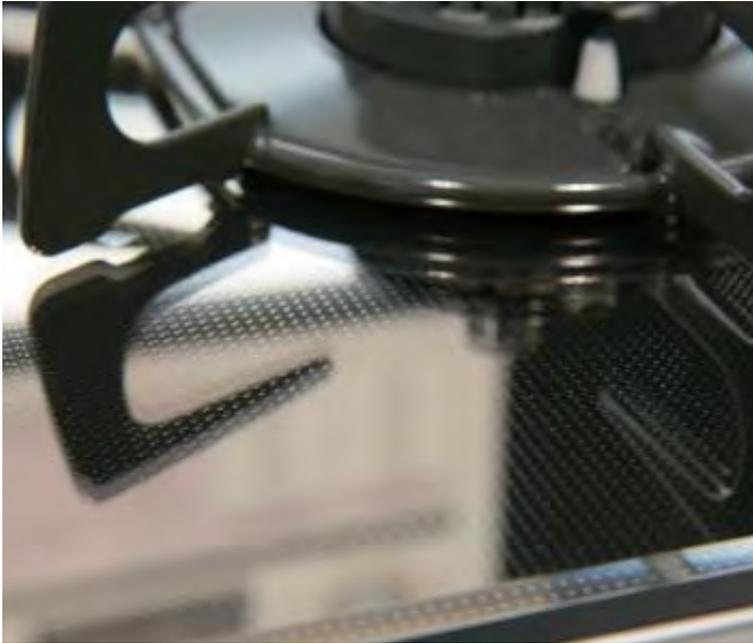


Endowed Chair established at Zhejiang University, China (ceremonial signing held on September 20, 2017)

Zhejiang University (Hangzhou City, Zhejiang Province, China) and our company established the NEG Endowed Chair in Glass Chemistry at the university. The aim of this course is to build a more cooperative relationship between the two parties by exchanging and utilizing intellectual and human resources in the areas of technology, R&D, and education; fostering technological development; and discovering the chemical properties of glass.



Professor Qiu of Zhejiang University (left) and Mr. Yamazaki, Director & Senior Vice President of NEG (right) after the agreement signing ceremony



Top plate of cooking appliance



Colored film for top plate of cooking appliance

Thin Film Gives Glass Higher Performance and Higher Added Value

Glass and Thin Film

Glass has a variety of excellent properties, such as transparency, imperviousness to air and water, solidity, and resistance to deterioration. Coating the surface of glass with film not only enhances these properties but also gives it added value.

History of Our Thin Film Business

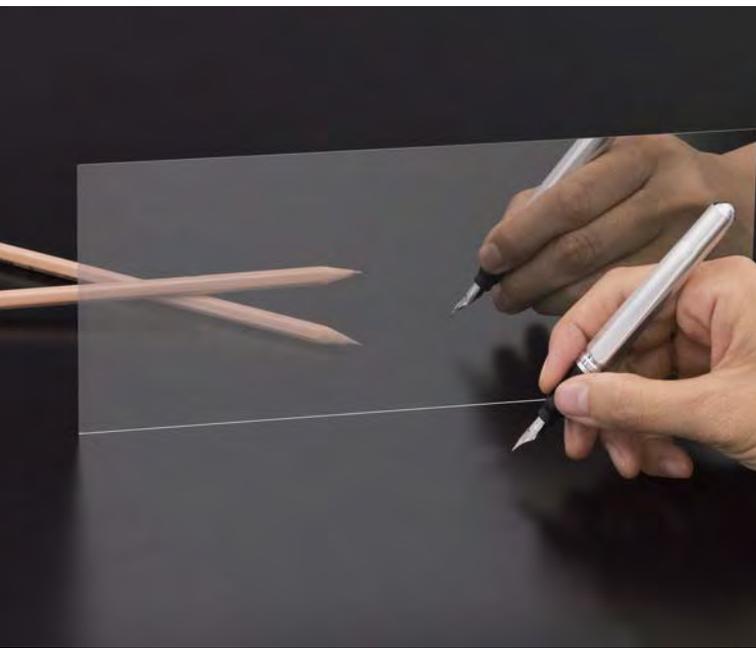
The history of our thin film business goes back to the 1970s, when we were processing thin film for CRT (cathode ray tube) glass. Starting with anti-glare film, we went on to develop thin-film technologies that realized functions including electrostatic protection, anti-reflection, and color correction for projection televisions. These functions added value to our product line and made a major contribution to the expansion of our CRT glass business. We now manufacture and sell a wide variety of films in various areas, including transparent conductive film for flat-panel displays, colored film for the top plate of cooking appliances, film that selects specific wavelengths in optical communication devices, and ultra-low-reflection film for Invisible Glass™ used for display cases.

Applications and Functions of Thin Film

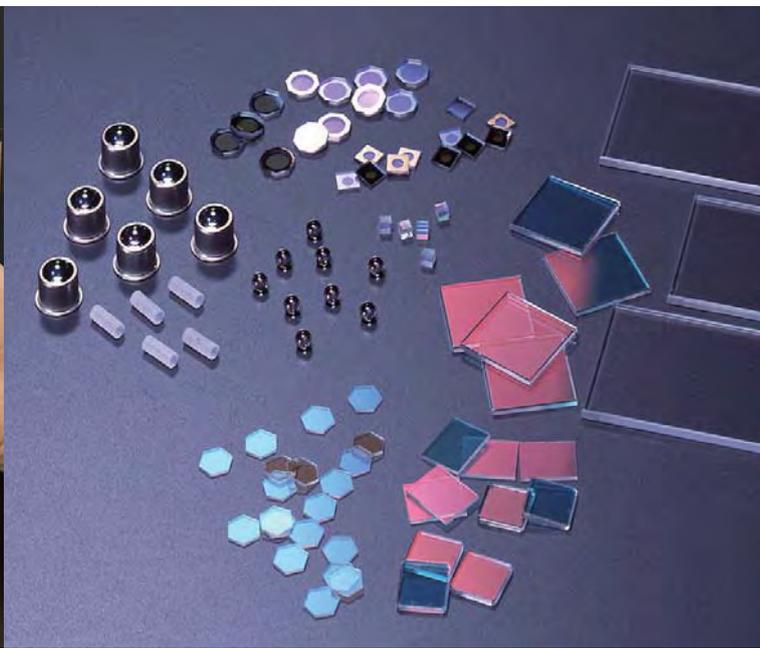
Applications	Functions
Cover glass for various kinds of sensors	Transmission and reflection of specific wavelengths Anti-reflection Fogging/freezing prevention (transparent heater)
Cover glass for vehicle displays and medical monitors	Anti-reflection Stain prevention
Decoration by glass for home appliances and housing equipment	Coloring, decoration

Controlling Transmission and Reflection of Specific Wavelengths

There are two reasons why the sea looks blue despite the fact that water itself is transparent. One is that the wavelengths of color other than blue (red to yellow) are absorbed by water molecules on or under the sea surface. The other is that, depending on the weather, the blue sky is projected on the sea surface. Light is composed of various



Dielectric mirror for car rear window coated with high-performance film



Glass for electronic devices coated with optical thin film

wavelengths including visible light, infrared light, and ultraviolet light. To provide glass with a function capable of transmitting or reflecting almost all of the light in a specific wavelength, we form a multi-layered, ultra-thin film on the glass surface. The thickness of the film must be accurate to the nanometer (one millionth of 1 mm) in order to properly transmit or reflect the light of a specific wavelength.



UV reflector

Display case made of Invisible Glass™ ultra-low-reflection glass

on our instructions. In addition to radio and infrared sensors, there is expected to be an increase in sensors that control an automobile's movement, such as visible-light image sensors (capable of confirming traffic signals and recognizing the car's surroundings) and LIDAR (Light Detection And Ranging). Also foreseeable in the near future is a world in which sensors will be used not only in automobiles but also in almost every aspect of our lives—there will literally be a trillion sensors used every year. Protective sensor covers that selectively and effectively transmit light will require special glass with high transmittance of specific wavelengths and thin film with a variety of properties. At the dawn of this new "trillion sensors" era, we will blaze new business trails through our expertise in special glass and thin film.

Development of Automotive Applications and the Era of a "Trillion Sensors"

Cars that automatically stay in the same lane and follow the vehicle in front of them are already being marketed, although these are limited to certain conditions such as highway driving. In the near future, we may very well see self-driving cars that take us to a desired destination based

Anti-freezing cover glass for cars and security cameras



Cover glass for image sensors

Performance Review, Progress on and Prospects for EGP2018, Medium-term Business Plan

In fiscal 2018, the final year of EGP2018, we are committed to meeting our objectives and leading the company to the next stage of growth.



Motoharu Matsumoto, President
Nippon Electric Glass Co., Ltd.

M. MATSUMOTO

Great expansion of glass fiber business in fiscal 2017 and early achievement of profit objectives in the medium-term business plan

Our performance in fiscal 2017 increased in both sales and profits. We recorded net sales of ¥282.4 billion (up 18% from the previous fiscal year) and operating income of ¥32.3 billion (up 64.5%). In EGP2018, our initial target for operating income was ¥30 billion by fiscal 2018. To exceed this objective a year ahead of schedule was an outstanding achievement.

The main factors contributing to this success were the expansion of our glass fiber business and the improved productivity of our display glass business. The improved performance of our glass fiber business resulted from M&A-led sales growth and enhanced productivity in response to increased demand. Over the years, management has focused on diversifying the company's display-centric business portfolio—this informed our work on EGP2018. As a result, sales from our glass fiber business in fiscal 2017 approached sales of our main product, displays. We expect fiscal 2018 sales in the two sectors to be almost the same. Fiscal 2017 was a year of great progress in that we have seen the emergence of a new pillar supporting the growth of our group.

Progress on EGP2018, efforts for the final year

As the final year of EGP2018, fiscal 2018 is very important for the next medium-term business plan. Our performance estimates include net sales of ¥300 billion, operating income of ¥31 billion, ordinary income of ¥29 billion, and profit attributable to owners of the parent of ¥20 billion. We will work together to achieve these objectives.

The following are our strategies and prospects for the final year of EGP2018, based on the progress of four basic policies.

1) Strengthen profitability of display-related business

Enhancing our presence in the Chinese market

In the global market for flat-panel displays (FPDs), unit-based sales are not increasing much. However, there is steady mid-single-digit growth annually as measured by screen surface area, due to increasing television sizes. Our sales in fiscal 2017 increased at a rate slightly above that of the global market. Despite a gradual decline in prices, our net sales exceeded those of the previous fiscal year. Solid growth in this sector is likely to continue, and we anticipate growth mainly in the Chinese market. We seek to enhance profitability, while properly controlling risks such as regional risks and customer imbalance.

Electric Glass (Xiamen), a Chinese subsidiary with FPD glass melting and forming facilities that we established in 2016, is moving along smoothly with production and has plans to increase capacity effective as of the first quarter of 2018. Once all of the plant's production lines are operational, in the second quarter of this fiscal year, our overseas production ratio of FPD glass will be about 50%. This will mark the end of the first phase of our overseas investment in the display sector. Going forward, we will enhance our presence in China by responding to market trends. In addition, efforts to improve productivity are now paying off, with significantly enhanced profitability in FPD glass. We will meet market demand for thinner and larger displays, while pursuing higher productivity and quality. This will be realized by introducing new equipment and technologies and by reinforcing our manufacturing facilities and extending their active lives.

2) Expand business related to performance materials, optical and electronic devices, medical care, and heat-resistant and building materials

Pursuing M&A and synergy effects in the glass fiber business

Modern vehicles are designed to be light to improve fuel efficiency. In vehicle designs, heavy metal parts are increasingly being replaced by more lightweight parts made from resins. These resins are reinforced by glass fiber, for which there is growing global demand. That is the backdrop to our strategic acquisition of a European glass fiber business (in October 2016) and a U.S. glass fiber business (in September 2017) from PPG Industries, Inc. As a result of these acquisitions, fiscal 2017 sales in the Performance Materials and Others sector (in which the main product is glass fiber) increased by 44% year on year.

PPG Industries is one of the world's most long-established glass fiber manufacturers. It has made products for markets where our group was absent; for example, wind turbine blades and house roofing. These acquisitions offer us access to a variety of business areas. We will be able to gain new technologies, expand our product portfolio and distribution channels, use numerous intellectual properties, develop new products, and streamline our logistics networks. Having additional European and U.S. manufacturing bases has enabled us to establish an integrated global manufacturing system (including Japan, Malaysia, Europe, and the U.S.). This has greatly expanded our presence in these markets. Going forward, we will make full use of the synergies brought about by M&A and strive to meet customer requests associated with expanding demand; for example, requests for steady supplies and new kinds of products.

3) Reinforcement of R&D

Process development for next-generation values

In the area of R&D, we have been strengthening our abilities in material development and process innovation, improving our evaluation technologies, and acquiring intellectual property. Our R&D expenses have been on the increase in recent years. They were ¥6.9 billion in fiscal 2017 and are expected to be ¥8 billion in fiscal 2018—equivalent to 3% of total sales.

We place particular focus on developing aspects of production such as melting, forming, and processing. It's not enough merely to develop a new material through basic research. We must look to our manufacturing process to achieve stable, consistently high-quality mass production and deliver products at competitive prices. Our manufacturing process is where our proprietary technologies and know-how are accumulated. At the same time, social values and customer opinions regarding products are always changing. Glass manufacturing consumes a lot of energy. We therefore anticipate growing demand for products manufactured with renewable energy. We have renewed our commitment to reviewing our existing processes from the perspective of sustainable manufacturing.

4) Constructive investments

Historical step toward the next growth stage

M&A is key to our policy of constructive investments, which we enacted by acquiring European and U.S. glass fiber businesses in fiscal 2016 and 2017. We will focus our efforts on PMI (post-merger integration) for the acquired bases, so that we can achieve positive results as soon as possible.

As a secondary effect of the acquisitions, we are receiving offers for new projects. When it comes to M&A, we will keep an open mind and take each case on its merits after investigating the benefits of collaboration or partnership. Throughout the long history of our group, we have grown chiefly by expanding our own production bases and by developing proprietary technologies. While we have had previous experience with M&A, joint projects, plant exports, and other collaborations, the 2016 and 2017 acquisitions are our largest M&A projects to date. We have therefore been absolutely determined to make them a success. The experience has also given us confidence and an opportunity to develop human resources with knowledge of M&A. I think we're now ready to take a giant step to the next stage of growth.

The concepts of CSR and priority themes

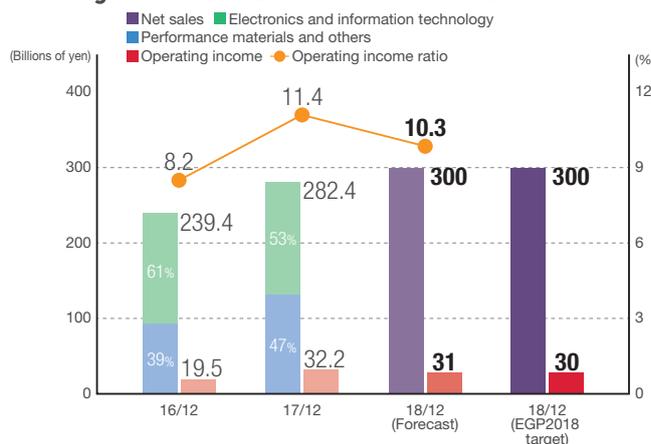
In recent years we have seen increases in ESG investment and requests to meet SDGs, indicating the importance placed on corporate social responsibility (CSR) in corporate evaluations. In response, the management of our group has, since last fiscal year, been holding discussions on how to define CSR and address issues in this area. We identified the following three priority themes: the Environment, Diversity and Inclusion, and Community Contribution (see page 32). These themes do not differ greatly from our traditional management themes. Even so, it has been meaningful to reconfirm the background and importance of each of these areas and to clarify the direction of a wide range of aggressive initiatives.

Let us firstly consider the theme of the Environment. Manufacturing that involves melting glass at a high temperature of over 1,000°C requires vast amounts of resources, including energy and water, and it produces much carbon dioxide. It is our responsibility to reduce the environmental burdens of these processes by implementing strict performance standards.

Secondly, we will further promote the theme of Diversity and Inclusion. In the past, our company has focused mainly on employing disabled persons. To this we are adding greater respect for people with different backgrounds and values, whether in terms of their race, religion, gender, or gender identity. Through our efforts, we will seek to create workplaces where each employee can work in a positive atmosphere, while conducting our business in line with global workplace standards.

The third theme we consider is Community Contribution. Our group will contribute, in Japan and overseas, to the development of local communities through employment, educational support, and event promotion—all to help local people appreciate the positive impact of our group. Also, we will continue our efforts to further strengthen corporate governance, the bedrock of CSR.

Progress on EGP2018 Medium-term Business Plan



To shareholders and investors

We regard returning profits to shareholders as a key management issue. It is a fundamental policy of ours to provide stable ongoing dividends to investors. Having said that, we take a flexible approach to providing returns to our shareholders, depending on opportunities present.

In fiscal 2018, the final year of EGP2018, we are determined not only to attain the goals set in EGP2018, but also to work out our next medium-term business plan in light of our expectations for the coming decades. We are committed to contributing to social development by creating products that are useful to people's lives. We look forward to your ongoing support.

EGP2018 Outline

[Basic Policies and Measures]

(1) Strengthen profitability of display-related business

- Improve productivity and quality by honing the manufacturing process
- Realize the smooth shift of production overseas
- Conduct management based on controlling risk and prioritizing income and expenditures

(2) Expand business related to performance materials, optical and electronic devices, medical care, and heat-resistant and building materials

- Provide specifics for the M&A alliance strategy to generate new business opportunities and growth synergy
- Grow existing businesses through sales expansion and investment
- Realize early commercialization of newly developed products

(3) Reinforcement of R&D

- Develop materials, processes, and products that take advantage of the superior features of glass
- Improve basic technologies in material design, manufacturing process technology, and evaluation technology
- Enhance intellectual property strengths and utilize licensing-in and cross-licensing to generate new businesses and expand existing businesses

(4) Constructive investments

In addition to the usual capital investments, the company will set aside 50 billion yen over a three-year period for strategic investments.

[Management Targets]

Net sales : **¥300 billion** Operating income : **¥30 billion**

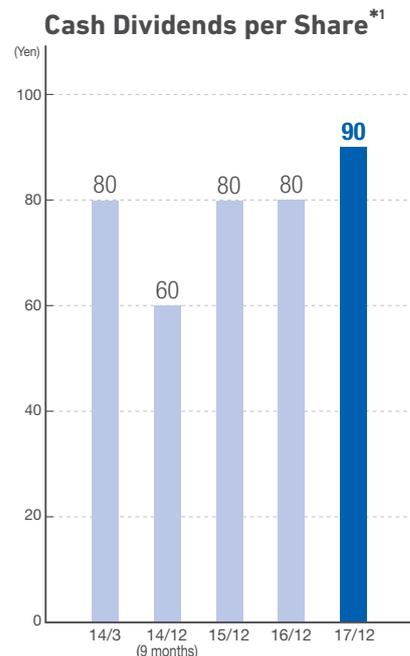
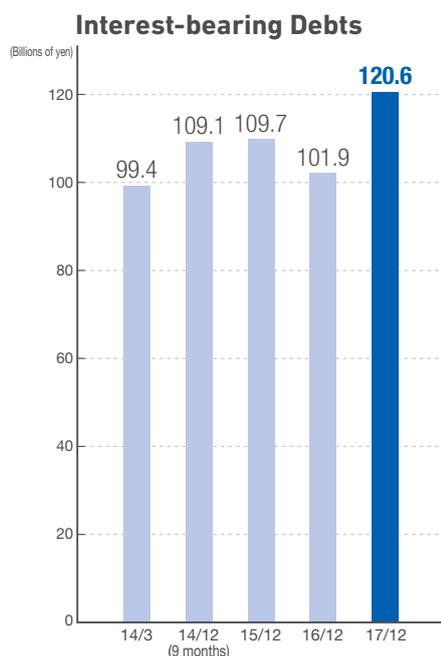
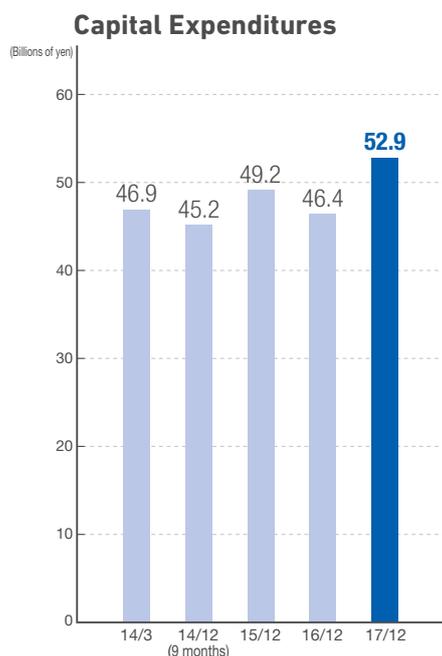
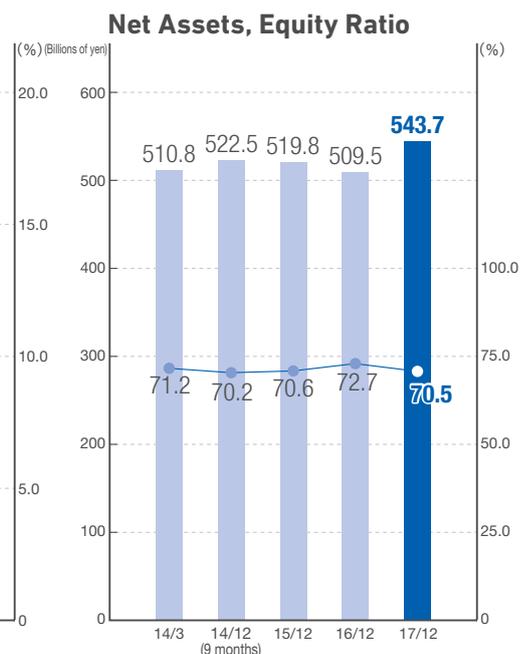
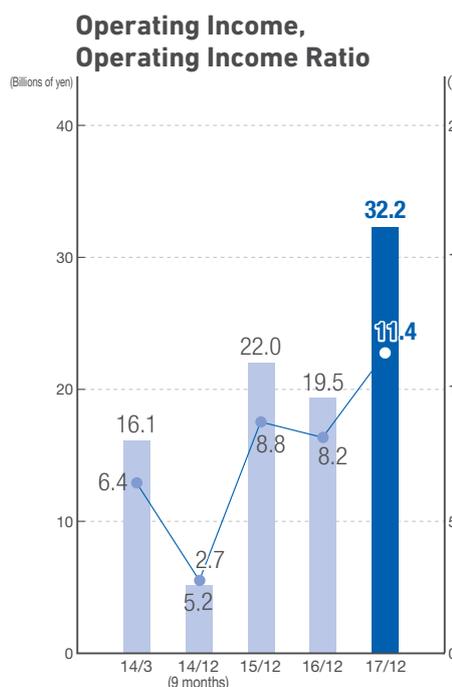
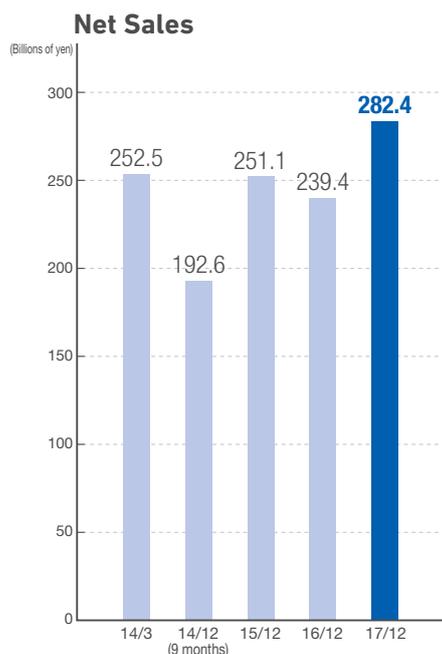
Operating income ratio : **10%**

[Duration]

January 1, 2016 to December 31, 2018

Financial and Non-financial Highlights

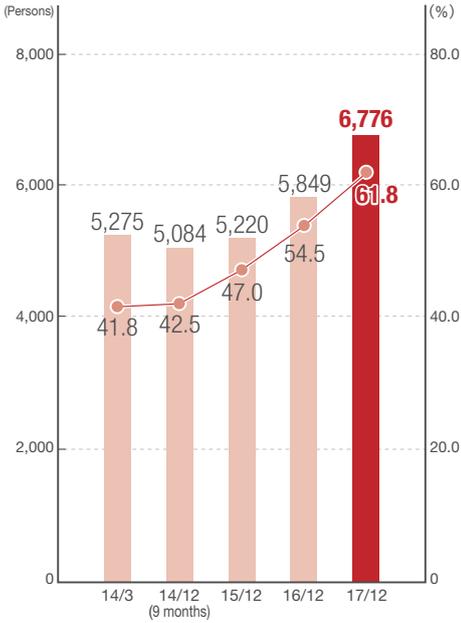
Financial Highlights (Consolidated)



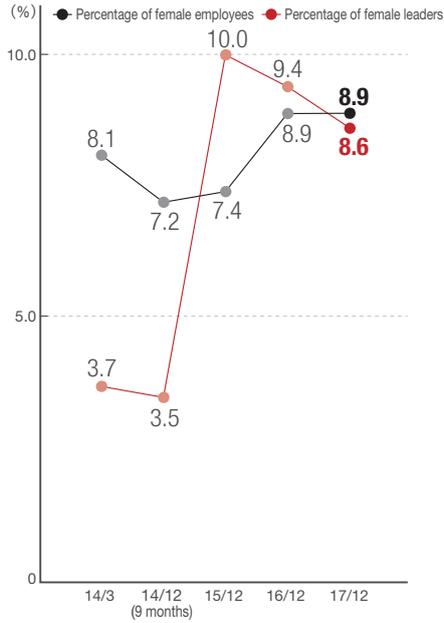
*1: Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

Non-financial Highlights

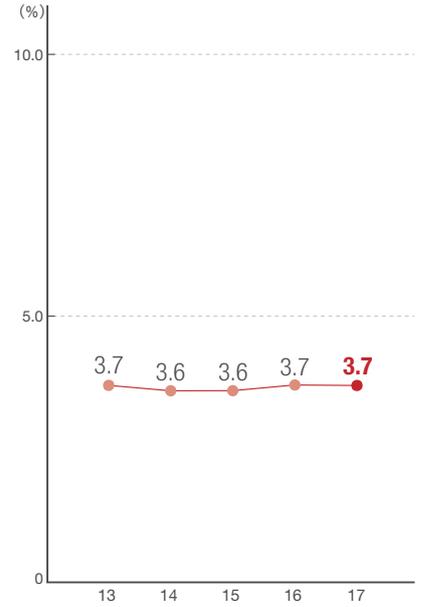
Number of Employees, Percentage of Overseas Employees (consolidated)



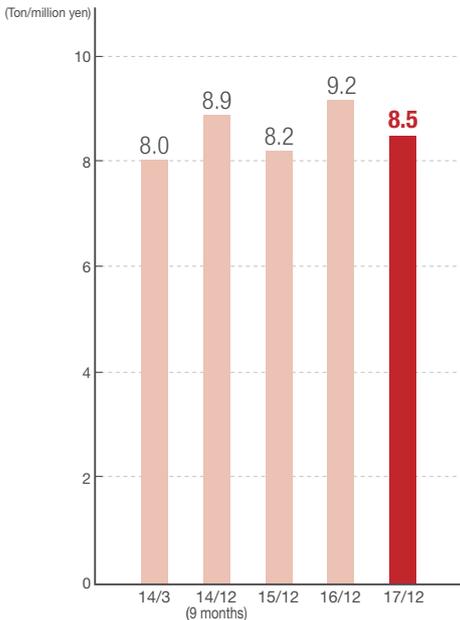
Percentage of Female Employees and Female Leaders (NEG)*²



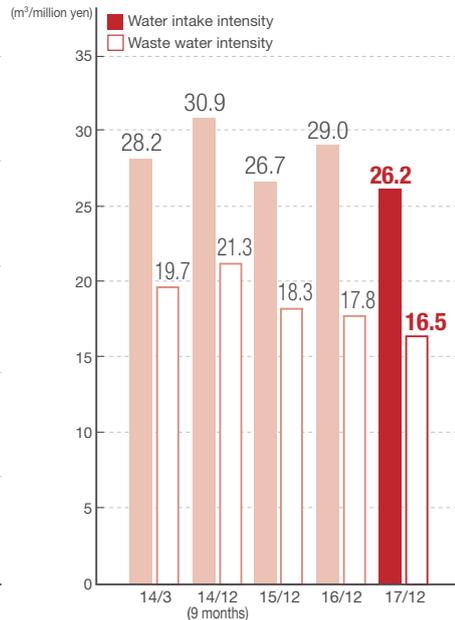
Percentage of Employees with Disabilities (NEG and consolidated subsidiaries in Japan)*³



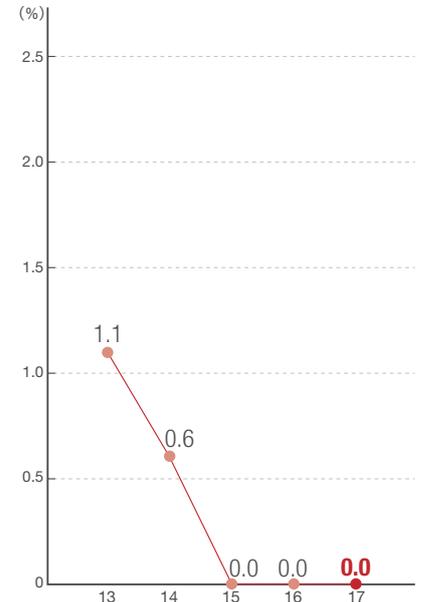
CO₂ Emissions Intensity (to consolidated sales)



Water Intake/Waste Water Intensity (to consolidated sales)



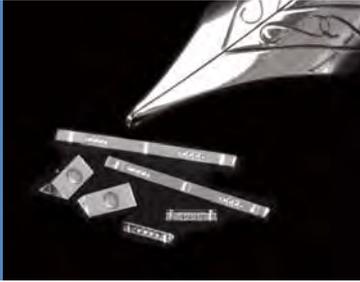
Industrial Accident Frequency Rate*⁴ (NEG)



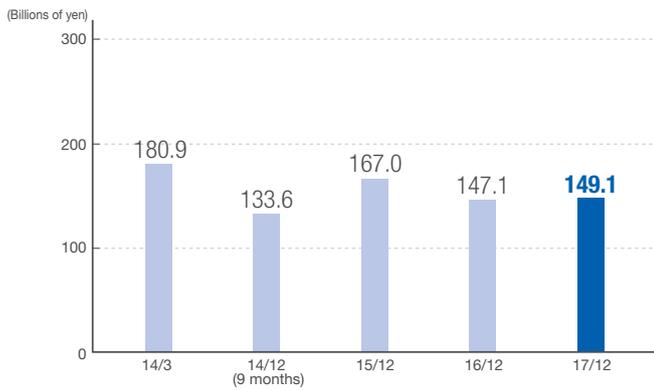
*²: A female leader is a female employee who oversees and manages subordinates. The percentage of female leaders is the number of female leaders divided by the total number of female employees in career-track positions.
 *³: As of June 1 every year. *⁴: Counted January–December every year.

Overview of Business

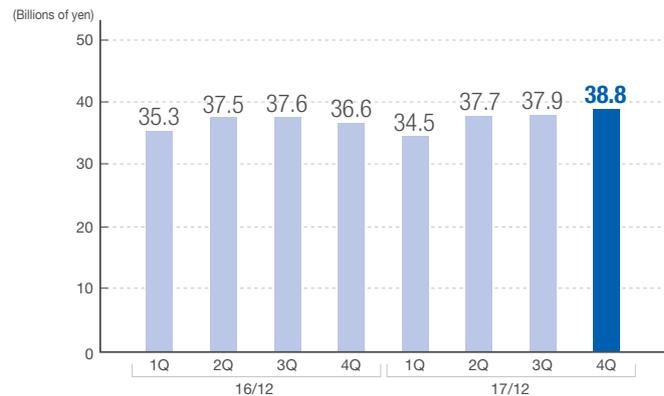
Electronics and Information Technology



Net Sales (year)



Net Sales (quarter)



Main Products and Sales Situation

Product	Characteristics and Applications	Sales Situation
Glass for Flat Panel Displays (FPDs)	Glass substrates manufactured by the overflow process have extremely flat and smooth surfaces. This type of glass is used as a substrate for displays, such as LCD TVs and mobile devices.	Backed by firm demand, shipments increased compared with the previous fiscal year as we began shipping to new customers via our joint venture processing plant in Fuqing, China.
Chemically Strengthened Glass, Dinorex™	Dinorex™ is glass developed for use as cover glass for mobile devices such as smartphones and tablets. It protects display surfaces against scratches and impact.	Although demand had plateaued, compared to the previous fiscal year, sales continued to recover.
Glass for Optical Devices	Our glass products for optical devices play important roles in data transmission, such as separating a particular wavelength from optical signals and branching optical signals.	Sales were firm, except for certain products.
Glass for Electronic Devices	Our glass for electronic devices takes various forms, including image sensor cover glass for devices such as digital cameras; powdered glass, glass paste, precision glass tubes, and phosphor-glass composite used in electronic parts for home appliances, automobiles, and industrial equipment.	Amid firm demand for home appliances and automobile-related products, sales of functional powdered glass and cover glass for image sensors grew. Phosphor-glass composite also performed well.
Glass for Solar Cells, SS-1	Our glass for solar cells, SS-1, has higher strain and softening points than conventional window glass. It is used as a substrate in chemical compound solar cells.	Sales were stable.

Outlook for Fiscal 2018

Glass for FPDs	<ul style="list-style-type: none"> Expansion in line with market growth Start-up of our melting and forming facilities (second-phase investment) in Xiamen, China More moderate decline in prices
Glass for Optical and Electronic Devices	<ul style="list-style-type: none"> Growth initiatives in various markets, including digital home appliances and automobiles Sales of glass for optical communications will correspond with the demand for communications infrastructure in emerging economies and other countries Commercialization of newly developed products

Progress and Issues in the EGP2018 Medium-term Business Plan

Glass for FPDs

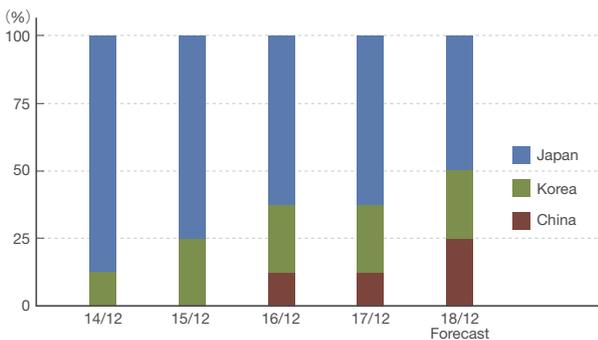
Progress

We focused on expanding our business in the growth market of China, particularly via the start-up of operations at our new joint venture processing facilities (Fuzhou Xufu Optoelectronic Technology; Fuqing City) and through preparations to boost production at our melting and forming subsidiary (Electric Glass (Xiamen); Xiamen City). We also implemented investment and repair work aimed at strengthening facilities and improving productivity. In the field of R&D, we developed new materials and manufacturing process technology to make thinner and larger glass substrates.

Issues

- Plans for the growing Chinese market
- Responding to planned production increases by our major customers
- Further quality and service improvement
- Productivity improvement, cost reductions

FPD Glass Forming Capacity Ratio



Overseas Display Business



Glass for Optical and Electronic Devices

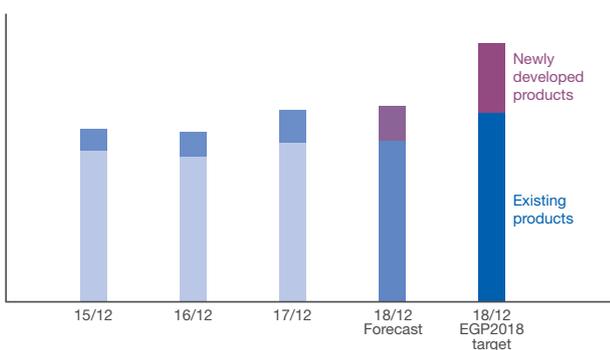
Progress

Amid firm demand in the home appliance and automotive markets, sales of glass for electronic devices grew. Glass for optical devices performed well, except for certain products. We progressed with the development and commercialization of new products such as deep UV-transmitting glass and infrared absorbing filters.

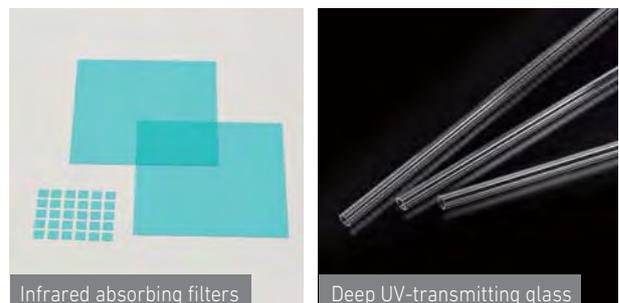
Issues

- Commercialization and sales promotion of newly developed products
- Adding further value to products
- Speed of growth

Sales Growth Prospect



New Product Development

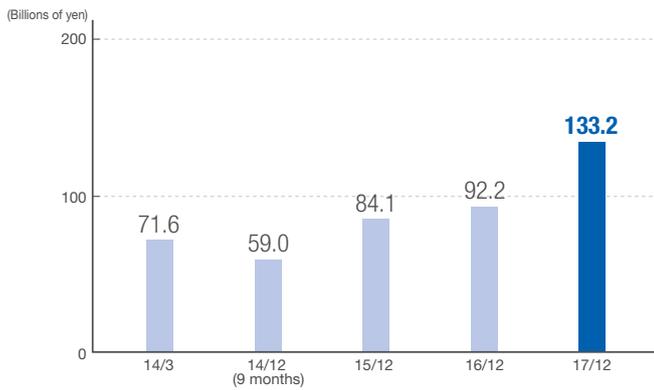


Overview of Business

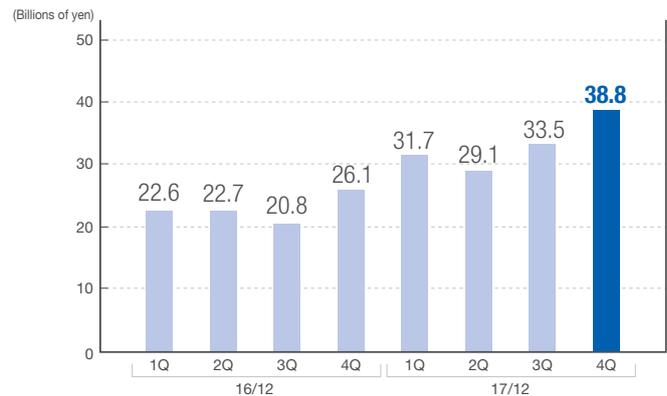
Performance Materials and Others



Net Sales (year)



Net Sales (quarter)



Main Products and Sales Situation

Product	Characteristics and Applications	Sales Situation
Glass Fiber	Glass fiber is glass formed into filaments each of which is around several to a dozen micrometers in diameter. It is used to create excellent composite materials due to its high mechanical strength. It is used in various applications, such as for strengthening resins and cement products.	Centered on glass fiber for use in high-function resin for automobile parts, demand was firm. Sales proceeds reached their highest ever, partly due to our M&A of overseas glass fiber operations (from October 2016 in Europe, and September 2017 in the U.S.).
Glass for Building Materials	We provide glass products for construction use in various shapes with a variety of properties, such as fire-rated glass, glass-ceramic building materials, and glass blocks.	Sales to large-scale construction projects in Japan were sluggish.
Heat-resistant Glass	With excellent thermal shock resistance and mechanical strength, our heat-resistant glass is widely used in household appliances such as oven and fireplace windows and top plates for cooking appliances. Due to having a CTE (coefficient of thermal expansion) close to zero, our heat-resistant glass is also used as carrier glass in the thermal treatment of electronic components.	Both overseas and domestic sales were firm.
Glass for Medical Care	Glass tubing made of borosilicate glass has excellent acid and chemical resistance and high strength. It is used as a material for medical containers such as ampoules and vials. LX Premium, with a high lead oxide content and excellent radiation shielding properties, protects medical personnel from radiation exposure in medical facilities.	Sales were firm overall, helped by the expansion of shipments to China of glass tubing for pharmaceutical and medical use, among other activities.

Outlook for Fiscal 2018

Glass Fiber	<ul style="list-style-type: none"> ● Favorable conditions in the automotive parts market ● Increased production in the U.S. and greater synergy among our four global bases ● Promotion of production efficiency improvement at each of our bases
Medical Care, Heat Resistance, Building Materials	<ul style="list-style-type: none"> ● Medical care: Sales expansion of glass tubing for pharmaceutical and medical use in China ● Heat resistance: Sales expansion overseas for glass used in cooking appliance top plates and stoves ● Building materials: Sales expansion of fire-rated glass

Progress and Issues in the EGP2018 Medium-term Business Plan

Glass Fiber

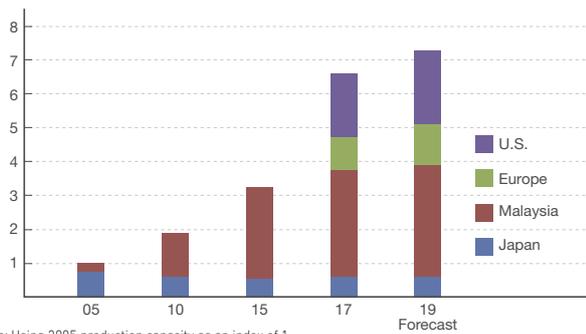
Progress

Amid increased demand for glass fiber for resin reinforcement, we carried out M&A in Europe and in the U.S. and created a global glass fiber production and supply structure made up of four bases (Japan, Malaysia, Europe, U.S.). We also enacted production efficiency improvement at each base location. Regarding new products, we developed flat glass fiber that has an elliptical cross section.

Issues

- Production increases at our U.S. base (from 18/2Q)
- Profitability improvement and the creation of synergy through post-merger integration at our European and U.S. bases
- Further M&A and alliance strategies ● Development of new products

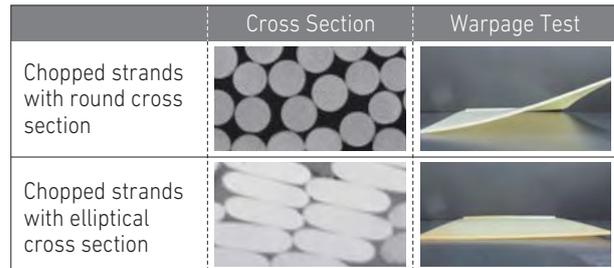
Expansion of Global Production Capacity



Note: Using 2005 production capacity as an index of 1.

New Product Development

Flat Glass Fiber*



*Glass fiber with an elliptical cross section. Compared with conventional chopped strands with a round cross section, it can be molded with reduced warpage and improved dimensional stability after compounding with thermoplastic resin. Further improved strength and surface condition performance can be expected.

Medical Care, Heat Resistance, Building Materials

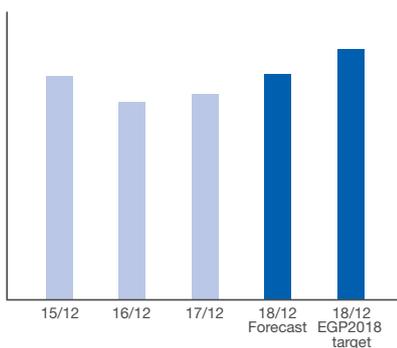
Progress

We worked to expand sales of glass tubing for pharmaceutical and medical use and heat-resistant glass mainly in growing overseas markets. For glass tubing for pharmaceutical and medical use, we particularly focused on business to China, and achieved a certain level of success in business expansion. Regarding new product development, we created new material for pharmaceutical glass tubing (BS-A Dark) that has better light-shielding properties than our current product.

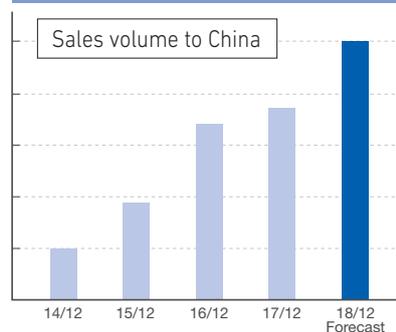
Issues

- Sales expansion of glass tubing for pharmaceutical and medical use in China
- Further quality and service improvement
- Productivity improvement, cost reductions

Sales Growth Prospect



Sales Expansion of Glass Tubing for Pharmaceutical and Medical Use in China



New Product Development



We will strengthen management supervisory functions and invigorate Board of Directors meetings, which will help our group boost competitiveness and achieve the goals of our EGP2018 medium-term business plan.

Our Corporate Governance Policy

We believe that to increase corporate value and achieve sustainable growth, it is essential to continue to ensure managerial transparency and strengthen supervisory functions regarding the execution of business affairs. This is our basic policy on corporate governance and we will strive to improve our organization and business systems in accordance with this policy.

Corporate Governance Structure

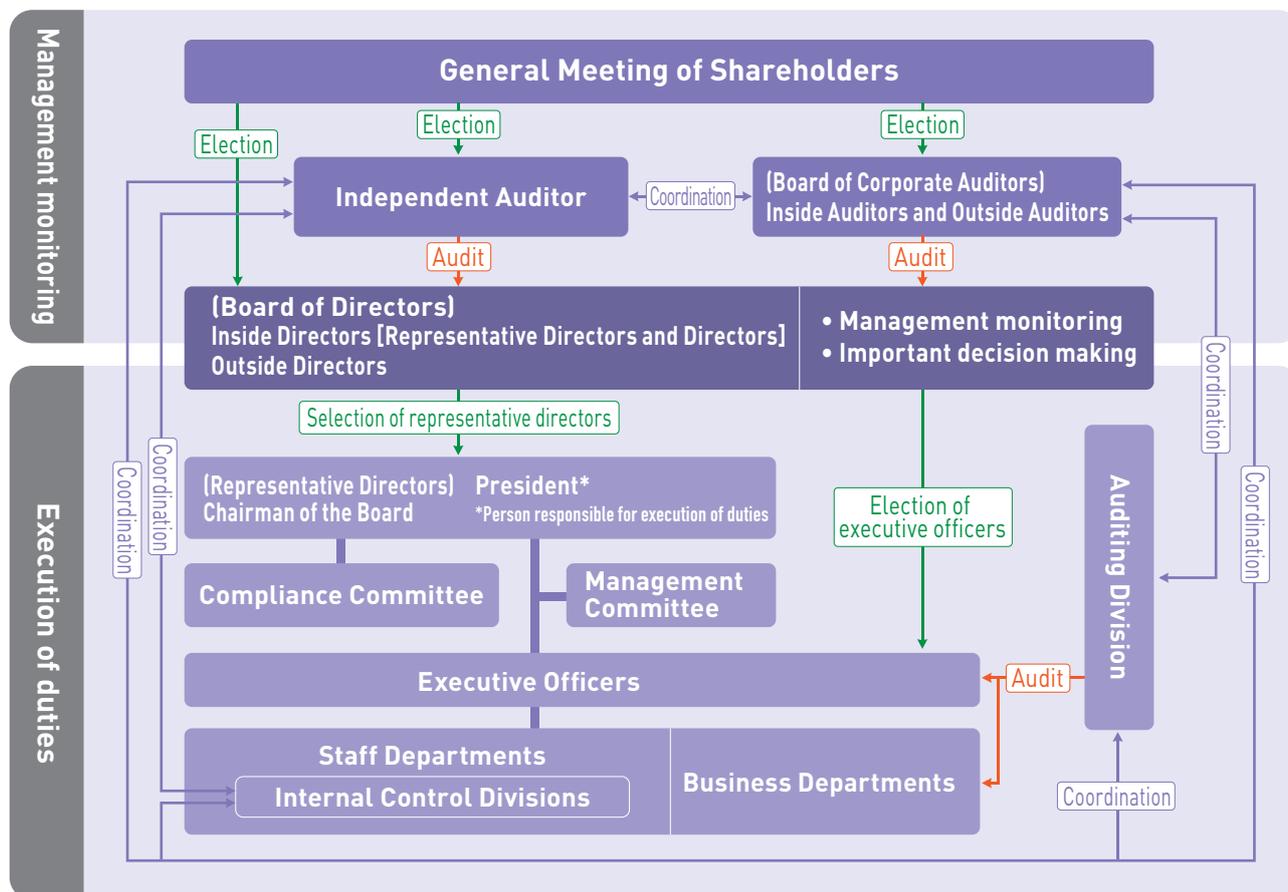
Board of Directors

The Board of Directors makes decisions on important management affairs of our group and supervises the execution of business affairs. As of March 29, 2018, the Board of Directors consists of nine members (including two representative directors, five inside directors, and

two outside directors). To achieve clarity of management responsibility and develop a flexible management system capable of responding to changes in the business environment, our group has shortened the term of Directors to one year. Regular Board of Directors meetings are held monthly, and extraordinary Board of Directors meetings are held when necessary. In addition, at the budget meeting held once a year, the Board of Directors monitors management by hearing explanations directly from the respective executive officers about the business outcomes of the current fiscal year and the budget of the next fiscal year.

We have disclosed the reasons for the appointment of each director in the Notice of the 99th General Meeting of Shareholders (held on March 29, 2018), which is available on our website. (http://www.neg.co.jp/uploads/sites/2/201803_99_en.pdf).

Diagram of Corporate Governance System (as of March 29, 2018)



Board of Corporate Auditors

Our group adopts a corporate auditor system. As of March 29, 2018, the Board of Corporate Auditors consists of four Corporate Auditors, two of whom are outside Corporate Auditors. Corporate Auditors conduct audits of the Directors' execution of their duties through assessing business affairs and corporate assets and setting important audit issues according to auditing policies, plans, and assignment of duties established by the Board of Corporate Auditors. They also participate in Board of Directors meetings. Meetings of the Board of Corporate Auditors are held monthly in principle, and Corporate Auditors share information and exchange opinions at these meetings. Corporate Auditors endeavor to improve the effectiveness of their audits by deepening their understanding about the company's business operations. For this purpose, the Corporate Auditors take various measures, such as attending the annual budget meeting and periodically questioning Directors and Executive Officers about their duties and handling of business affairs.

Management Committee

The Management Committee deliberates on our company's important managerial affairs and draws up detailed action plans regarding the decisions made at the Board of Directors meetings. Management Committee meetings are held twice a month and when deemed necessary.

Executive Officers

Our group adopts an executive officer system to promote faster decision making, ensure managerial transparency, and enhance the execution of business affairs. As of March 29, 2018, there are 20 Executive Officers (five of whom are directors). The President is responsible for execution of duties and the other Executive Officers execute the duties assigned to them by the President. Each Executive Officer serves for a term of one year.

Attendance of Board of Directors and Board of Corporate Auditors Meetings in Fiscal 2017

	Name	Board of Directors	Board of Corporate Auditors
Representative Directors	Masayuki Arioka	14/14 meetings (100%)	—
	Motoharu Matsumoto	14/14 meetings (100%)	—
Directors	Hirokazu Takeuchi	14/14 meetings (100%)	—
	Masahiro Tomamoto	14/14 meetings (100%)	—
	Akihisa Saeki	14/14 meetings (100%)	—
	Koichi Tsuda	14/14 meetings (100%)	—
	Hiroki Yamazaki	14/14 meetings (100%)	—
Outside Directors	Sumimaru Odano	14/14 meetings (100%)	—
	Shuichi Mori	14/14 meetings (100%)	—
Full-time Corporate Auditors	Fujio Kishi	14/14 meetings (100%)	13/13 meetings (100%)
	Masahiko Ohji	14/14 meetings (100%)	13/13 meetings (100%)
Outside Corporate Auditors	Kazuya Ishii	14/14 meetings (100%)	13/13 meetings (100%)
	Keijiro Kimura	14/14 meetings (100%)	13/13 meetings (100%)

Outside Directors and Corporate Auditors

As of March 29, 2018, there are two outside Directors and two outside Corporate Auditors within our company.

One of the outside Directors is an economist who has expertise and broad experience in the field of global economics. The other outside Director has a long track record in corporate management, and vast knowledge and experience in that area. The outside Directors provide objective advice and professional opinions at Board of Directors meetings. Their appointments further strengthen management supervisory functions.

Outside Corporate Auditors consist of one attorney at law and one certified accountant and tax accountant, who are both independent from the company and are highly experienced in their respective fields. They proactively perform their auditing duties and reinforce supervisory functions.

When hiring outside Directors and Corporate Auditors, we base our selection on whether candidates satisfy requirements set for independent directors/corporate auditors in accordance with the Tokyo Stock Exchange's rules and regulations. At the same time, we also take into account the importance of avoiding any risks or conflicts of interest with our general shareholders. We have registered all our outside executives as independent directors/corporate auditors with the Tokyo Stock Exchange.

Analysis and Evaluation of the Effectiveness of the Board of Directors

We asked all our Directors to respond to a questionnaire to investigate the effectiveness of the Board of Directors. We found that the Board of Directors is viable and functioning effectively. We will continue to conduct such surveys to rate the Board's effectiveness and ensure that deliberations are effectively conducted at Board of Directors meetings.

Policy on Deciding Directors' and Corporate Auditors' Remuneration

Remuneration is paid to inside Directors on a monthly salary and bonus basis, and to outside Directors and Corporate Auditors on a monthly salary basis. The amount paid to each Director or Corporate Auditor is decided in accordance with their job description, level of responsibility, and performance within the total amount limits set in the shareholders meeting. The total amount of Directors' and Corporate Auditors' remuneration for the fiscal year ending December 2017 is as follows:

Category	Total amount of remuneration (millions of yen)	Total amount for each type of remuneration (millions of yen)				Number of eligible Board Members
		Base remuneration	Stock option	Bonuses	Retirement benefits	
Directors (outside Directors excluded)	317	237	—	80	—	7
Corporate Auditors (outside Corporate Auditors excluded)	41	41	—	—	—	2
Outside Directors and Corporate Auditors	25	25	—	—	—	4

To maintain public trust and to achieve sustainable growth, every employee and executive of our group is expected to comply with laws and international rules, and consistently act in accordance with our organization's high ethical standards.

Compliance System

We have a compliance committee, a specialized organization that makes sure all of our group employees are informed to ensure their compliance with laws and corporate ethical standards. The committee is responsible for the following activities:

- Drafting revisions to the Corporate Philosophy, Group Code of Conduct, and Principle of Activities
- Collecting and analyzing information on compliance and providing compliance training
- Installing and managing an internal reporting system (NEG Hotline)

Compliance Program

Group Code of Conduct and Principle of Activities

To ensure that all employees are informed on compliance matters, we have established the Group Code of Conduct and Principle of Activities. Wallet-sized cards printed with the Corporate Philosophy Structure, Code of Conduct, Principle of Activities, and an introduction to the NEG Hotline are distributed to employees of our group.

NEGグループ企業行動憲章 ～誠実な行動～	
<p>1. お得意先第一 ○お得意先のご要望を理解し、そのご要望にどこまでもお応えします。 ○社会に役立ち、かつ安全でお得意先の満足と信頼を得られる製品を提供します。 ○新たな技術開発に挑戦し、文明の進歩と豊かな未来に寄与します。</p> <p>2. 達成への執念 ○執念をもって課題を成し遂げます。</p> <p>3. 自由闊達 ○前例にとらわれない自由な発想と、部門や世代にとらわれない自由な発言を尊重します。</p> <p>4. 高い倫理観 ○内外の法令、国際ルールを遵守し、常に高い倫理観をもって誠実に行動します。 ○政治、行政との健全かつ正常な関係を保ち、反社会的勢力、団体には毅然と対応します。 ○公正、透明、自由な競争、適正な取引を行います。 ○会社資産を適正、確実に管理します。</p>	<p>5. 自然との共生 ○自然と共存することを常に意識し、企業活動に伴う環境負荷の低減に努めます。 ○地球環境の保全と循環型社会の実現に寄与します。</p> <p>6. 社会貢献 ○健全な企業活動を通して利益を生み出し、社会の持続的発展に貢献します。 ○企業活動を行う国や地域社会の文化を尊重し、良き企業市民として行動します。</p> <p>7. 人権尊重 ○人権を尊重し、差別的取り扱い、児童労働、強制労働を認めません。 ○安全で、従業員一人ひとりが十分に能力を発揮できる環境を確保します。</p> <p>8. 情報発信 ○適時、適切に、必要な企業情報を開示するとともに、広く関係先とのコミュニケーションを図ります。</p> <p style="text-align: right;">以上</p> <p style="text-align: right;">1998年 8月1日制定 2006年 2月1日改訂 2015年12月1日改訂</p>

Internal Whistleblowing System

An internal whistleblowing system called NEG Hotline has been installed. Its purpose is to prevent any illegal violations, wrongdoings, or unethical acts and to promote early detection and quick resolution should such acts occur. We have established two consultation hotlines, one that connects employees to the compliance committee (internal contact point) and another that connects to an attorney's office (outside contact point). The intended users of this system are regular employees, fixed-term employees, advisers, contract employees, temp staff, and part-time employees of our group; executives, regular employees, contract employees, temp staff, and part-time employees of our domestic subsidiaries; and employees of our business partners. The confidentiality of the informants is strictly protected at both contact points, so that no unfair treatment will occur.

**会社とあなたを守る
「NEGほっとライン」**

**コンプライアンス強化月間
2017年10月1日～31日**

日本電気硝子株式会社 コンプライアンス委員会

Poster for Compliance Awareness Month

Ensuring Compliance

To raise compliance awareness (for example, for high ethical standards and respect for human rights) throughout our group, each year we carry out compliance training as a part of an education program for newly hired employees and antitrust seminars for employees engaged in sales activities. We also ensure awareness among management by holding workshops for directors and executive officers. At these sessions, participants take the opportunity to discuss themes such as governance and compliance.

In addition, we have designated October as the month for strengthening compliance. We conduct compliance-related lectures and workshops throughout our group companies both in Japan and overseas, and also put up compliance awareness posters throughout our facilities. Moreover, we ask all executives and employees in Japan and overseas to provide us with signed declarations promising that they will abide by the Group Code of Conduct. This gives them the opportunity to reflect on how they carry out their work in terms of compliance. Thanks to these efforts, no affairs subject to legal actions, such as bribery, anticompetitive acts, or other violations occurred in fiscal 2017.



Compliance lecture at the Otsu Plant



Compliance workshop at Electric Glass Fiber America

Compliance Education, Workshops, and Lectures Held in Fiscal 2017

	Type	Intended Persons	No. of Times	No. of Participants	Themes
Japan	Education for new employees	All new employees	1	33	<ul style="list-style-type: none"> • Corporate Philosophy, Group Code of Conduct, Principle of Activities • What is compliance? • Antitrust laws • Internal whistleblowing system • Case studies, etc.
	Workshop	Managers at our company and domestic subsidiaries (Participants shall inform other employees in their workplace of the content.)	5	161	<ul style="list-style-type: none"> • Other company cases • Leak of personal information • Sexual harassment • Overtime work • Internal whistleblowing system, etc.
	Lecture	Executives and department managers at our company, representatives of domestic subsidiaries, district managers	1	44	Important points on compliance and risk management seen in corporate scandals
	Antitrust seminar for sales departments	All employees of our company engaged in sales activities	10	76	<ul style="list-style-type: none"> • Antitrust laws • Current status and cases in each country • Important points
Overseas	Workshop	Managers at subsidiaries in Europe, the U.S., and Malaysia	7	271	<ul style="list-style-type: none"> • Corporate Philosophy, Group Code of Conduct, Principle of Activities • Antitrust laws • Bribery • Protection of personal information, etc.



BCP response training

Implementing BCP

To be prepared for disasters such as earthquakes, typhoons, floods, and fires, we created a disaster management manual based on the company's disaster preparedness regulations, and we carry out emergency drills periodically. In the wake of the 2011 Great East Japan Earthquake, we reviewed our disaster management measures and implemented seismic reinforcement to our buildings, production facilities, and equipment.

In 2015, we began using Business Continuity Planning (BCP), which replaced the previous disaster preparedness regulations. To facilitate the processes necessary for BCP, a manual providing information on detailed preparation procedures and actions that should be taken when an emergency or disaster strikes was created. In accordance with the implementation of BCP, we have also introduced a system that will efficiently confirm the whereabouts of all domestic employees and their families in case of an emergency. Moreover, in order to resume production and

continue to supply our customers in the aftermath of a disaster, we are working to strengthen our risk management system of procurement.

In 2017, we reviewed BCP-related regulations and manuals for each of the divisions, which were formulated in the past, and revised them as needed. In September 2017, we conducted BCP response training in which the President acted as director of the disaster control center.

Basic Policy of BCP

- 1.To protect each employee and their families and to secure their safety.
- 2.To protect production equipment, to prevent the spread of damage as well as secondary disasters from occurring within the company and the adjacent communities, and to help with rescue efforts
- 3.To resume providing clients with products and services as rapidly as possible.

Risk Management

Our group reviews business risks on a periodic basis, based on our policy on internal control, and takes the necessary steps to manage such risks. In cases involving any business risks that are deemed significant,

responsible divisions or specialized committees formulate regulations and guidelines, conduct training, prepare manuals, and undertake additional activities as deemed necessary.

Business Risks

Risk	Description
1. Drastic changes in demand and market structure	Contracted demand for existing products due to technological innovation, or fluctuation of price or supply of products due to intensified competition.
2. Capital expenditure risks	Significant change in demand forecast, shortage of plant capacity, sudden change in price of major equipment or materials.
3. Risks related to certain products	Change in investment or sales plan or material procurement policy of our major customers.
4. Risks related to procurement of materials and other items	Tight supply or delay of special raw materials or materials whose suppliers are limited, or escalating price of such materials.
5. Risks related to legal restrictions	Violation of the laws or regulations of the country or region where we operate.
6. Risks related to intellectual property rights	A litigation related to intellectual property rights.
7. Environmental risks	A shift to stricter environmental regulations, or more corporate responsibilities related to the environment demanded by society.
8. Risks related to fluctuations in exchange and interest rates	Change in exchange or securities market, or interest rate environment.
9. Risks related to overseas business operations	Unanticipated change in laws or regulations, international tax risk, particular trade practices, change in political or social conditions, social turmoil due to terrorism or war, or others.
10. Securing human resources	Difficulty in securing human resources appropriate for future business.
11. Impairment accounting for fixed assets	Occurrence of impairment loss of fixed assets due to the impact of business profitability or market trends.
12. Risks related to information management	A filed claim for damages due to the leak of confidential information, which our group obtained in the course of business; tarnished corporate reputation due to such problems; or a decline in competitiveness due to a leak of information on newly developed technology.
13. Risks related to natural disasters and accidents	Delay of production or shipment caused by natural disasters (such as earthquakes or typhoons), fires, or other accidents; and repair costs for damage to facilities caused by such disasters.

Directors, Corporate Auditors, Executive Officers

Directors



Chairman of the Board (Representative Director)
Masayuki Arioka

Apr. 1978 Joined Nippon Electric Glass
Mar. 1997 Appointed as General Manager of Glass Fiber Division, Production
Jun. 1999 Appointed as Director (incumbent)
Jun. 2002 Appointed as Vice President
Jun. 2004 Appointed as Senior Vice President
Apr. 2008 Appointed as Executive Vice President
Jun. 2009 Appointed as President
Mar. 2015 Appointed as Chairman of the Board (incumbent)



President (Representative Director)
Motoharu Matsumoto

Apr. 1982 Joined Nippon Electric Glass
Jun. 2003 Appointed as CEO of Technoglass Inc.
Feb. 2005 Appointed as General Manager of Accounting Division
Apr. 2008 Appointed as Vice President
Jun. 2011 Appointed as Director (incumbent) and Senior Vice President
Apr. 2013 Appointed as Executive Vice President
Mar. 2015 Appointed as President (incumbent)



Director and Executive Vice President
Hirokazu Takeuchi

Apr. 1982 Joined Nippon Electric Glass
Apr. 2010 Appointed as Vice President and Group General Manager of Electronic Products Group
Jun. 2013 Appointed as Director (incumbent) and Senior Vice President
Jan. 2016 Appointed as Group General Manager of Glass Fiber Group (incumbent)
Jan. 2017 Appointed as Executive Vice President (incumbent)



Director and Senior Vice President
Masahiro Tomamoto

Apr. 1978 Joined Nippon Electric Glass
Apr. 2009 Appointed as Vice President and General Manager of LCD Glass Division, Production
Apr. 2012 Appointed as Group Deputy General Manager of LCD Glass Group
Jun. 2013 Appointed as Director (incumbent) and Senior Vice President (incumbent)
Apr. 2014 Appointed as Group General Manager of Corporate Engineering Group (incumbent)



Director and Senior Vice President
Akihisa Saeki

Apr. 1982 Joined Nippon Electric Glass
Apr. 2012 Appointed as Vice President and General Manager of LCD Glass Division, Production
Oct. 2013 Appointed as General Manager of Display Glass Division, Production
Jun. 2014 Appointed as Director (incumbent) and Senior Vice President (incumbent)
Mar. 2015 Appointed as Group General Manager of Display Glass Group (incumbent)



Director and Senior Vice President
Koichi Tsuda

Apr. 1982 Joined Nippon Electric Glass
Apr. 2011 Appointed as Vice President and General Manager of Administrative Division
Mar. 2015 Appointed as Director (incumbent) and Senior Vice President (incumbent)



Director and Senior Vice President
Hiroki Yamazaki

Apr. 1984 Joined Nippon Electric Glass
Oct. 2006 Appointed as General Manager of Technical Division
Apr. 2011 Appointed as Vice President
Jan. 2016 Appointed as Group General Manager of Corporate Technology Group (incumbent)
Mar. 2016 Appointed as Director (incumbent) and Senior Vice President (incumbent)



Outside Director (Independent Director)
Sumimaru Odano

Apr. 2000 Became Professor, Faculty of Economics, Shiga University
Apr. 2003 Appointed as Director of Center for Risk Research, Faculty of Economics, Shiga University
Apr. 2011 Became Emeritus Professor (incumbent) and Specially Appointed Professor of Faculty of Economics, Shiga University
Mar. 2015 Appointed as outside Director of Nippon Electric Glass (incumbent)
Nov. 2017 Appointed as Director of KEA Institute Co., Ltd. (incumbent)



Outside Director (Independent Director)
Shuichi Mori

Apr. 1972 Joined Sumitomo Corp.
Jun. 2008 Appointed as Executive Vice President (Representative Director) of Sumitomo
Mar. 2011 Left Sumitomo
Mar. 2011 Appointed as President (Representative Director) of Jupiter Telecommunications Co., Ltd.
Jan. 2014 Appointed as Chairman (Representative Director) of Jupiter Telecommunications
Left Jupiter Telecommunications
Jun. 2015 Appointed as outside Director of Nippon Electric Glass (incumbent)
Mar. 2016 Appointed as outside Director of Tokai Cable Network (incumbent)
Jun. 2017

Executive Officers

Shigeru Goto
Glass Fiber Business (USA Operations)

Kiyohide Takeuchi
Electric Glass Building Materials Co., Ltd.

Haruki Matsumiya
Engineering, Plant Engineering

Masashi Takahata
Consumer Glass Products Business (Sales)

Toshimasa Kanai
Thin Film Business

Kunihiro Nakagawa
Electronic Products Business (Sales)

Tomonori Kano
Display Glass Business (Production)

Takuo Horiuchi
Display Glass Business (Sales)

Akira Kishimoto
Consumer Glass Products Business

Hiroaki Nomura
Glass Fiber Business (Sales), Sales Management

Masaaki Kadomi
Technology

Masahiro Kobayashi
Electronic Products Business

Norio Nakamura
Glass Fiber Business (Production)

Masaya Kubo
Nippon Electric Glass (Malaysia) Sdn. Bhd.

Mamoru Morii
Accounting, Purchasing

Corporate Auditors



Full-time
Fujio Kishi

Apr. 1978 Joined Nippon Electric Glass
Mar. 2006 Appointed as General Manager of Tokyo Branch Office
Jun. 2011 Appointed as full-time Corporate Auditor (incumbent)



Full-time
Masahiko Ohji

Apr. 1982 Joined Nippon Electric Glass
Oct. 2010 Appointed as General Manager of Development Division
Jan. 2015 Appointed as Special Assistant to President
Mar. 2015 Appointed as full-time Corporate Auditor (incumbent)



Outside Corporate Auditor (Independent Corporate Auditor)
Keijiro Kimura

Apr. 1987 Registered as attorney at law and joined Showa Law Office
Jan. 1994 Registered with New York State Bar Association, U.S.
May 1998 Established Kyohei Law Office
Apr. 2013 Became Representative Partner of Kyohei Law Office (incumbent)
Mar. 2015 Appointed as outside Corporate Auditor of Nippon Electric Glass (incumbent)



Outside Corporate Auditor (Independent Corporate Auditor)
Katsuhiro Matsui

Oct. 1990 Joined Showa Ota Audit Corporation (now Ernst & Young ShinNihon LLC)
Aug. 1994 Registered as certified public accountant
Oct. 2010 Left Ernst & Young ShinNihon
Nov. 2010 Registered as certified tax accountant, established Matsui-jicpa (incumbent)
May 2011 Became Representative Partner of Sakura Horwath LLC (incumbent)
Mar. 2018 Appointed as outside Corporate Auditor of Nippon Electric Glass (incumbent)

Messages from Outside Directors

Corporate governance at Nippon Electric Glass gets its strength from management's careful assessment of proprietary technologies and the current business environment of the group, and from its teamwork in maintaining and improving the group's trust and reliability. Open discussions at Board of Directors meetings are also an advantage. Moreover, outside Directors receive detailed reports about the Management Committee meetings and also have meetings with Vice Presidents on a regular basis, which allow them to grasp the current situation before attending Management Committee meetings.

As an outside Director, I keep myself detached from decision-making and focus on how well the internal organizational structure is working toward the continuous improvement of company value. I also check whether appropriate consideration is being given to corporate social responsibility. In addition, since information asymmetry exists between management and other stakeholders, I also monitor whether sufficient information disclosure and the company's transparency policies help ease such an imbalance.

Given the rapidly changing business environment, I think that global business expansion of the group is inevitable. At the same time, technological innovation and the development and securing of human resources are high-priority issues for the long-term sustainable growth of the group. As a specialist on international economy, I attend Board of Directors meetings with an intense interest in strengthening the management and strategy of the group with the aim of making it a well-balanced international enterprise.

Sumimaru Odano

For about 12 years from 1982 when I was working for Sumitomo Corporation, I was involved in exporting Nippon Electric Glass' CRT glass manufacturing facilities to China.

The managerial characteristics of the group, which have remained strong from that time, include:

- (1) placing the highest priority on investing managerial resources in the advancement of technology and development of new products;
- (2) practicing solid management while at the same time making bold decisions, such as making a major switch from CRT glass to FPD glass and the large-scale acquisitions of European and U.S. glass fiber businesses;
- (3) excellent foresight and high ethical standards of the group's successive Presidents; and
- (4) the underlying strengths of production sites and human resources, which are the driving force behind the success and sustainability of the group.

Amid the worldwide expansion of the group's business, as an outside Director, I'm monitoring whether personnel necessary for business growth are appropriately allocated and managerial decision-making is made based on the prescribed procedures. I carry out my duties using a wide range of knowledge regarding overseas business, which I accumulated while working for Sumitomo and the experiences and perspectives as a company executive. I try to provide the management with expert and professional advice from an objective point of view.

Shuichi Mori

We will contribute to realizing a sustainable society by working on three priority themes: the Environment, Diversity and Inclusion, and Community Contribution.

The History and Themes of Our CSR Activities

Our work on pollution problems at our Fujisawa Plant in the early 1970s taught us to undertake environmental conservation as an issue crucial to the sustainability of our operations. A particular characteristic of special glass manufacturers is the consumption of large amounts of energy and resources, and the emission of carbon dioxide. Accordingly, environmental conservation continues to be an issue of the utmost importance for our group. At the same time, we have engaged in contribution to the community mainly by assisting with the education of local human resources and through active involvement in employment of the disabled. Based on this historical background, and in order to further advance our CSR activities, we have established a “way of thinking” that forms the foundation of these activities, which we have set forth in our CSR priority themes.

Our Fundamental Way of Thinking Regarding CSR

CSR is a key area in our corporate activities and cannot exist separate from our corporate philosophy structure. Accordingly, we carry out our CSR activities in accordance with the intention of our corporate philosophy structure and, through the implementation of CSR activities, we aim to raise our corporate value and realize a sustainable society. We have established both of these approaches as our fundamental way of thinking in regard to CSR.

Our Way of Thinking on CSR

We promote CSR with our corporate philosophy structure as the basic principles. Through our CSR activities we will raise our corporate value and realize a sustainable society.

Three Priority Themes

We have established the Environment, Diversity and Inclusion, and Community Contribution as the three priority themes of our CSR. These themes have a strong association with the priority issues that we have focused on so far (environmental conservation, community contribution, employment of the disabled). We have reconfirmed the background and importance of these three themes and have clarified the future direction for scaling up our initiatives on a broader scale. In addition, we will place emphasis on these themes, as we believe they are directly linked to the United Nations’ Sustainable Development Goals (SDGs).

Environment

Environmental conservation is a duty for a company like ours whose operations incur a high environmental burden, so we advocate “consideration for the environment” and “efficient manufacturing processes lead to environment-friendly manufacturing.” Furthermore, we maintain the attitude that it is unthinkable for our operational activities to not include environmental conservation activities.

Diversity and Inclusion

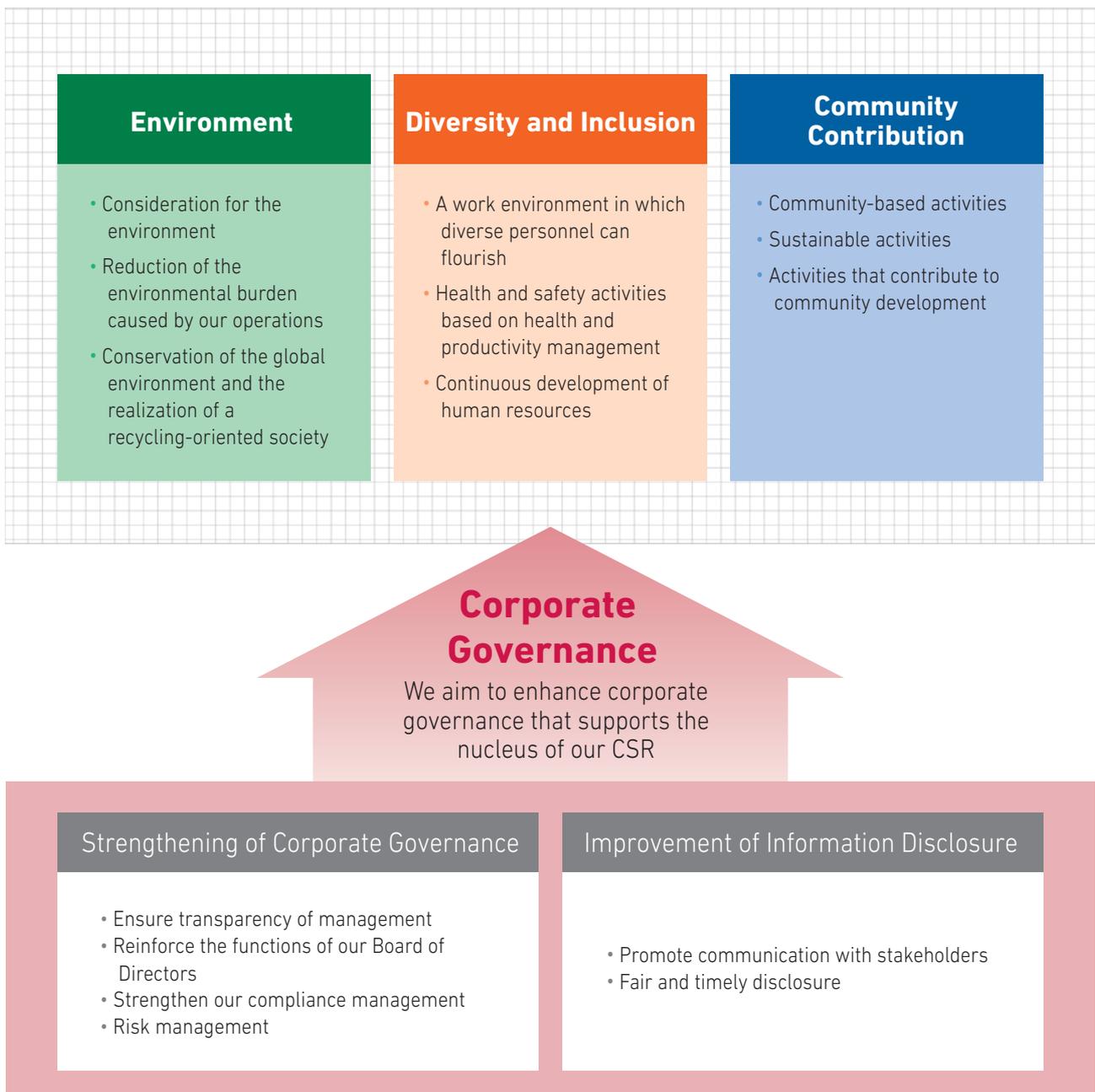
The basis of our thinking on Diversity and Inclusion is that the integrated strength of personnel with diverse backgrounds and values—whether in terms of gender, race, or so on—is the driving force behind corporate growth. Of course, employment of the disabled is also included in this theme. At the same time, we will do our utmost for all these employees by providing personnel training and maintaining a safe and healthy working environment for them.

Community Contribution

A good relationship with the community is essential for sustainable business. Therefore, we believe it is important to engage with local communities to gain their trust and appreciation. We will continue to actively participate in local activities, and also provide support for the disadvantaged and for human resource development in the communities we serve.

The Basic Policy of Our Priority Themes

In order to further clarify the direction of our CSR activities, we have determined a basic policy regarding our priority themes. Furthermore, we have identified corporate governance as what supports the nucleus of CSR and positioned it within the framework of our CSR.



By designating our basic CSR policy to include our way of thinking on CSR and the three priority themes, and by proactively promoting CSR activities even more than before, we aim to realize a sustainable society and to improve our corporate value.

With consideration for the environment as one of our key values, we will continue to manufacture products in an environmentally friendly way.

Our Way of Thinking on Environmental Conservation

We hold consideration for the environment as an important value and have always been conscious of our coexistence with nature through our operations. Furthermore, we have managed our business based on the belief that practicing the world's most efficient manufacturing process is, in fact, the key to realizing the world's most environment-friendly manufacturing. Against this backdrop, we endeavor to not only reduce our burden on the environment, but also tackle various issues, including sustainable development and conservation of biodiversity. The Environmental Charter is our fundamental policy on the environment and sets forth the direction we need to follow in enacting our initiatives for environmental conservation. In accordance with our Environmental Charter, through our glass business, and together with our group companies, we will continue to be instrumental in helping to preserve the global environment and realize a recycling-oriented society.

Motoharu Matsumoto, President



Environmental Charter

Environmental Principles

Preservation of the global environment is extremely important and indispensable for the prosperity of civilization and humanity in the 21st century. Nippon Electric Glass, upholding the Corporate Philosophy of "To build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing" and adhering to "consideration for the environment" as one of its essential corporate values, strives to be and remain the world's leading manufacturer of special glass by ensuring the state-of-the-art technological development, the highest quality standards, efficient production, and steady product supply. Nippon Electric Glass and its group companies are committed to contributing to the preservation of the global environment and realization of a recycling-based society by adopting high-efficiency and environmentally responsible processes.

Action Plan

1. We will honor and observe all environment-related laws and regulations and the environment-related agreements and conventions that we have signed, and establish and enforce our own and voluntary environmental restrictions.
2. We will endeavor to reduce our environmental impact in all aspects of our corporate activities and in all stages of the product life cycle, including procurement, manufacturing, transportation, sales, use, reuse, treatment, and disposal.
3. We will attain the world's highest-level manufacturing to more effectively utilize natural resources and energy sources, thereby contributing to preservation of biodiversity and reduction of greenhouse gas emissions.
4. We will strive to adapt our activities to the requirements of 21st-century society to prevent pollution, thereby optimizing our presence in society.
5. We will set environmental objectives and targets and attain them through optimization of our essential operations and environmental protection activities in which all employees participate. We will also continuously improve our environmental management system to enhance our environmental protection performance.

This Charter will be informed to all employees and affiliated companies, and will be made available to parties outside the Company at their request.

Promoting the Environmental Management Plan

In fiscal 2017, in order to improve environmental performance, all domestic plants set 38 objectives, of which 33 were attained. A total of 36 objectives have been set for fiscal 2018. The topics we are working on are directly connected to our essential operations and to priority issues.

ISO 14001 Certification Status

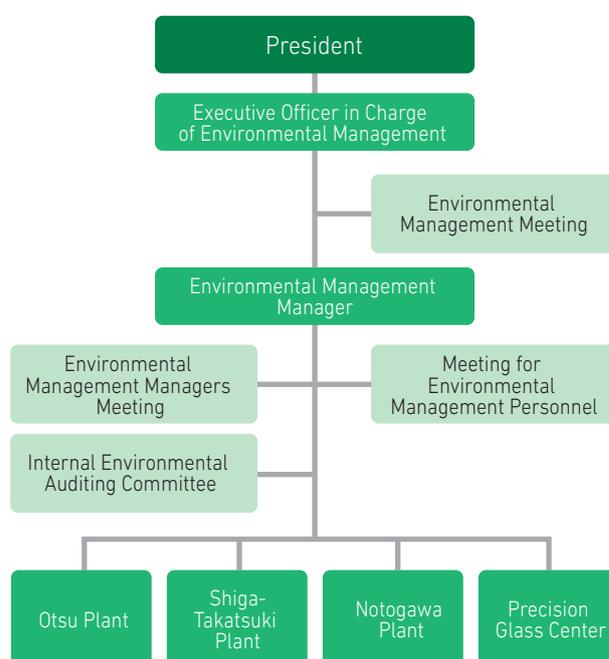
Adapting to New ISO 14001:2015 Standards

The international environmental standard ISO 14001 was revised in 2015 in order to ensure the efficacy of ISO application. From January 2017 we implemented a new Environmental Management System (EMS), which incorporates the new standard and, after undergoing the auditing process, we received accreditation renewal in August 2017.

ISO 14001 Certification Status of Our Group

Company name	Date of certification
Nippon Electric Glass Co., Ltd. (multi-certification at four plants)	Aug. 27, 1999
Group companies	Date of certification
Japan	
SGS Engineering Co., Ltd.	Jan. 19, 2001
Nichiden Glass Processing Company, Limited	Nov. 1, 2002
Shiga Nichiman Company, Limited	Feb. 15, 2013
Overseas	
Techneglas LLC	Jan. 31, 2000
Nippon Electric Glass (Malaysia) Sdn. Bhd.	Jan. 12, 2002
Nippon Electric Glass Taiwan Co., Ltd.	Sep. 18, 2006
Paju Electric Glass Co., Ltd.	Aug. 28, 2007
Nippon Electric Glass (Korea) Co., Ltd.	Oct. 9, 2007
Electric Glass (Shanghai) Co., Ltd.	Dec. 21, 2009
Electric Glass (Korea) Co., Ltd.	Dec. 9, 2014
Electric Glass (Guangzhou) Co., Ltd.	Nov. 11, 2015
Electric Glass (Xiamen) Co., Ltd.	Apr. 17, 2017
Electric Glass Fiber NL, B.V.	May 22, 2017

Environmental Management Activity Organization Chart



Environmental Management Meeting

The executive officer in charge of environmental management serves as chair, and the President and representatives of each operational department attend this meeting. Representatives from overseas subsidiaries also participate as necessary. Specific environmental conservation activities based on the President's environmental policies, performance reports, and promotion updates are shared. Deliberation on our group's environmental conservation activities is carried out at this meeting.

Environmental Education

As environment-related laws are revised and regulations are strengthened, it is necessary to accurately ascertain those changes in order to ensure legal compliance. In fiscal 2018 we plan to emphasize education of such laws.



Environmental Management Logo

This logo was created in June 1993 and it is used when making internal postings about our EMS activities and Environmental Charter. The design was selected from among internal suggestions. The green leaves represent environmental technology, nature, and the hands of our employees, while the blue circle depicts the sky and the earth, environmental equipment made by our employees, and the community and society surrounding us.

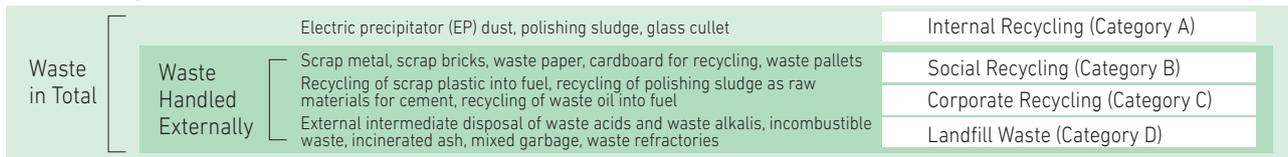
Environmental Business Plan

Our environmental business plan is an original activity that applies our operational management approach to environmental conservation activities. Waste, water, and exhaust gas are the main themes of the plan, under which we work to reduce environmental burdens that result from our glass production operations.

Waste Reduction

Since we began this activity in 2000, we have steadily decreased the amount of solid waste destined for landfill (Category D). Since 2009, the amount of solid waste destined for landfill disposal resulting from normal production activities at our facilities in Japan has been equivalent to 0.1% (or less) of the total weight of products sold. We are currently also actively reducing corporate recycling (Category C), which we outsource.

Waste Categories



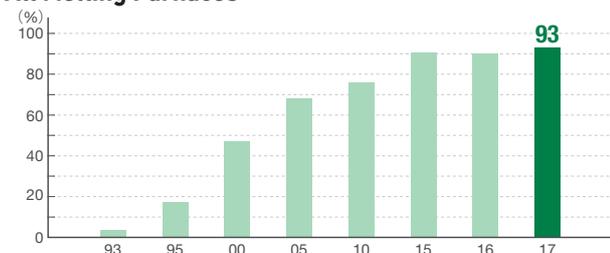
Our Global Warming Countermeasures

A significant amount of energy is used to melt glass. Therefore, we consider it our duty to further improve the energy efficiency of our melting furnaces.

Oxy-fuel Firing Glass Melting Furnaces

Compared to air combustion furnaces, oxy-fuel firing furnaces remove more excess nitrogen. This has reduced the amount of exhaust gas (exhaust heat) and consequently lowered fuel and energy consumption. It has also reduced emissions of CO₂ and thermal nitrogen oxides (NO_x). In 1993, we installed the first oxy-fuel firing glass melting furnace in Japan. This technology has now been installed in almost all of our furnaces.

Percentage of Oxy-fuel Firing Furnaces among All Melting Furnaces



Fuel Conversion in Glass Melting Furnaces

We have been switching to fuels with less environmental impact to operate our glass melting furnaces. We have switched from heavy oil to LPG and ultimately to LNG, thus reducing CO₂ emissions.

Water Reduction

We believe that the level of manufacturing is represented in the way water is used. Consequently, by managing our water usage we are increasing our understanding of the entire glass manufacturing process and further improving our process technology and equipment.

Reducing Evaporated Glass Components in Glass Melting Furnaces

The exhaust gas from melting furnaces contains evaporated components derived from the raw materials of glass production. These evaporated components can be recycled if captured. By combining the reduction of evaporation from melting furnaces and efficient capture of the evaporated components, we are applying best practices to improve our melting process and energy conservation technology.

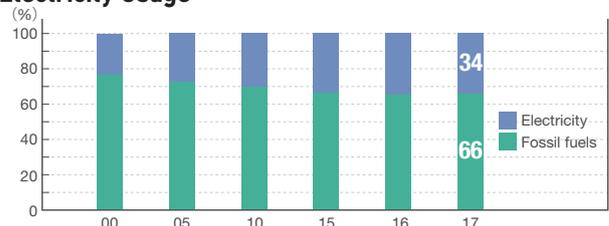
Fuel Conversion



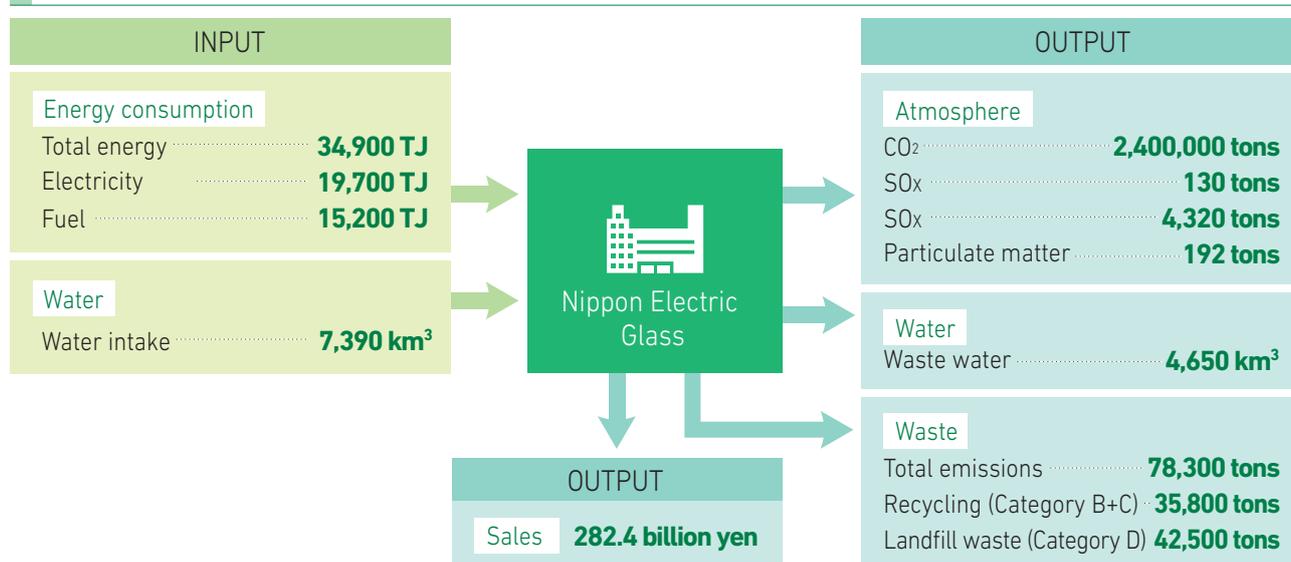
Increasing Electricity Usage in the Glass Melting Process

In the melting process, both gas and electricity are used. In electric heating, unlike that using gas fuel, electrodes are directly inserted into the molten glass, resulting in excellent thermal conductivity of the glass. Also, in heating with electricity, the amount of exhaust gas (exhaust heat) can be substantially reduced compared with that generated by heating with fossil fuels. Thus, if electricity usage is increased in percentage terms, energy savings and reductions in CO₂ emissions can be achieved. We are continuing with group-wide activities aimed at increasing electricity as an energy source used to melt glass.

Electricity Usage



Material Flow (fiscal 2017 consolidated basis)



Environmental Accounting

(Millions of yen)

Category	Main Activities	2016		2017			
		2016.1.1-2016.12.31		2017.1.1-2017.12.31			
		Investment	Expenses	Investment	Expenses		
(1) Costs within operational area	Costs to reduce environmental burden of production activities within operational area	Cost breakdown	① Anti-pollution maintenance and management costs	23	958	205	621
			② Global environmental conservation costs	-	1,244	1	1,532
			③ Resource recycling costs	14	2,474	67	2,195
(2) Upstream and downstream costs	Costs to reduce environmental burden of upstream and downstream production activities		-	336	-	312	
(3) Costs of management activities	Environmental conservation costs within management activities		4	1,156	4	1,542	
(4) Research and development costs	Environmental conservation costs of R&D activities		173	10	149	718	
(5) Costs for social initiatives	Environmental conservation costs of social initiatives		-	294	-	197	
(6) Environmental remediation costs	Costs to deal with damage to the environment		-	2	-	41	
Total			212	6,474	426	7,158	

Note: Regarding expenses and investment, only costs clearly arising directly from environmental concerns have been aggregated. In regard to production facilities and R&D, only sections related to the environment have been included.

(Millions of yen)

Item	Contents	2016	2017
Total investment	Scheduled repair of glass melting furnaces and production rationalization investment, investment to improve manufacturing productivity of major products	18,977	19,850
Total research and development costs	Development and improvement of process technology, and development of products, including FPD glass and glass for electronic devices	6,658	6,897
Proceeds from sales of valuable resources related to ③ of (1)	Sales of scrap metal, scrap bricks, etc.	10	18
Proceeds from sales of valuable resources related to (2)		0	0

We maintain a safe and healthy working environment for all employees and strive to develop competent human resources.

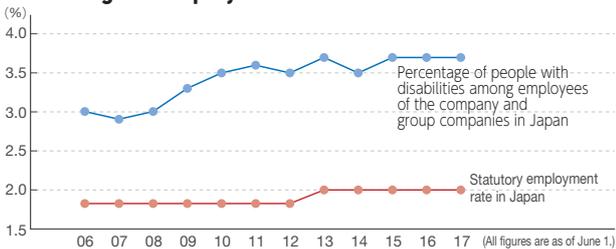
Recruitment and Workplace Environment Maintenance

In addition to our continued commitment to provide employment for the disabled, we also strive to cultivate a work environment in which the diverse backgrounds and values of employees—whether in terms of race, religion, gender, or gender identity—are respected and in which employee welfare and happiness is a priority.

Promoting Employment of People with Disabilities

In 1980, we established a special-purpose subsidiary aimed at employing people with disabilities. We were among the first six companies in Japan to do so. As of June 2017, our group had achieved a 3.7% employment rate for people with disabilities. We are now working to achieve our aim of a 4% employment rate for the disabled, which is double the statutory requirement.

Percentage of Employees with Disabilities



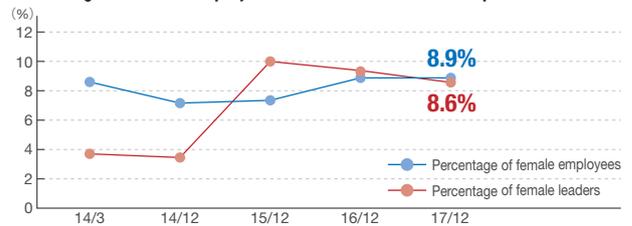
Women's Career Advancement

In May 2015, for the fourth consecutive year, we received the Kurumin accreditation mark under the Act on Advancement of Measures to Support Raising Next-Generation Children in Japan. Now, as we implement our Fifth Action Plan (see table below), we are also deciding on steps for our next action plan. By promoting diverse work styles and encouraging employees to take annual paid leave, we aim to gain accreditation under the stricter requirements of the Platinum Kurumin accreditation mark. Furthermore, via our Women's Empowerment Project, we hold events for employees to exchange information and opinions with staff at other firms. We are also working to nurture female leaders for positions in management.

Fifth Action Plan (Outline) (April 1, 2015 to March 31, 2018)

- Childcare leave
 Women: To achieve more than 75% utilization rate
 Men: To achieve more than 13% utilization rate of those whose spouse has given birth
- Introduction of system to allow diverse work styles
- Measures to reduce overtime work
- Promotion of use of annual paid leave
- Women's Empowerment Project

Percentage of Female Employees and Female Leaders in Japan (non-consolidated)

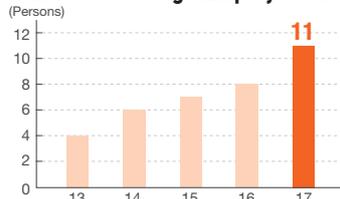


Note: A female leader is a female employee who oversees and manages subordinates. The percentage of female leaders is the number of female leaders divided by the total number of female employees in career-track positions.

Responding to Globalization

In order to respond to the rapid globalization of our operations, we are actively hiring foreign nationals and cultivating global personnel who can work effectively anywhere in the world. We are also improving group synergy via personnel exchange between Japan and overseas subsidiaries, and among some overseas subsidiaries. In the future, we are considering creating a global human resource system in order to gain even greater synergy.

Number of Foreign Employees in Japan (cumulative)



Global Meeting of Human Resource Division and Administrative Division

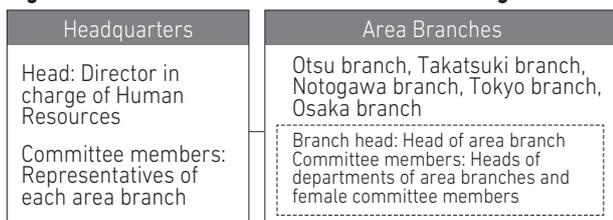
Human Rights Initiatives

In line with the spirit of our corporate philosophy structure, respect for human rights are set forth in our Code of Conduct and Principles of Activities. Led by our committee on human rights issues, we perform human rights training and participate in and dispatch executives to projects run by administrative and external groups. As a board member of a corporate coordination committee for human rights awareness in Shiga Prefecture, where our main operations are located, we play a leading role in the committee's activities.



Human rights training

Organization Chart of the Committee on Human Rights Issues



Health and Productivity Management

Since we believe that taking measures to improve the health of all employees leads to corporate growth, we are developing health and safety activities based on health and productivity management. We are also implementing work-style reforms.

Health and Safety

Regarding health and safety, under our Principles of Activities, we are committed to a policy of "safety is the top priority in our work, and we adhere to all health and safety rules and regulations."

Under our company-wide health and safety program, we follow an action policy that puts the mental and physical health of each employee at the foundation of our operational activities. Consequently, we aim to implement measures for the maintenance and improvement of employees' mental and physical health, for the creation of a vibrant working environment, and to thereby increase the creativity and productivity of the entire corporation. In addition to periodic workplace patrols, we also implement educational awareness campaigns, hazard prevention activities, and information sharing among all operational sites both in Japan and overseas, so that we can increase awareness of health and safety issues and achieve of our zero-accident benchmark. Furthermore, for all employees we have an EAP (Employee Assistance Program), mental health classes, and stress checks as part of our measures concerned with mental health.



Nippon Electric Glass (Taiwan) celebrates 1,000 days of zero accidents

Industrial accident frequency rate (non-consolidated)

Zero accidents for three consecutive years

Organization Chart of the Health and Safety Committee



Work-style Reforms

We started promoting work-style reforms in February 2017. By eliminating unnecessary and duplicated work through task inventory checks and maximizing use of IT, we have improved efficiency. These efforts have enabled us to reduce overtime work and increase the taking of paid leave. The benefits of these efforts have been returned to our employees via an expanded welfare program and a special, one-off bonus payment.

Main Initiatives

- Task inventory checks
- Active use of IT
- Conference reforms
- Usage of five consecutive days of leave
- Full implementation of no-overtime days
- Adoption of flexible work rules

Newly established systems (from February 2018)

- Work-at-home system
- Re-employment system

Number of Paid Leave Days Taken

	Days Taken	Percentage of Days Taken
Fiscal 2017	14.0	58%

Human Resource Development

In order to attain our goal of being the world's leading manufacturer of special glass, our human resources must also be the world's best. We help our employees to improve their skills by offering them study opportunities that include on-the-job training, level-specific training, global human resource training, manufacturing and technological training, and self-development programs.



Training Programs

Category	Items
Training based on level	New employee training, young employee training (5th year), mid-career employee training (10th year), managerial position training (new managers), mid-level management training, training for employees over the age of 50 (career development seminar, life plan seminar)
Global human resources	Global Communications Program (GCP), overseas training for newly hired administrative employees, language training (English, Chinese, and Korean)
Skill-based training	Intellectual property training, accounting seminars, Monozukuri College to provide and enhance knowledge on manufacturing
Others	Compliance training, information security training, self-development programs, seminar on "Unlimited Possibilities of Glass" for providing basic knowledge on glass

Community Contribution

We contribute to the development of local communities through initiatives based on activities rooted in those communities. Our main activities include local clean-ups, plant tours, educational support, and involvement in community events.

Supporting the Younger Generation

Academic-industrial Collaboration

We concluded a comprehensive university-industry collaboration agreement with the University of Shiga Prefecture in 2007. Based on that agreement, we have been collaborating with the university on a variety of ongoing projects which include the establishment of an endowment course, joint research and technological exchange on glass engineering, and supporting the development of tomorrow's leaders. In 2017, Chairman Arioka gave a lecture to students and faculty at the university on the topic "Learning from local industries and companies," which included a lively question and answer session.



Lecture by Chairman Arioka

Visiting Lessons

Every year, we co-sponsor and cooperate with Otsu City Science Museum in their IF (Innovation for the Future) Class program. We give visiting lessons to local elementary and junior high school students, in which they can learn about the characteristics and functions of glass, and also enjoy the experience of cutting glass. The lessons are popular with the students as a good opportunity to experience the fun of manufacturing and of making new discoveries about glass.



IF Class visiting lesson

Welcoming Visitors to Our Plants and the Showroom

We welcome local children, students, and neighborhood councils to visit our plants and showroom. This supports the development of the younger generation and deepens the community's understanding of our business activities. Aiming to enhance further understanding of our company, in 2017 we remodeled the showroom at our head office so that it is easy to see how our glass is used in end-market products.



Local high school students visiting Electric Glass Fiber UK



Students of East China University of Science and Technology visiting Electric Glass (Shanghai)



Remodeling of the head office showroom

Coexistence with Local Communities

To strengthen our ties with local communities, we carry out volunteer activities such as cleaning and planting greenery, host various events to which we invite local residents, and hold donation and support activities. In 2017, we donated to the refurbishment of Shiga Prefecture's Lake Biwa Museum. To help in the environmental conservation of the lake, we held a fishing tournament to catch and remove non-native fish. Many of our employees participated in the event.

Photographs of Main Events and Support Activities



Donation to the refurbishment of Lake Biwa Museum (a certificate of appreciation is awarded)



Fishing tournament at Lake Biwa to remove non-native fish, Otsu Plant



Children playing in Takatsuki Industrial Park (a park managed by Shiga-Takatsuki Plant that is free to use)



A summer festival to which we invited local residents, Otsu Plant



Cleaning around the plant on China's Environment Day, Electric Glass (Guangzhou)



Participating in a year-end kimchi-pickling volunteer event for local senior citizens, Electric Glass (Korea)

We will continue working to enhance our corporate value by maintaining active communication with various stakeholders.

We declare in our Group Code of Conduct that we disclose necessary corporate information in a timely and appropriate manner, and communicate on a broad basis with stakeholders. To enhance our corporate value, we strive to maintain active communication and deepen mutual understanding with various stakeholders.

Communicating with Shareholders and Investors

General Meeting of Shareholders

On March 30, 2017, the 98th general meeting of shareholders was held in the conference room at our head office. Following a report on the fiscal year results and our EGP2018 medium-term business plan, our management responded in a sincere manner to issues raised by our shareholders.



The 98th general meeting of shareholders

Communicating with Investors

We communicate with institutional investors, both in Japan and overseas, by way of various activities, including interviews, teleconferences, financial results briefing sessions, and participation in IR-related events organized by securities firms. The opinions and requests that we received from investors are fed back to our management and utilized to help improve our investor relations activities.

Fiscal 2017 Results

Total number of dialogues carried out:

162 companies

Information Disclosure Tools

We ensure prompt disclosure of information through use of the Tokyo Stock Exchange's Timely Disclosure Network (TDnet) and by posting information on our website in a timely fashion. Furthermore, we make active use of news

releases and web pages to present information that we believe will assist our stakeholders to gain a better understanding of our group. Such information is also disclosed in a prompt, appropriate, and fair manner.



Cooperation with External Evaluation Agencies

We have received questionnaires from CDP, an international NGO, titled "CDP Climate Change" and "CDP Water" and are preparing disclosure of our initiatives in those fields.

Communicating with Customers

The principle of "customer first" is a key value in our corporate philosophy structure. Under the management policy that forms the basic principle of our business operations, we are also committed to being the world's best for customer satisfaction, and we aim to further improve customer satisfaction as we supply safe, reliable, and high-quality products.

Product Safety Management Committee

We are carrying out activities to ensure the safety of our products. We have established internal rules for the promotion of product safety and set up a product safety management committee. A committee member is elected from each business operation group that is involved in product manufacture and sales, and from corporate divisions in charge of development in technology and engineering.

Product Safety Management Committee Initiatives

- Exchange of information beneficial to product safety activities
- Consideration of issues related to product safety activities that should be examined by the group as a whole
- Requesting reports from each department on the situation of their product safety activities and checking of those reports
- Interdepartmental sharing of information on measures to conform with various laws and regulations related to product safety

Quality Assurance

Each business operation group that is involved in product manufacture and sales conducts product quality assurance. Those activities center on quality control and quality assurance procedures based on a quality management system that originates from ISO9001.

Participation in Exhibitions

Aiming to communicate with as many customers as possible and also to create business opportunities, we participate in many exhibitions every year both in Japan and overseas.



JEC World 2017

Communicating with Business Partners

Basic Procurement Policy and Request to Our Business Partners

Under the basic procurement policy that we have established, we seek to build up reliable relationships with business partners in Japan and overseas who can provide us with products and services of superior quality and price competitiveness. In order to enhance the performance and efficiency of the entire supply chain, we ask our business partners to work to improve their competitiveness and to comply with laws and regulations.

Basic Procurement Policy

- 1) Open and fair business dealings
- 2) Harmonious mutual prosperity with partners
- 3) Compliance with social norms
- 4) Environmental consciousness (green procurement)

Request to Our Business Partners

- 1) Competitiveness of purchasing products
- 2) Compliance with laws, regulations, and social norms
- 3) Environmental preservation and operational safety
- 4) Appropriate information security
- 5) Sound corporate management

In addition, we place great importance on responsible procurement practices aimed at mitigating the risk of sourcing so-called conflict minerals. (Minerals such as tantalum, tin, tungsten, and gold, which may, either directly or indirectly, finance armed groups abetting human rights violations in the Democratic Republic of the Congo and adjoining countries.) We are working together with our business partners to eliminate materials or parts containing conflict minerals from the supply chain by enhancing supply chain transparency.

Note: Details of our basic procurement policy, request to our business partners, and policy regarding conflict minerals are disclosed on our website.

Briefing Sessions for Business Partners and Global Meeting of Procurement Divisions of Our Group

Each year, we hold a briefing session for business partners in order to improve communication with these partners. We also hold a global meeting at which all the procurement divisions from manufacturing sites gather to discuss the procurement policy of our group and to share ideas on compliance and other issues.



Briefing session for business partners

Major Exhibitions in Fiscal 2017

Name of Exhibition	Period	Location	Outline of Exhibition
International Automotive Electronics Technology Expo	Jan. 18–20	Japan	Advanced technologies for cars
HPBExpo	Mar. 2–4	United States	North America's largest trade fair for stoves
Lighting Fair	Mar. 7–10	Japan	One of Japan's largest for lighting equipment
JEC World	Mar. 14–16	France	A global trade fair for composite materials
OFC	Mar. 21–23	United States	Most influential specialty show for the optical communications industry
Optics Expo	Apr. 5–7	Japan	Light and laser technology
Finetech Japan	Apr. 5–7	Japan	Displays and OLED
CITE	Apr. 9–11	China	One of China's largest for displays and electronic parts
International Technical Exhibition of Medical Imaging	Apr. 14–16	Japan	Comprehensive radiology exhibition
API China	May 16–18	China	China's largest on pharmaceutical packaging
Chinaplas	May 16–19	China	One of Asia's largest for plastics
Touch Taiwan	Sep. 20–22	Taiwan	Touch panels and optical films
CEATEC Japan	Oct. 3–6	Japan	One of Asia's largest for IT and electronics
Fakuma	Oct. 17–21	Germany	International trade fair for plastics processing
Biwako Environmental Business Exhibition	Oct. 18–20	Japan	One of Japan's largest for environmental industries
SAMPE Japan	Nov. 29–Dec. 1	Japan	Processing and application of advanced materials
SEMICON Japan	Dec. 13–15	Japan	Electronic device manufacturing

Financial Review

Business Climate

In the global economy of fiscal year 2017, Europe and the U.S. enjoyed a recovery on the back of improved consumer spending and employment conditions, while China saw signs of recovery due to the effects of various policies. The Japanese economy continued to recover gradually, due in part to improved consumer spending, employment conditions and corporate earnings.

Against this backdrop, the NEG Group has been working to expand its business in the display field in China, a growing market. Such actions include commencing operations of a newly established joint venture for processing (in Fuqing) and preparation for production increase at the melting and forming subsidiary (in Xiamen). Efforts to improve productivity have been stepped up, resulting in increased earning capacity. Meanwhile, in the performance materials field, we established a global production and supply system for glass fiber (in Japan, Malaysia, Europe and the U.S.) through a business acquisition in the U.S.

Our R&D yielded new products such as flat glass fiber with an elliptical cross-section and BS-A Dark pharmaceutical/medical glass tubing with high light-shielding performance. In addition, we successfully achieved the world's first room-temperature driving of an all-solid sodium ion secondary battery that uses glass ceramic as positive electrode material. Also, we made an endowment to establish the NEG Endowed Chair in Glass Chemistry at Zhejiang University (in Hangzhou, Zhejiang Province). Through this partnership, we will collaborate closely with the university to work on developing technology.

Analysis of Business Results

In fiscal 2017, shipments of glass substrates for liquid crystal displays (LCDs) increased to meet solid demand, which was supported notably by full-scale shipments to new customers from the second quarter of fiscal 2017. Additionally, steady shipments of glass fiber and the acquisition of European (in fiscal 2016) and U.S. (in fiscal 2017) glass fiber businesses contributed to increased sales. These factors resulted in net sales of ¥282,447 million (\$2,500 million), an 18.0% increase on the previous fiscal year.

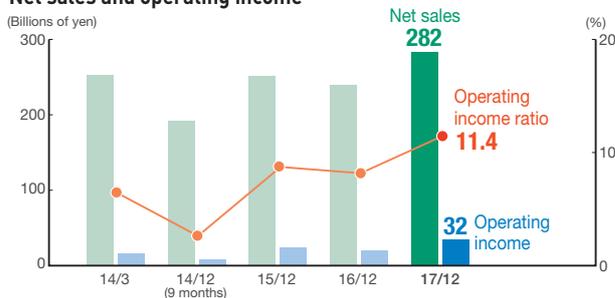
Operating income was boosted by improved productivity, increased sales and a more moderate price decline for LCD glass substrates. In the previous fiscal year, there were foreign exchange losses related to financing of a Chinese subsidiary of NEG. But in fiscal 2017, these losses turned into gains, resulting in an increase of income before income taxes.

As a result, gross profit was ¥70,659 million (\$625 million), a 37.2% increase on the previous fiscal year, and operating income was ¥32,202 million (\$285 million), a 64.5% increase on the previous fiscal year. The operating income ratio was 11.4%, representing an increase of 3.2 points from the previous fiscal year. For the net amount of other income and other expenses, we experienced gains of ¥431 million (\$4 million). This figure was derived chiefly from gain on sales of investment securities of ¥1,942 million (\$17 million),

interest and dividend income of ¥1,856 million (\$16 million) and foreign exchange gains of ¥1,521 million (\$13 million). Other expenses included a loss on closing of plant of ¥3,431 million (\$30 million) and depreciation of idle property, plant and equipment of ¥907 million (\$8 million). These factors resulted in income before income taxes of ¥32,633 million (\$289 million), an increase of 114.7% on the previous fiscal year.

The company recorded ¥4,293 million (\$38 million) in current income taxes and ¥651 million (\$6 million) as deferred income taxes. This resulted in a profit attributable to owners of the parent of ¥27,184 million (\$241 million), a 447.1% increase on the previous fiscal year. Profit attributable to owners of parent per share was ¥273.29 (\$2.42), compared to ¥49.95 (\$0.44) in fiscal 2016.

Net sales and operating income

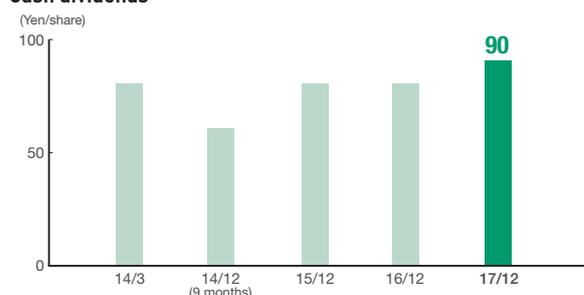


Dividends

The company sees shareholder returns as a management priority. We therefore follow a policy of providing shareholders with steady returns on their investments over the long term. Returns are not significantly affected by fluctuations in the company's earnings, and dividends take into account financial conditions. We also take a timely and flexible approach to returns.

The end-of-term dividend for fiscal 2017 was ¥50 (\$0.44). The company carried out stock consolidation at a ratio of 5 to 1 on July 1, 2017, and paid interim dividends of ¥8 (\$0.07) per share, taking June 30, 2017 as the reference date. This corresponded to ¥40 (\$0.35) after stock consolidation. Taking into account the stock consolidation, the annual dividend amounted to ¥90 (\$0.80) per share, up by ¥10 (\$0.09) from the previous year. The company plans to pay an annual dividend of ¥100 (\$0.88) per share in fiscal 2018.

Cash dividends*



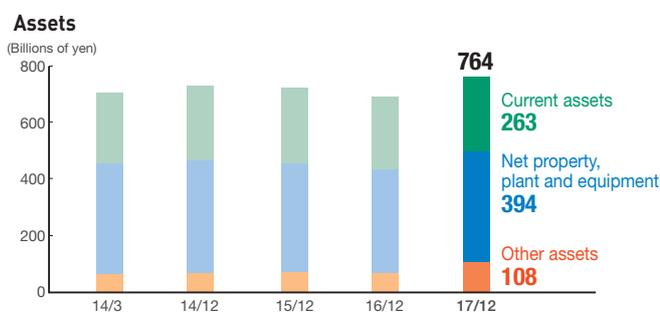
* Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

Financial Position

Total assets at the end of fiscal 2017 were ¥764,420 million (\$6,765 million), an increase of ¥70,502 million (\$624 million) from the previous fiscal year.

Current assets increased by ¥8,062 million (\$71 million). Cash and time deposits decreased as a result of a payment to acquire a U.S. glass fiber business and the redemption of unsecured bonds redeemable within one year.

Noncurrent assets increased by ¥62,440 million (\$553 million) despite depreciation. This was mainly attributable to an increase in tangible fixed assets resulting from capital investment in the melting and forming subsidiary in Xiamen, China, and an increase in tangible and intangible fixed assets resulting from the acquisition of a U.S. glass fiber business. Investments and other assets increased as a result of an increase in valuation of certain investment securities.



Current liabilities increased by ¥17,811 million (\$158 million). This was despite repayments of short-term debt, which increased after long-term debt was transferred to short-term debt. As mentioned above, unsecured bonds redeemable within one year were redeemed.

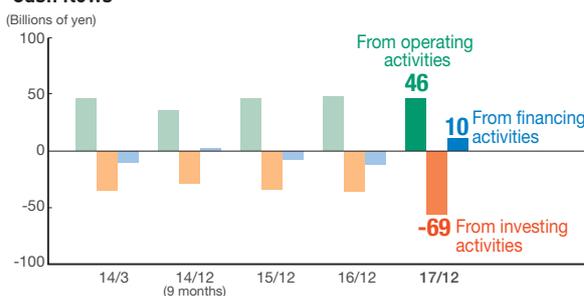
Long-term liabilities also increased by ¥18,466 million (\$163 million). This was mainly due to an increase in long-term debt resulting from the acquisition of a U.S. glass fiber business.

Total net assets at the end of fiscal 2017 were ¥543,789 million (\$4,812 million), an increase of ¥34,225 million (\$303 million) from the previous fiscal year. This was attributable to an increase in retained earnings due to profits as well as an increase in the valuation on net unrealized holding gains on securities and foreign currency translation adjustments. Accordingly, the equity ratio at the end of fiscal 2017 was 70.5%, down by 2.2 points from 72.7% at the end of the previous fiscal year.

Cash Flow Analysis

In order to achieve the financial strength that will enable it to withstand changes in its business environment, the NEG Group has designated the following as key elements of its financial policy: emphasize cash flow-oriented management, promote efficient use of assets (including reduction in financial and inventory assets, improvement of productivity and consolidation for equipment) and strengthen financial standing (by maintaining an appropriate equity ratio and realizing essential debt-free management).

Cash flows



The NEG Group's cash flows for fiscal 2017 were as follows: With regard to cash flow resulting from operating activities, income before income taxes increased compared to the previous fiscal year. A decrease was seen in depreciation and amortization, although they remained high. Meanwhile, trade receivables and inventories increased. All these factors led to a total ¥46,160 million (\$408 million) in net cash provided by operating activities, a decrease of ¥2,101 million (\$19 million) from fiscal 2016.

As regards cash flow from investment activities, net cash used for investing activities totaled ¥68,644 million (\$607 million), an increase of ¥32,505 million (\$288 million) compared to the previous fiscal year. This was mainly due to the reinforcement of facilities globally and the acquisition of a U.S. glass fiber business.

These activities resulted in a free cash flow (the total of cash flows from operating activities and investment activities) of -¥22,484 million (-\$199 million), a decrease of ¥34,606 million (\$306 million) from the previous fiscal year.

Regarding cash flow from financing activities, net cash provided by financing activities totaled ¥9,797 million (\$87 million). This was an increase of ¥27,421 million (\$243 million) on the previous fiscal year, due to the inclusion of income from long-term borrowings. Contributing factors included the redemption of unsecured bonds, payments of dividends to shareholders and noncontrolling interests.

Including the effect of exchange rate changes on cash and cash equivalents of ¥355 million (\$3 million), the balance of cash and cash equivalents at the end of fiscal 2017 was ¥113,835 million (\$1,007 million), a decrease of ¥12,332 million (\$109 million) compared to the end of fiscal 2016.

Capital Expenditure

The NEG Group invested ¥52,913 million (\$468 million) in capital expenditure for fiscal 2017. Such actions included the construction of production facilities, the installation of additional equipment to expand production capacities, the replacement of equipment to improve productivity, the periodic repair of glass melting equipment and the acquisition of a business.

In the Electronics and Information Technology sector, expenditures were primarily made on the expansion of production capacities. In the Performance Materials and Others sector, expenditures were made mainly on the acquisition of the U.S. glass fiber business of PPG Industries, Inc.

Consolidated Financial Summary

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries for the Ten Most Recent Years

*Fiscal year ended December 31, 2014 was a nine-month period due to a change in the Company's fiscal year-end.

	2009/3	2010/3	2011/3	2012/3
For the year				
Net sales	¥ 335,662	¥ 332,388	¥ 390,196	¥ 338,214
Operating income	76,416	98,426	117,471	61,639
Profit attributable to owners of parent	21,832	54,927	68,609	19,409
Depreciation and amortization	46,134	48,167	52,699	54,785
Capital expenditures	102,050	93,079	110,025	98,788
Research and development	5,051	3,589	4,553	6,464
At year-end				
Total assets	¥ 588,414	¥ 646,444	¥ 692,622	¥ 687,070
Current assets	200,062	228,625	238,908	224,416
Net property, plant and equipment	362,860	385,170	417,423	420,311
Current liabilities	165,640	153,874	142,327	135,200
Interest-bearing debts	129,883	99,827	94,273	86,812
Net assets	352,744	406,307	468,038	475,736
Cash flows				
Net cash provided by operating activities	¥ 89,873	¥ 118,721	¥ 133,391	¥ 83,737
Net cash used in investing activities	(121,975)	(86,847)	(96,822)	(79,827)
Net cash provided by (used in) financing activities	27,438	(35,135)	(11,774)	(14,731)
Cash and cash equivalents at end of year	94,623	91,668	116,366	105,210
Per share of common stock (yen and dollars)				
Profit attributable to owners of parent	¥ 219.43	¥ 552.05	¥ 689.59	¥ 195.09
Net assets	3,508.08	4,043.75	4,660.87	4,727.33
Cash dividends	50.00	55.00	65.00	75.00
Operating income ratio (%)	22.8	29.6	30.1	18.2
Equity ratio (%)	59.3	62.2	66.9	68.4
Return on equity (%)	6.3	14.6	15.8	4.2

Notes: 1. Profit attributable to owners of parent per share and net assets per share are calculated based on the average number of shares outstanding during each year and the number of shares outstanding at the end of each year, respectively.
2. As there was no dilutive stock outstanding during these years, diluted profit attributable to owners of parent per share was not calculated.
3. U.S. dollar amounts have been translated from Japanese yen solely for the convenience of the reader using the prevailing exchange rate at December 31, 2017 of ¥113 to US\$1.00.
4. As of December 31, 2017, Nippon Electric Glass Co., Ltd. had 27 consolidated subsidiaries and 1 affiliated company accounted for by the equity method.

(Millions of yen and thousands of U.S. dollars, except per share figures)

	2013/3	2014/3	2014/12*	2015/12	2016/12	2017/12	
	¥ 287,304	¥ 252,548	¥ 192,692	¥ 251,178	¥ 239,412	¥ 282,447	\$ 2,499,531
	24,968	16,171	5,224	22,035	19,571	32,202	284,973
	10,603	12,432	5,938	9,637	4,969	27,184	240,566
	46,105	35,891	28,420	37,154	31,256	28,735	254,292
	37,487	46,962	45,214	49,212	46,429	52,913	468,257
	6,833	6,920	5,527	6,183	6,658	6,898	61,044
	¥ 697,386	¥ 707,021	¥ 731,185	¥ 726,938	¥ 693,918	¥ 764,420	\$ 6,764,779
	243,577	247,502	264,001	267,430	254,870	262,932	2,326,832
	395,376	393,751	397,273	386,013	367,399	393,818	3,485,115
	88,038	86,970	82,701	105,400	86,025	103,836	918,903
	102,604	99,492	109,141	109,731	101,997	120,661	1,067,796
	495,295	510,807	522,577	519,801	509,564	543,789	4,812,292
	¥ 55,111	¥ 46,700	¥ 38,837	¥ 46,797	¥ 48,261	¥ 46,160	\$ 408,496
	(46,545)	(33,843)	(29,264)	(32,638)	(36,139)	(68,644)	(607,469)
	7,667	(11,190)	1,699	(7,892)	(17,624)	9,797	86,698
	121,741	123,888	129,823	133,856	126,167	113,835	1,007,389
	¥ 106.58	¥ 124.97	¥ 59.69	¥ 96.88	¥ 49.95	¥ 273.29	\$ 2.42
	4,914.84	5,057.28	5,163.32	5,159.30	5,069.60	5,416.93	47.94
	80.00	80.00	60.00	80.00	80.00	90.00	0.80
	8.7	6.4	2.7	8.8	8.2	11.4	
	70.1	71.2	70.2	70.6	72.7	70.5	
	2.2	2.5	1.2	1.9	1.0	5.2	

5. Capital expenditures for FY2014/12 were calculated based on the periods from April 1, 2014 to December 31, 2014 for the company and its domestic consolidated subsidiaries and January 1, 2014 to December 31, 2014 for the Company's overseas consolidated subsidiaries.

6. Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

Value Creation

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Financial & Corporate Information

Consolidated Financial Statements

Consolidated Balance Sheets

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries
December 31, 2016 and 2017

ASSETS

	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2016	December 31, 2017	December 31, 2017
Current assets:			
Cash and time deposits (Note 5 and 9)	¥ 132,002	¥ 117,068	\$ 1,036,000
Notes and accounts receivable-trade (Note 5)	49,133	61,146	541,115
Allowance for doubtful receivables	(97)	(164)	(1,451)
Inventories (Note 10)	60,414	69,367	613,867
Deferred tax assets (Note 13)	4,066	5,511	48,770
Other current assets (Note 5)	9,352	10,004	88,531
Total current assets	254,870	262,932	2,326,832
Property, plant and equipment (Note 11 and 14):			
Land	13,639	13,034	115,345
Building and structures	156,326	160,350	1,419,027
Machinery and equipment	714,697	706,730	6,254,247
Construction in progress	5,857	29,839	264,062
Total property, plant and equipment	890,519	909,953	8,052,681
Accumulated depreciation	(523,120)	(516,135)	(4,567,566)
Net property, plant and equipment	367,399	393,818	3,485,115
Intangible assets:			
Goodwill	1,904	21,848	193,345
Other intangible assets	5,277	13,172	116,567
Total intangible assets	7,181	35,020	309,912
Investments and other assets:			
Investment securities (Note 5 and 6)	53,477	62,686	554,743
Investment in affiliates (Note 6)	1,685	3,213	28,434
Deferred tax assets (Note 13)	7,094	2,896	25,628
Other assets	2,212	3,855	34,115
Total investments and other assets	64,468	72,650	642,920
Total assets	¥ 693,918	¥ 764,420	\$ 6,764,779

The accompanying notes to the consolidated financial statements are an integral part of these statements.

LIABILITIES AND NET ASSETS

	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2016	December 31, 2017	December 31, 2017
Current liabilities:			
Short-term debt, including current portion of long-term debt (Note 5 and 12)	¥ 31,197	¥ 37,607	\$ 332,805
Notes and accounts payable (Note 5):			
Trade	31,605	37,990	336,195
Construction and other	8,931	8,885	78,628
Accrued expenses	9,814	11,858	104,938
Accrued income taxes	1,339	1,994	17,646
Reserve for loss on plant closing	437	2,930	25,929
Other reserves	89	108	956
Other current liabilities (Note 5)	2,613	2,464	21,806
Total current liabilities	86,025	103,836	918,903
Long-term liabilities:			
Long-term debt (Note 5 and 12)	70,800	83,054	734,991
Deferred tax liabilities	1,334	3,992	35,327
Reserve for special repairs	23,127	23,278	206,000
Reserve for loss on plant closing	–	823	7,283
Other reserves	32	36	319
Net defined benefit liability (Note 15)	1,562	1,900	16,814
Other long-term liabilities (Note 5 and 14)	1,474	3,712	32,850
Total long-term liabilities	98,329	116,795	1,033,584
Net assets (Note 16):			
Shareholders' equity:			
Common stock			
Authorized – 1,200,000,000 shares in Dec. 2016 240,000,000 shares in Dec. 2017			
Issued – 497,616,234 shares in Dec. 2016 99,523,246 shares in Dec. 2017	32,156	32,156	284,566
Capital surplus	34,320	34,320	303,717
Retained earnings	424,442	443,668	3,926,265
Treasury stock at cost			
251,848 shares in Dec. 2016 53,734 shares in Dec. 2017	(293)	(307)	(2,716)
Total shareholders' equity	490,625	509,837	4,511,832
Accumulated other comprehensive income (Note 4):			
Net unrealized holding gains on securities	22,558	30,124	266,584
Deferred losses on hedges	(418)	(209)	(1,850)
Foreign currency translation adjustments	(8,744)	(1,280)	(11,327)
Remeasurements of defined benefit plans	267	347	3,071
Total accumulated other comprehensive income	13,663	28,982	256,478
Noncontrolling interests			
	5,276	4,970	43,982
Total net assets	509,564	543,789	4,812,292
Contingent liabilities (Note 18)			
Total liabilities and net assets	¥ 693,918	¥ 764,420	\$ 6,764,779

On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

Consolidated Statements of Income

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2016 and 2017

	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2016	December 31, 2017	December 31, 2017
Net sales	¥ 239,412	¥ 282,447	\$ 2,499,531
Cost of sales	187,903	211,788	1,874,230
Gross profit	51,509	70,659	625,301
Selling, general and administrative expenses	31,938	38,457	340,328
Operating income	19,571	32,202	284,973
Other income (expenses):			
Interest and dividend income	1,242	1,856	16,425
Interest expense	(1,098)	(701)	(6,204)
Gain on sales of property, plant and equipment, net	353	1,309	11,584
Gain on sales of investment securities, net (Note 6)	1	1,942	17,186
Loss on valuation of investment securities (Note 6)	-	(735)	(6,504)
Depreciation of idle property, plant and equipment	(1,300)	(907)	(8,027)
Reversal of reserve for special repairs	8,912	-	-
Foreign exchange gains (losses)	(3,848)	1,521	13,460
Loss on closing of plant	-	(3,431)	(30,363)
Other, net	(8,631)	(423)	(3,742)
	(4,369)	431	3,815
Income before income taxes	15,202	32,633	288,788
Income taxes (Note 13):			
Current	2,270	4,293	37,992
Deferred	7,256	651	5,761
	9,526	4,944	43,753
Profit	5,676	27,689	245,035
Profit attributable to noncontrolling interests	707	505	4,469
Profit attributable to owners of parent	¥ 4,969	¥ 27,184	\$ 240,566
		Yen	U.S. dollars (Note 1)
Amount per share of common stock:			
Profit attributable to owners of parent (Note 2)	¥ 49.95	¥ 273.29	\$ 2.42
Diluted profit attributable to owners of parent (Note 2)	-	-	-
Cash dividends applicable to the year (Note 16)	80.00	90.00	0.80

The accompanying notes to the consolidated financial statements are an integral part of these statements.

Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation.

On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

Consolidated Statements of Comprehensive Income

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2016 and 2017

	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2016	December 31, 2017	December 31, 2017
Profit	¥ 5,676	¥ 27,689	\$ 245,035
Other comprehensive income (Note 4):			
Net unrealized holding gains and (losses) on securities	(732)	7,566	66,956
Deferred gains and (losses) on hedges	(213)	209	1,850
Foreign currency translation adjustments	(5,252)	7,369	65,212
Remeasurements of defined benefit plans, net of tax	267	80	708
Share of other comprehensive income of associates accounted for using equity method	-	95	841
	(5,930)	15,319	135,567
Comprehensive income	¥ (254)	¥ 43,008	\$ 380,602
Comprehensive income attributable to:			
Owners of the parent	¥ (938)	¥ 42,503	\$ 376,133
Noncontrolling interests	684	505	4,469

The accompanying notes to the consolidated financial statements are an integral part of these statements.

Consolidated Statements of Changes in Net Assets

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2016 and 2017

	Thousands of shares	Millions of yen									
	Number of shares of common stock issued	Common stock	Capital surplus	Retained earnings	Treasury stock	Net unrealized holding gains on securities	Deferred gains and (losses) on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Non-controlling interests	Total net assets
Balance at January 1, 2016	497,616	¥ 32,156	¥ 34,350	¥ 427,431	¥ (289)	¥ 23,290	¥ (204)	¥ (3,515)	¥ -	¥ 6,582	¥ 519,801
Profit attributable to owners of parent	-	-	-	4,969	-	-	-	-	-	-	4,969
Cash dividends paid	-	-	-	(7,957)	-	-	-	-	-	-	(7,957)
Acquisition of treasury stock	-	-	-	-	(5)	-	-	-	-	-	(5)
Disposition of treasury stock	-	-	(0)	-	1	-	-	-	-	-	1
Purchase of shares of consolidated subsidiaries	-	-	(30)	-	-	-	-	-	-	-	(30)
Other	-	-	-	(1)	-	-	-	-	-	-	(1)
Net changes in items other than shareholders' equity	-	-	-	-	-	(732)	(214)	(5,229)	267	(1,306)	(7,214)
Balance at January 1, 2017	497,616	¥ 32,156	¥ 34,320	¥ 424,442	¥ (293)	¥ 22,558	¥ (418)	¥ (8,744)	¥ 267	¥ 5,276	¥ 509,564
Profit attributable to owners of parent	-	-	-	27,184	-	-	-	-	-	-	27,184
Cash dividends paid	-	-	-	(7,958)	-	-	-	-	-	-	(7,958)
Acquisition of treasury stock	-	-	-	-	(15)	-	-	-	-	-	(15)
Disposition of treasury stock	-	-	(0)	-	1	-	-	-	-	-	1
Other	-	-	-	(0)	-	-	-	-	-	-	(0)
Net changes in items other than shareholders' equity	-	-	-	-	-	7,566	209	7,464	80	(306)	15,013
Stock consolidation (Note 2 and 16)	(398,093)	-	-	-	-	-	-	-	-	-	-
Balance at December 31, 2017	99,523	¥ 32,156	¥ 34,320	¥ 443,668	¥ (307)	¥ 30,124	¥ (209)	¥ (1,280)	¥ 347	¥ 4,970	¥ 543,789

	Thousands of U.S. dollars (Note 1)										
	Common stock	Capital surplus	Retained earnings	Treasury stock	Net unrealized holding gains on securities	Deferred gains and (losses) on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Non-controlling interests	Total net assets	
Balance at January 1, 2017	\$ 284,566	\$ 303,717	\$ 3,756,124	\$ (2,592)	\$ 199,628	\$ (3,700)	\$ (77,380)	\$ 2,363	\$ 46,690	\$ 4,509,416	
Profit attributable to owners of parent	-	-	240,566	-	-	-	-	-	-	240,566	
Cash dividends paid	-	-	(70,425)	-	-	-	-	-	-	(70,425)	
Acquisition of treasury stock	-	-	-	(133)	-	-	-	-	-	(133)	
Disposition of treasury stock	-	(0)	-	9	-	-	-	-	-	9	
Other	-	-	(0)	-	-	-	-	-	-	(0)	
Net changes in items other than shareholders' equity	-	-	-	-	66,956	1,850	66,053	708	(2,708)	132,859	
Balance at December 31, 2017	\$ 284,566	\$ 303,717	\$ 3,926,265	\$ (2,716)	\$ 266,584	\$ (1,850)	\$ (11,327)	\$ 3,071	\$ 43,982	\$ 4,812,292	

The accompanying notes to the consolidated financial statements are an integral part of these statements.

On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

Consolidated Statements of Cash Flows

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2016 and 2017

	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2016	December 31, 2017	December 31, 2017
Cash flows from operating activities:			
Income before income taxes	¥ 15,202	¥ 32,633	\$ 288,788
Depreciation and amortization	31,256	28,735	254,292
Gain on sales of property plant, and equipment	(531)	(1,347)	(11,920)
Loss on closing of plant	-	3,431	30,363
Loss on valuation of investment securities	-	735	6,504
Gain on sales of investment securities, net	(1)	(1,942)	(17,186)
Increase (decrease) in reserve for special repairs	(8,523)	151	1,336
Interest and dividend income	(1,242)	(1,856)	(16,425)
Interest expense	1,098	701	6,204
Foreign exchange (gains) losses	3,441	(2,316)	(20,496)
Increase in notes and accounts receivable, trade	(1,022)	(6,176)	(54,655)
Decrease (increase) in inventories	4,550	(2,182)	(19,310)
Increase in notes and accounts payable	681	1,327	11,743
Other	8,604	(3,513)	(31,088)
Subtotal	53,513	48,381	428,150
Interest and dividends received	1,272	1,856	16,425
Interest paid	(1,073)	(782)	(6,920)
Income taxes paid	(5,451)	(3,295)	(29,159)
Net cash provided by operating activities	48,261	46,160	408,496
Cash flows from investing activities:			
Decrease in time deposits, net	4,646	2,595	22,965
Proceeds from sales of marketable and investment securities	3	3,025	26,770
Purchases of property, plant and equipment	(27,688)	(16,516)	(146,159)
Proceeds from sales of property, plant and equipment	1,506	3,220	28,496
Payments for investments in capital of subsidiaries and associates	-	(1,575)	(13,938)
Payment for transfer of business (Note 8)	(7,434)	-	-
Purchase of shares of subsidiaries resulting in change in scope of consolidation (Note 8)	(5,066)	(59,389)	(525,566)
Other	(2,106)	(4)	(37)
Net cash used in investing activities	(36,139)	(68,644)	(607,469)
Cash flows from financing activities:			
Increase in short-term debt, net	3,390	7,476	66,159
Proceeds from long-term borrowings	13,300	21,135	187,035
Repayment of long-term borrowings	(13,300)	-	-
Redemption of unsecured bonds	(10,000)	(10,000)	(88,496)
Cash dividends paid	(7,957)	(7,959)	(70,434)
Cash dividends paid to noncontrolling interests	(2,020)	(811)	(7,177)
Other	(1,037)	(44)	(389)
Net cash provided by (used in) financing activities	(17,624)	9,797	86,698
Effect of exchange rate changes on cash and cash equivalents	(2,187)	355	3,142
Net decrease in cash and cash equivalents	(7,689)	(12,332)	(109,133)
Cash and cash equivalents at beginning of year	133,856	126,167	1,116,522
Cash and cash equivalents at end of year (Note 9)	¥ 126,167	¥ 113,835	\$ 1,007,389

The accompanying notes to the consolidated financial statements are an integral part of these statements.

1. Basis of presenting consolidated financial statements

The accompanying consolidated financial statements of Nippon Electric Glass Co., Ltd. ("the Company") and its consolidated subsidiaries have been prepared in accordance with the provisions set forth in the Japanese Financial Instruments and Exchange Law and its related accounting regulations and in conformity with accounting principles generally accepted in Japan ("Japanese GAAP"), which are different in certain respects as to application and disclosure requirements from International Financial Reporting Standards.

The accompanying consolidated financial statements have been restructured and translated into English with certain expanded disclosures from the consolidated financial statements of the Company prepared in accordance with Japanese GAAP and filed with the appropriate Local Finance Bureau of the Ministry of Finance as required by the Japanese Financial Instruments and Exchange Law. Certain supplementary information included in the statutory Japanese language consolidated financial statements, but not required for fair presentation, is not presented in the accompanying consolidated financial statements.

The translations of Japanese yen amounts into U.S. dollar amounts are included solely for the convenience of the readers outside Japan, using the prevailing exchange rate at December 31, 2017, which was ¥113 to U.S. \$1.00. The translations, provided for convenience, should not be construed as representations that the Japanese yen amounts have been, could have been or could in the future be converted into U.S. dollars at this or any other rate of exchange.

2. Significant accounting policies

(a) Consolidation policies

Under Japanese GAAP, companies are required to consolidate all significant equity investments over which they have the power of control through a majority of voting rights or the existence of certain other conditions evidencing control.

The accompanying consolidated financial statements include the accounts of the Company and substantially all of its subsidiaries. All significant intercompany transactions and account balances are eliminated upon consolidation.

Investments in unconsolidated subsidiaries and affiliates are accounted for by the equity method or by cost. If the equity method of accounting had been applied to the investments in these companies accounted for by cost, the effect on the accompanying consolidated financial statements would not be material.

(b) Translation of foreign currencies

All short-term and long-term monetary receivables and payables denominated in foreign currencies are translated into Japanese yen at the relevant exchange rates at the balance sheet date.

The financial statements of the Company's overseas consolidated subsidiaries are translated into Japanese yen at the current rates for assets and liabilities and at historical rates for shareholders' equity accounts. Average rates for the years are used for the translation of income and expense amounts. Foreign currency translation adjustments are recorded in net assets.

(c) Cash and cash equivalents

In preparing the consolidated statements of cash flows, cash on hand, deposits placed with banks on demand and short-term highly liquid investments with maturities of three months or less when deposited or purchased are considered to be cash and cash equivalents.

(d) Marketable and investment securities

Available-for-sale securities with observable fair market values are stated at fair market value. Unrealized gains and losses on these securities are reported, net of applicable income taxes, as a separate component of net assets. Realized gains and losses on sales of such securities are calculated using moving average cost.

(e) Allowance for doubtful receivables

Allowance for doubtful receivables is provided in an amount sufficient to cover possible losses on collection. For regular receivables, it consists of an estimated amount based on the historical ratio of bad debt losses. For receivables from customers in financial difficulty, it consists of the estimated noncollectable amounts of specific doubtful receivables.

(f) Inventories

Inventories are stated principally at the lower of cost or net realized value, with cost determined by the moving average method.

(g) Property, plant and equipment (except for leased properties)

Property, plant and equipment are principally stated at cost. Depreciation of property, plant and equipment of the Company and its domestic consolidated subsidiaries is calculated by the declining balance method at rates based on the estimated useful life of the assets. Buildings, excluding facilities attached to buildings, acquired after March 31, 1998, are depreciated using the straight-line method. Facilities attached to buildings and structures acquired after March 31, 2016, are also depreciated using the straight-line method. Depreciation of property, plant and equipment of overseas consolidated subsidiaries is calculated principally by the declining balance method at rates based on the estimated useful life of the assets. The estimated useful life of machinery and equipment is generally 9 years.

(h) Intangible assets (except for leased properties)

Intangible assets are amortized by the straight-line method.

(i) Reserve for directors' bonuses

To provide a reserve for directors' bonuses, the Company and its consolidated subsidiaries record the amount estimated to be paid to directors after the balance sheet date for their services rendered during the fiscal period.

(j) Severance and retirement benefits

The Company and its consolidated subsidiaries, excluding certain consolidated subsidiaries, principally use a simplified method for calculating projected benefit obligation, which provides for accrued retirement benefits for voluntary retirement at the end of the fiscal year because there are few employees who have applied for the defined benefit pension plans.

The allowance for employees' severance and retirement benefits is recognized in an amount after deducting pension assets from retirement benefit for the net defined benefit liability in certain consolidated subsidiaries. Net defined benefit liability and retirement benefit costs are as follows.

(1) Allocation of projected retirement benefit obligation

In calculating the retirement benefit obligation, the benefit formula method is used to allocate the projected retirement benefit obligation to the estimated years of service of the eligible employees.

(2) Method for amortizing actuarial gain or loss

Depending on each company's actual situation, actuarial gain or loss is amortized at the time of occurrence or by the straight-line method over a period not exceeding the estimated average remaining service years of employees from the next year following the time of occurrence.

(k) Directors' retirement benefits

To provide for directors' retirement benefits, the Company and its consolidated subsidiaries recorded the amount that was required by internal corporate policy at the end of the current fiscal year. However, the directors' retirement benefits system was abolished in June 2004, and the Company has ceased recording these provisions since July 2004.

(l) Reserve for special repairs

To be prepared for significant repairs of glass-melting furnaces that occur on a periodic basis, estimated costs for the next repairs are accrued within the period between the previous repair and the next such envisioned repair.

(m) Reserve for loss on plant closing

To provide for loss on plant closing, the Company recorded the estimated cost of closing the plant.

(n) Income taxes

The tax effects of loss carryforwards and temporary differences between the financial statement basis and the tax basis of assets and liabilities are recognized as deferred tax assets and liabilities. The provision for income taxes is computed based on the pretax income included in the consolidated statements of income.

(o) Research and development

Costs related to research and development activities are charged to income as incurred and amounted to ¥6,658 million and ¥6,898 million (\$61,044 thousand) for the fiscal years ended December 31, 2016 and 2017, respectively.

(p) Profit attributable to owners of parent per share

The computations of profit attributable to the owners of the parent per share are based on the average number of shares of common stock outstanding during each year. Diluted profit attributable to the owners of the parent per share of common stock is computed based on the average number of shares outstanding, increased by the number of

shares that would be outstanding assuming all dilutive convertible bonds were converted at the beginning of the year at the current conversion price. As there were no dilutive shares outstanding during the year, the computation of diluted profit attributable to the owners of the parent per share was not calculated.

Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

(q) Derivatives and hedge accounting

The Company and its consolidated subsidiaries state derivative financial instruments at fair value and recognize changes in the fair value as gain or loss, unless the derivative financial instruments are used for hedging purposes.

Forward foreign exchange contracts and interest rate swap contracts that meet the criteria for hedge accounting as provided in the "Accounting Standard for Financial Instruments" are accounted for using deferral hedge accounting, which requires unrealized gain or loss to be deferred as net unrealized gain or loss on the contract as a component of net assets until the loss or gain related to the hedged item is actually recognized.

Hedging instruments and hedged items used by the Company and its consolidated subsidiaries are as follows:

Hedging instruments:	Forward foreign exchange contracts and interest rate swap contracts
Hedged items:	Forecasted foreign currency transactions and interest on borrowings

The Company and its consolidated subsidiaries enter into forward foreign exchange contracts and interest rate swap contracts to hedge the risk of exchange rate fluctuations in forecasted foreign currency transactions and fluctuations in interest rates on borrowings, respectively. For forecasted foreign currency transactions, the suitability for hedging is confirmed by pretesting and post testing with consideration for whether the transaction is highly likely to be executed. The Company and its consolidated subsidiaries use derivative transactions solely for the purpose of managing risks and not for speculation. The counterparties are major financial institutions, therefore, the Company and its consolidated subsidiaries consider the credit risk to be minimal. The derivative transactions are entered into by each company in accordance with accounting policies and decisions made by each company's management.

(r) Goodwill

Goodwill is amortized by the straight-line method over the period it is expected to have an effect.

(s) Reclassification and restatement

Certain prior period amounts have been reclassified to conform to the current year presentation. These reclassifications had no impact on the previously reported results of operations or retained earnings.

3. Additional information

Application of revised implementation guidance on Recoverability of Deferred Tax Assets Effective from the current fiscal year, the Company and its domestic subsidiaries have adopted "Revised Implementation Guidance on Recoverability of Deferred Tax Assets" (ASBJ) Guidance No. 26, March 28, 2016.

4. Accounting standards for presentation of comprehensive income

The components of other comprehensive income for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Net unrealized holding gains and losses on securities			
Increase (decrease) during the year	¥(1,687)	¥ 12,971	\$ 114,788
Reclassification adjustments	(1)	(1,942)	(17,186)
Subtotal, before tax	(1,688)	11,029	97,602
Tax (expense) benefit	956	(3,463)	(30,646)
Subtotal, net of tax	(732)	7,566	66,956
Deferred gains and losses on hedges			
Increase (decrease) during the year	(435)	(107)	(947)
Reclassification adjustments	132	409	3,620
Subtotal, before tax	(303)	302	2,673
Tax (expense) benefit	90	(93)	(823)
Subtotal, net of tax	(213)	209	1,850
Foreign currency translation adjustments			
Increase (decrease) during the year	(5,252)	7,369	65,212
Remeasurements of defined benefit plans			
Increase (decrease) during the year	356	137	1,212
Reclassification adjustments	-	(31)	(274)
Subtotal, before tax	356	106	938
Tax (expense) benefit	(89)	(26)	(230)
Subtotal, net of tax	267	80	708
Share of other comprehensive income of entities accounted for using equity method			
Increase (decrease) during the year	-	95	841
Total other comprehensive income	¥(5,930)	¥ 15,319	\$ 135,567

5. Financial instruments

(a) Status of financial instruments

(1) Policy on financial instruments

As a Group policy, the Company and its consolidated subsidiaries restrict investments of surplus cash, if any, to safe financial assets such as bank deposits. Funds required by the Company are obtained mainly through bank borrowings and the issuance of bonds. Derivatives are used to avoid the risks to be hereinafter described, and the Company does not enter into derivative contracts for speculative purposes.

(2) Details of financial instruments, risks thereof and risk management structure

Notes and accounts receivable-trade, which are operating receivables, are exposed to customer credit risk. The Company, pursuant to the Company's Credit Control Regulations, manages credit risk by managing relative due dates and outstanding balances of each counterparty and by periodically monitoring the credit status of major counterparties. Consolidated subsidiaries perform similar procedures in conformity with the Company's Credit Control Regulations.

Operating receivables denominated in foreign currencies, which arise from the Company's global business development, are exposed to foreign exchange fluctuation risk. The Group enters into forward foreign exchange contracts mainly for accounts receivable associated with export transactions of finished goods to manage fluctuation in future foreign exchange rates.

Investment securities consist mainly of equity securities of companies with which companies in the Group have business relationships and are exposed to market price fluctuation risk. The Company, pursuant to the Company's Shareholdings Regulations, regularly monitors the fair values of such securities and continuously reviews the holding thereof.

Notes and accounts payable-trade, which are operating debt, are settled within one year.

Regarding borrowings, short-term debt is issued mainly for the purpose of obtaining funds for operating transactions, and bonds and long-term debt are issued mainly for the purpose of obtaining funds for capital expenditures. Interest rates on some borrowings are floating rates and are exposed to interest rate fluctuation risk against which long-term debt is partially hedged through interest rate swap contracts.

In addition, borrowings denominated in foreign currencies are exposed to foreign exchange fluctuation risk, which the Company uses currency swap and interest rate and currency swap contracts to manage.

For details regarding hedge accounting of derivatives such as hedging instruments and hedged items and hedging policy, refer to Note 2 (q), "Significant accounting policies-Derivatives and hedge accounting."

Matters regarding derivative transactions are determined by executives in charge of accounting at each consolidated Group company in accordance with the regulations of each company. Approval for transactions that exceed a certain scope is granted by the Company's management committee. Operations and management pertaining to the execution thereof are carried out by each company's accounting department, and such operations are managed through a check and balance system. With derivative transactions, the Company enters into contracts only with financial institutions with high ratings to reduce credit risks.

Operating debt and borrowings are exposed to liquidity risks. The Group manages such risks by cash management forecasting at each Group company.

(3) Supplementary explanation for fair values of financial instruments

Please note that notional amounts of derivatives in the note on "Derivatives" do not indicate the market risks pertaining to the derivatives themselves.

(b) Fair values of financial instruments

The table below shows the book values of financial instruments recorded in the consolidated balance sheet, their fair values and any differences between the book value and fair value as of December 31, 2016 and 2017. Financial instruments whose fair values were deemed to be extremely difficult to estimate were not included. [Note 3]

2016/12:	Millions of yen		
	Book value	Fair value	Difference
(1) Cash and time deposits	¥ 132,002	¥ 132,002	¥ -
(2) Notes and accounts receivable-trade	49,133	49,133	-
(3) Investment securities:			
Other securities	52,740	52,740	-
(4) Short-term debt:			
Short-term debt	(21,197)	(21,197)	-
Current portion of unsecured bonds	(10,000)	(10,016)	(16)
(5) Notes and accounts payable-trade	(31,605)	(31,605)	-
(6) Long-term debt:			
Unsecured bonds	(30,000)	(30,343)	(343)
Long-term borrowings	(40,800)	(40,753)	47
(7) Derivatives			
Derivatives not accounted for with hedge accounting	(791)	(791)	-
Derivatives accounted for with hedge accounting	(602)	(602)	-

2017/12:	Millions of yen		
	Book value	Fair value	Difference
(1) Cash and time deposits	¥ 117,068	¥ 117,068	¥ -
(2) Notes and accounts receivable-trade	61,146	61,146	-
(3) Investment securities:			
Other securities	62,684	62,684	-
(4) Short-term debt:			
Short-term debt	(28,681)	(28,681)	-
Current portion of long-term debt	(8,926)	(8,938)	(12)
(5) Notes and accounts payable-trade	(37,990)	(37,990)	-
(6) Long-term debt:			
Unsecured bonds	(30,000)	(30,272)	(272)
Long-term borrowings	(53,054)	(52,942)	112
(7) Derivatives			
Derivatives not accounted for with hedge accounting	(1,527)	(1,527)	-
Derivatives accounted for with hedge accounting	(352)	(352)	-

2017/12:	Thousands of U.S. dollars		
	Book value	Fair value	Difference
(1) Cash and time deposits	\$ 1,036,000	\$ 1,036,000	\$ -
(2) Notes and accounts receivable-trade	541,115	541,115	-
(3) Investment securities:			
Other securities	554,726	554,726	-
(4) Short-term debt:			
Short-term debt	(253,814)	(253,814)	-
Current portion of long-term debt	(78,991)	(79,097)	(106)
(5) Notes and accounts payable-trade	(336,195)	(336,195)	-
(6) Long-term debt:			
Unsecured bonds	(265,488)	(267,894)	(2,406)
Long-term borrowings	(469,503)	(468,513)	990
(7) Derivatives			
Derivatives not accounted for with hedge accounting	(13,513)	(13,513)	-
Derivatives accounted for with hedge accounting	(3,115)	(3,115)	-

Note: Fair value measurements of financial instruments and matters regarding marketable securities and derivatives.

- Amounts for "Book value" and "Fair value" in parentheses indicate net liabilities.
- Measurements of fair value for financial instruments and matters regarding marketable securities and derivatives

(1) Cash and time deposits and (2) Notes and accounts receivable-trade

The fair value of these items approximates the book value because of their short-term nature. Thus, the book value is used as the fair value.

(3) Investment securities

The fair value of equity securities is based on market prices on public exchanges.

For information on investment securities, refer to Note 6, "Marketable and investment securities."

(4) Short-term debt and (5) Notes and accounts payable-trade

The fair value of these items, excluding the current portion of long-term debt and unsecured bonds,

approximates the book value because of their short-term nature. Thus, the book value is used as the fair value. The current portion of long-term debt and unsecured bonds, which are included in short-term debt, is measured based on the methods used in "(6) Long-term debt" below and classified as such.

(6) Long-term debt

The fair value of unsecured bonds issued by the Company is measured based on the market price if available and the present value calculated by discounting the total amount of principle and interest outstanding at an appropriate rate considering the time to maturity and the credit risk if the market price is not available.

The fair value of long-term borrowings is measured by discounting the total amount of principle and interest outstanding at an estimated interest rate for similar new borrowings.

(7) Derivatives

Refer to Note 7, "Derivatives."

3. Financial instruments whose fair values are deemed to be extremely difficult to estimate

Equity securities issued by affiliates, investments in capital of subsidiaries and associates and non-listed equity securities are not included in "(3) Investment securities"

because their fair values were deemed extremely difficult to estimate, they had no quoted market prices and it was not possible to estimate their future cash flows. For information related to these securities, refer to Note 6, "Marketable and investment securities."

6. Marketable and investment securities

(a) Acquisition cost and book value of securities with observable market values at December 31, 2016 and 2017 were as follows:

2016/12:	Millions of yen		
	Acquisition cost	Book value	Difference
Available-for-sale securities:			
Securities with book value exceeding acquisition cost:			
Equity securities	¥ 22,287	¥ 52,740	¥ 30,453
Securities with book value not exceeding acquisition cost:			
Equity securities	-	-	-
	¥ 22,287	¥ 52,740	¥ 30,453

2017/12:	Millions of yen		
	Acquisition cost	Book value	Difference
Available-for-sale securities:			
Securities with book value exceeding acquisition cost:			
Equity securities	¥ 20,982	¥ 62,493	¥ 41,511
Securities with book value not exceeding acquisition cost:			
Equity securities	221	191	(30)
	¥ 21,203	¥ 62,684	¥ 41,481

2017/12:	Thousands of U.S. dollars		
	Acquisition cost	Book value	Difference
Available-for-sale securities:			
Securities with book value exceeding acquisition cost:			
Equity securities	\$ 185,681	\$ 553,035	\$ 367,354
Securities with book value not exceeding acquisition cost:			
Equity securities	1,956	1,691	(265)
	\$ 187,637	\$ 554,726	\$ 367,089

(b) Book values of securities with no available market values at December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Available-for-sale securities:			
Equity securities issued by affiliates	¥ 1,685	¥ 1,684	\$ 14,903
Investments in capital of subsidiaries and associates	-	1,529	13,531
Non-listed equity securities, other	737	2	17
	¥ 2,422	¥ 3,215	\$ 28,451

(c) Sales of available-for-sale securities sold in the years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Total sales amounts	¥ 3	¥ 3,025	\$ 26,770
Gains on sales	1	1,942	17,186
Losses on sales	0	-	-

(d) Impairment loss on investment securities

There was no impairment loss on investment securities in the year ended December 31, 2016. The Company recognized impairment loss of ¥735 million (\$ 6,504 thousand) on equity securities for the fiscal year ended December 31, 2017.

If the fair market value as of the end of each financial quarter has dropped by more than 30% from the acquisition cost, all of the loss on impairment is recognized.

7. Derivatives

The fair values of derivative contracts used by the Company and its consolidated subsidiaries at December 31, 2016 and 2017 were as follows:

(a) Derivative transactions not accounted for under hedge accounting

Currency related transactions

2016/12:

		Millions of yen			
Classification	Type of transaction:	Notional amount	Portion due after 1 year	Fair value	Unrealized gain (loss)
Nonmarket transactions	Forward foreign exchange				
	Buy	¥ 132	¥ -	¥ 3	¥ 3
	Currency swap	14,810	11,270	(794)	(794)
		¥ 14,942	¥ 11,270	¥ (791)	¥ (791)

2017/12:

		Millions of yen			
Classification	Type of transaction:	Notional amount	Portion due after 1 year	Fair value	Unrealized gain (loss)
Nonmarket transactions	Forward foreign exchange				
	Buy	¥ 142	¥ -	¥ 1	¥ 1
	Currency swap	7,070	4,130	(164)	(164)
	Interest rate and currency swap	28,250	28,250	(1,364)	(1,364)
		¥ 35,462	¥ 32,380	¥ (1,527)	¥ (1,527)

2017/12:

		Thousands of U.S. dollars			
Classification	Type of transaction:	Notional amount	Portion due after 1 year	Fair value	Unrealized gain (loss)
Nonmarket transactions	Forward foreign exchange				
	Buy	\$ 1,257	\$ -	\$ 9	\$ 9
	Currency swap	62,566	36,549	(1,451)	(1,451)
	Interest rate and currency swap	250,000	250,000	(12,071)	(12,071)
		\$ 313,823	\$ 286,549	\$(13,513)	\$(13,513)

Note: The fair value is based on prices obtained from financial institutions.

(b) Derivative transactions to which hedge accounting has been applied

Currency related transactions

2016/12: Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
	Forward foreign exchange				
Deferral hedge accounting	Sell	Forecasted transactions for accounts receivable denominated in foreign currencies	¥ 16,668	¥ 3,951	¥ (321)
	Buy	Forecasted transactions for investments denominated in foreign currencies	10,921	–	34
			¥ 27,589	¥ 3,951	¥ (287)

2017/12: Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
	Forward foreign exchange				
Deferral hedge accounting	Sell	Forecasted transactions for accounts receivable denominated in foreign currencies	¥ 15,802	¥ 2,591	¥ (160)
			¥ 15,802	¥ 2,591	¥ (160)

2017/12: Thousands of U.S. dollars

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
	Forward foreign exchange				
Deferral hedge accounting	Sell	Forecasted transactions for accounts receivable denominated in foreign currencies	\$ 139,841	\$22,929	\$(1,416)
			\$ 139,841	\$22,929	\$(1,416)

Note: The fair value is based on prices obtained from financial institutions.

Interest related transactions

2016/12: Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Interest rate swap	Interest on borrowings	¥ 27,500	¥ 27,500	¥ (315)

2017/12: Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Interest rate swap	Interest on borrowings	¥ 27,500	¥ 20,000	¥ (192)

2017/12: Thousands of U.S. dollars

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Interest rate swap	Interest on borrowings	\$ 243,363	\$ 176,991	\$(1,699)

Note: The fair value is based on prices obtained from financial institutions.

8. Payments for transfers of business and purchases of shares of subsidiaries

Payments for transfers of business and purchases of shares of subsidiaries at December 31, 2016 were as follows:

	Millions of yen
Current assets	¥ 4,382
Noncurrent assets	11,915
Goodwill	1,813
Current liabilities	(3,572)
Noncurrent liabilities	(1,958)
Cost of share acquisition and business transfer	12,580
Cash and cash equivalents	(80)
Payment for acquisition of the European glass fiber business of PPG	¥ 12,500

Payments for purchases of shares of subsidiaries at December 31, 2017 were as follows:

	Millions of yen	Thousands of U.S. dollars
Current assets	¥ 9,858	\$ 87,239
Noncurrent assets	34,094	301,717
Goodwill	20,383	180,381
Current liabilities	(4,411)	(39,035)
Noncurrent liabilities	(534)	(4,727)
Cost of share acquisition	59,390	525,575
Cash and cash equivalents	(1)	(9)
Payment for acquisition of the American glass fiber business of PPG	¥ 59,389	\$ 525,566

9. Cash and cash equivalents

Cash and cash equivalents at December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Cash and time deposits on consolidated balance sheets	¥ 132,002	¥ 117,068	\$ 1,036,000
Time deposits due over three months	(5,835)	(3,233)	(28,611)
Cash and cash equivalents in consolidated statements of cash flows	¥ 126,167	¥ 113,835	\$ 1,007,389

10. Inventories

Inventories at December 31, 2016 and 2017 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Finished and purchased goods	¥ 38,977	¥ 44,156	\$ 390,761
Work-in-process	1,457	1,606	14,212
Raw materials and others	19,980	23,605	208,894
	¥ 60,414	¥ 69,367	\$ 613,867

11. Loss on impairment of fixed assets

Long-lived assets such as property, plant and equipment and acquired intangibles subject to amortization are reviewed for impairment whenever events or changes in circumstances indicate that the book values of the assets may not be recoverable. Recoverability of assets to be held and used in operations is measured by a comparison between the book value of the asset and the estimated undiscounted future cash flows expected to be generated by the asset. If the book value of the asset exceeds the estimated future cash flows, an impairment loss is recognized in the amount by which the book value of the asset exceeds the fair value.

Loss on impairment of fixed assets for the fiscal years ended December 31, 2016 is summarized below.

(a) Grouping

The Company and its consolidated subsidiaries group operating assets by business unit for which the profit or loss is continually controlled to measure the impairment of the assets.

Idle assets which are not used for business are treated separately.

(b) Assets subject to impairment

After review, the book values of the following assets were reduced to their recoverable values, and the reduced amounts were recognized as impairment loss.

2016/12:

Use	Reason	Location	Type
Important idle assets	No utilization plan	Notogawa factory, Shiga-Takatsuki factory, Wakasa-Kaminaka factory, Nippon Electric Glass (Korea) Co., Ltd., other	Building and structures, machinery and equipment, land, other

(c) Assessment of recoverable values

The recoverable values of important idle assets were measured based on net selling price. No recoverable values were expected for the production facilities of the glass manufacturing line due to the probability of low future sales.

(d) Impairment loss on fixed assets was as follows:

	Millions of yen	
	2016/12	
Buildings and structures	¥ 3,503	
Machinery and equipment	2,241	
Land	648	
Other	97	
	¥ 6,489	

There was no materiality in impairment of fixed assets the year ended December 31, 2017.

12. Short-term and long-term debt

Short-term debt, including the current portion of long-term debt, at December 31, 2016 and 2017 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Short-term bank borrowings; average rate 0.3% per annum	¥ 19,197	¥ 26,681	\$ 236,115
Commercial paper; average rate -0.0% per annum	2,000	2,000	17,699
Current portion of long-term borrowings; average rate 0.1% per annum	-	8,926	78,991
Current portion of unsecured bonds	10,000	-	-
	¥ 31,197	¥ 37,607	\$ 332,805

Long-term debt at December 31, 2016 and 2017 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Borrowings, principally from banks and insurance companies due from 2019 through 2024; average rate 0.2% per annum	¥ 40,800	¥ 61,980	\$ 548,494
0.4% unsecured bonds, due in 2017	10,000	-	-
0.7% unsecured bonds, due in 2019	10,000	10,000	88,496
0.3% unsecured bonds, due in 2020	10,000	10,000	88,496
0.6% unsecured bonds, due in 2022	10,000	10,000	88,496
	80,800	91,980	813,982
Less current portion of long-term borrowings	-	(8,926)	(78,991)
Less current portion of unsecured bonds	(10,000)	-	-
	¥ 70,800	¥ 83,054	\$ 734,991

The aggregate annual maturities of long-term debt at December 31, 2017 were as follows:

Years ending December 31	Millions of yen	Thousands of U.S. dollars
2018	¥ 8,926	\$ 78,991
2019	21,579	190,965
2020	11,663	103,212
2021	24,862	220,018
2022	11,663	103,212
2023 and thereafter	13,287	117,584
	¥ 91,980	\$ 813,982

For flexible financing purposes, the Company has committed credit facilities with certain banks. The maximum aggregate credit facility available to the Company is ¥25,000 million (\$221,239 thousand). The credit facility has not been used as of December 31, 2017.

13. Income taxes

The Company is subject to a number of taxes based on income, which, in the aggregate, indicate a statutory tax rate in Japan of approximately 32.9% and 30.7% for the fiscal years ended December 31, 2016 and 2017, respectively.

The significant differences between the statutory tax rate in Japan and the effective tax rate of the Company and its consolidated subsidiaries for financial statement purposes for the fiscal years ended December 31, 2016 and 2017 were as follows:

	2016/12	2017/12
Statutory tax rate in Japan	32.9%	30.7%
Exclusion from gross revenue of dividends	(17.6)	(16.2)
Difference in tax rates for overseas consolidated subsidiaries	(35.5)	(6.3)
Expenses not deductible for tax purposes, mainly		
entertainment expenses	2.6	(0.3)
Undistributed earnings of overseas consolidated subsidiaries	9.9	(1.0)
Effect of elimination of dividend income	17.2	16.3
Changes in statutory tax rates on the Company and its		
domestic consolidated subsidiaries	4.0	1.7
Overseas withholding tax	2.8	2.4
Unrealized profits	4.5	(0.7)
Less valuation allowance	42.0	(10.7)
Other	(0.1)	(0.7)
Effective tax rate	62.7%	15.2%

Significant components of the Company's and its consolidated subsidiaries' deferred tax assets and liabilities as of December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Deferred tax assets:			
Reserve for special repairs	¥ 7,057	¥ 7,101	\$ 62,841
Capital allowances	6,597	5,356	47,398
Depreciation in excess of tax limit	6,585	4,024	35,611
Unrealized gain on property, plant and equipment	2,768	3,016	26,690
Loss on devaluation of inventories	2,205	2,188	19,363
Tax losses carried forward	3,608	1,697	15,018
Loss on valuation of investment securities	1,394	1,294	11,451
Long-term prepaid expenses	410	266	2,354
Accrued bonuses	357	419	3,708
Reserve for loss on plant closing	134	1,151	10,186
Other	3,853	3,561	31,513
Subtotal deferred tax assets	34,968	30,073	266,133
Less valuation allowance	(8,805)	(5,180)	(45,841)
Total deferred tax assets	26,163	24,893	220,292
Deferred tax liabilities:			
Depreciation of overseas consolidated subsidiaries	(5,523)	(6,621)	(58,593)
Net unrealized holding gains on securities	(7,895)	(11,357)	(100,504)
Undistributed profit of overseas consolidated subsidiaries	(2,722)	(2,392)	(21,168)
Other	(197)	(108)	(956)
Total deferred tax liabilities	(16,337)	(20,478)	(181,221)
Net deferred tax assets	¥ 9,826	¥ 4,415	\$ 39,071

Adjustment of deferred tax assets following the change in the U.S. Federal tax rate

On December 22, 2017 (local date), the United States passed a new tax reform bill, a key element of which was the reduction of the federal statutory corporate tax rate, which was to change from the consolidated fiscal year beginning on or after January 1, 2018. Following these changes, net deferred tax assets recorded in this fiscal year decreased by ¥573 million (\$5,071 thousand), while income taxes-deferred increased by ¥569 million (\$5,035 thousand).

14. Asset retirement obligations

(a) Asset retirement obligations recorded on the consolidated balance sheets

(1) Outline of asset retirement obligations

Recorded asset retirement obligations are expenses such as the costs for disposal of machinery and equipment owned by the Company that contain PCB (polychlorinated biphenyl) and the costs for removal of asbestos from buildings owned by the Company when they are demolished.

(2) Basis for calculating asset retirement obligations

Asset retirement obligations are based on estimates provided by specialty companies (construction companies, etc.).

(3) Changes in the total amount of asset retirement obligations during the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Beginning balance	¥ 328	¥ 320	\$ 2,832
Decrease due to the fulfillment of asset retirement obligations	(8)	(9)	(80)
Change in estimated asset retirement obligations	-	(5)	(44)
Other	-	0	0
Ending balance	¥ 320	¥ 306	\$ 2,708

(b) Asset retirement obligations not recorded on the consolidated balance sheets

Regarding some factory sites and other properties being used under real estate leasing agreements, the Company and its consolidated subsidiaries have obligations related to the cost of restoring such properties to their original state at the time of business termination or moving out. However, since there are uncertainties regarding the lease periods of the properties to which such obligations apply because there are no plans to move out at this time, it is impossible to reasonably estimate the related asset retirement obligations. Therefore, no asset retirement obligations are recorded for such obligations.

15. Severance and retirement benefits

The Company and its domestic consolidated subsidiaries provide mainly defined contribution pension plans. However, certain employees are provided unfunded lump-sum payment plans. The overseas consolidated subsidiaries provide funded lump-sum payment plans defined contribution pension plans and defined benefits plan.

Under defined benefit pension plans, the reconciliation of opening and ending balances for projected benefit obligation for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Projected benefit obligation at beginning of year	¥ (1,224)	¥(31,600)	\$(279,646)
Service cost	(299)	(732)	(6,478)
Interest cost	(114)	(593)	(5,248)
Actuarial differences	(105)	(2,630)	(23,274)
Benefits paid	302	867	7,673
Increase from business combinations	(28,470)	-	-
Other	(1,690)	(3,123)	(27,638)
Projected benefit obligation at end of year	¥(31,600)	¥(37,811)	\$(334,611)

Under defined benefit pension plans, the reconciliation of opening and ending balances for pension assets for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Pension assets at beginning of year	¥ 22	¥ 30,038	\$ 265,823
Expected return on pension assets	87	549	4,858
Actuarial differences	447	2,711	23,991
Contributions paid by employer	1	355	3,142
Benefits paid	(168)	(762)	(6,743)
Increase from business combinations	27,939	-	-
Other	1,710	3,019	26,717
Pension assets at end of year	¥ 30,038	¥ 35,910	\$ 317,788

Under defined benefit pension plans, the reconciliation of ending balances for projected benefit obligations and pension assets and the balances for net defined benefit liability recognized in the consolidated balance sheets for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Projected benefit obligations of funded plans	¥(30,796)	¥(36,809)	\$(325,744)
Pension assets	30,038	35,910	317,788
	(758)	(899)	(7,956)
Projected benefit obligation of unfunded plans	(804)	(1,001)	(8,858)
Net liabilities for severance and retirement benefits recognized in the consolidated balance sheets	(1,562)	(1,900)	(16,814)
Net defined benefit liability	(1,562)	(1,900)	(16,814)
Net liabilities for severance and retirement benefits recognized in the consolidated balance sheets	¥ (1,562)	¥ (1,900)	\$ (16,814)

Under defined benefit pension plans, components of severance and retirement benefit expense for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Service cost	¥ 299	¥ 732	\$ 6,478
Interest cost	114	593	5,248
Expected return on pension assets	(87)	(549)	(4,858)
Amortization of actuarial differences	14	(8)	(72)
Severance and retirement benefit expense for defined benefit pension plans	¥ 340	¥ 768	\$ 6,796

Under defined benefit pension plans, remeasurements of defined benefit plans for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Actuarial differences	¥ 356	¥ 106	\$ 938
Total	¥ 356	¥ 106	\$ 938

Under defined benefit pension plans, the accumulated amounts for remeasurements of defined benefit plans for the fiscal years ended December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Unrecognized amount for actuarial differences	¥(356)	¥(462)	\$(4,088)
Total	¥(356)	¥(462)	\$(4,088)

Under defined benefit pension plans, the percentage composition by asset class of total plan assets for the fiscal years ended December 31, 2016 and 2017 was as follows:

	2016/12	2017/12
Equity securities	51%	51%
Bonds	49%	49%
Others	0%	0%
Total	100%	100%

The current and expected allocation of plan assets as well as the current and expected long-term rates of return for the various assets that constitute the plan assets are considered when determining the long-term expected rate of return on plan assets.

Under defined benefit pension plans, principal actuarial assumptions for the fiscal years ended December 31, 2016 and 2017 were as follows:

	2016/12	2017/12
Discount rates	Mainly 1.8%	Mainly 1.8%
Long-term expected rates of return on plan assets	Mainly 1.3%	Mainly 1.8%
Expected rates of pay raises	Mainly 2.4%	Mainly 2.0%

The total amounts that the Company and its consolidated subsidiaries needed to contribute to the defined contribution pension plans was ¥1,181 million for the fiscal year ended December 31, 2016 and ¥1,463 million (\$12,947 thousand) for the fiscal year ended December 31, 2017.

16. Net assets

Under Japanese laws and regulations, the entire amount paid for new shares is required to be designated as common shares. However, a company may, by a resolution of the Board of Directors, designate an amount not exceeding one half of the price of the new shares as additional paid-in capital, which is included in capital surplus.

Under the Japanese Corporate Law (“the Law”), in cases in which a dividend distribution of surplus takes place, the smaller of an amount equal to 10% of the dividend or the excess, if any, of 25% of common share over the total of additional paid-in capital and legal earnings reserve must be set aside as additional paid-in capital or legal earnings reserve. The legal earnings reserve is included in retained earnings in the accompanying consolidated balance sheets. Under the Law, both of these appropriations generally require a resolution of the shareholders’ meeting.

Additional paid-in capital and legal earnings reserve may not be distributed as dividends. Under the Law, all additional paid-in capital and all legal earnings reserve may be transferred to other capital surplus and retained earnings, which are potentially available for dividends, by a resolution of a shareholders’ meeting.

Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

The maximum amount that the Company can distribute as dividends is calculated based on the nonconsolidated financial statements of the Company in accordance with Japanese laws and regulations.

At the annual shareholders’ meeting held on March 29, 2018, the shareholders approved cash dividends amounting to ¥4,973 million (\$44,009 thousand), or ¥50.00 per share. In addition, the Company paid interim cash dividends of ¥3,979 million (\$35,212 thousand), or ¥8.00 per share before stock consolidation, on August 31, 2017.

17. Business combinations

(a) Overview of the business combination

(1) Name and business of the acquired company

Name of the acquired company: PPG Industries Fiber Glass Products, Inc.

Name of the transferor of business: PPG Industries, Inc.

PPG Industries Ohio, Inc.

Business: Production and sale of glass fiber

(2) Main reasons for the business combination

Through the acquisition, the transaction will establish a global production and supply base spanning Japan, Malaysia, Europe and the U.S. and allow the Company to more effectively respond to future global demand for glass fibers.

Furthermore, the Company expects to develop and provide new glass fibers through synergies created with the newly acquired subsidiary contributing to improvement in innovative composite material functionality as well as expanding market presence and business growth.

(3) Date of the business combination

September 1, 2017

(4) Legal form of the business combination

Share acquisition and business transfer in consideration for cash

(5) Name of the acquired company after the business combination

Electric Glass Fiber America, LLC

(6) Ratio of voting rights acquired

PPG Industries Fiber Glass Products, Inc. 100%

(7) Primary basis for determining which is the acquiring company

The share acquisition and business transfer in consideration for cash through the Company’s U.S. subsidiary, Nippon Electric Glass America, Inc.

(b) Period of inclusion of acquired company’s performance in the consolidated financial statements

From September 1, 2017 to December 31, 2017

(c) Amount and type of consideration paid for and acquisition cost of the acquired company

Millions of U.S. dollars

Consideration for acquisition	Cash and cash equivalents	\$ 540
Acquisition cost		540

(d) Main acquisition related costs

Advisory fees, etc.: ¥797 million (\$7,053 thousand)

(e) Details of assets acquired and liabilities assumed on the date of the business combination

	Millions of yen	Thousands of U.S. dollars
Current assets	¥ 9,858	\$ 87,239
Noncurrent assets	34,094	301,717
Total assets	43,952	388,956
Current liabilities	¥ 4,411	\$ 39,035
Noncurrent liabilities	534	4,727
Total liabilities	4,945	43,762

(f) Amounts allocated to intangible assets other than goodwill and the weighted average amortization period by components

	Millions of yen	Thousands of U.S. dollars	The weighted average amortization period
Trademarks	¥ 3,186	\$ 28,195	Non-amortization
Developed technology	3,186	28,195	20
Customer relationships	1,318	11,664	10

(g) Amount, cause and amortization of goodwill arising from the acquisition

- (1) Amount of goodwill
¥20,383 million (\$180,381 thousand)
- (2) Source of goodwill
Expected future excess earning power
- (3) Amortization method and period
Straight-line method over 10 years

(h) Estimated amount and calculation method of the impact on the consolidated statements of income calculated on the assumption that the business combination had been concluded at the start of the consolidated fiscal year

A description is omitted as the estimated amount of the impact is difficult to calculate.

18. Contingent liabilities

Contingent liabilities at December 31, 2016 and 2017 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016/12	2017/12	2017/12
Notes receivable discounted	¥ 37	¥ 52	\$ 460
Guarantees of employees' housing loans	224	183	1,619
Guarantees of bank loans	-	3,249	28,752

19. Segment information

Information by segment for the fiscal years ended December 31, 2016 and 2017 was as follows:

(a) Segment information (by management approach)**Outline of reportable segment**

The Company has adopted a business division system in which each business division develops a comprehensive strategy for the products it handles and conducts business activities based on such strategy. The Board of Directors periodically reviews decisions regarding the allocation of management resources to each business division and evaluates business performance.

Although it is considered that the Group consists of multiple business segments that are handled by various business divisions, in general the "glass products" made by the Group companies are similar in terms of characteristics, manufacturing methods, market and industry, customer type and marketing factors. Therefore, the Group has consolidated these segments into a single "Glass Business" segment. Accordingly, except for information given in the "Outline of reportable segment", information for other segments has been omitted.

(b) Related Information

(1) Information by products and services

	Millions of yen		
	Glass Business		Total
2016/12:	Electronics and Information Technology	Performance Materials and Others	
Sales to external customers	¥ 147,126	¥ 92,286	¥ 239,412

	Millions of yen		
	Glass Business		Total
2017/12:	Electronics and Information Technology	Performance Materials and Others	
Sales to external customers	¥ 149,157	¥ 133,290	¥ 282,447

	Thousands of U.S. dollars		
	Glass Business		Total
2017/12:	Electronics and Information Technology	Performance Materials and Others	
Sales to external customers	\$ 1,319,973	\$ 1,179,558	\$ 2,499,531

(2) Geographical information

Net sales

2016/12:

Millions of yen

Japan	China	Korea	Europe	Other areas	Total
¥ 51,159	¥ 41,155	¥ 70,410	¥ 21,772	¥ 54,916	¥ 239,412

2017/12:

Millions of yen

Japan	China	Korea	Europe	Other areas	Total
¥ 50,139	¥ 62,313	¥ 59,722	¥ 40,289	¥ 69,984	¥ 282,447

2017/12:

Thousands of U.S. dollars

Japan	China	Korea	Europe	Other areas	Total
\$ 443,708	\$ 551,442	\$ 528,513	\$ 356,540	\$ 619,328	\$ 2,499,531

Notes: 1. The classifications of countries and areas are based on the location of customers.

2. The main countries classified as "Other areas" are Taiwan and the U.S.

Property, plant and equipment

2016/12:

Millions of yen

Japan	China	Korea	Malaysia	Other areas	Total
¥ 212,055	¥ 44,212	¥ 51,894	¥ 42,758	¥ 16,480	¥ 367,399

2017/12:

Millions of yen

Japan	China	Korea	Malaysia	Other areas	Total
¥ 200,814	¥ 61,102	¥ 47,080	¥ 43,215	¥ 41,607	¥ 393,818

2017/12:

Thousands of U.S. dollars

Japan	China	Korea	Malaysia	Other areas	Total
\$ 1,777,115	\$ 540,726	\$ 416,637	\$ 382,434	\$ 368,203	\$ 3,485,115

Notes: 1. The classifications of countries and areas are based on the location of property, plant and equipment.

2. The main countries classified as "Other areas" are countries in Europe and Taiwan.

(3) Information by major customers

Sales

Millions of yen

Thousands of U.S. dollars

Related segment

	2016/12	2017/12	2017/12	
LG Display Co., Ltd.	¥ 54,196	¥ 45,617	\$ 403,690	Glass Business

(c) Information on impairment of fixed assets

Millions of yen

2016/12:

	Glass Business	Total
Loss on impairment of fixed assets	¥ 6,489	¥ 6,489

There was no materiality in the impairment of fixed assets in the year ended December 31, 2017.

(d) Information on amortization of goodwill and unamortized balance

Millions of yen

2016/12:

	Glass Business	Total
Amortization of goodwill	¥ 84	¥ 84
Balance at end of year	1,904	1,904

2017/12:

	Glass Business	Total
Amortization of goodwill	¥ 859	¥ 859
Balance at end of year	21,848	21,848

Thousands of U.S. dollars

2017/12:

	Glass Business	Total
Amortization of goodwill	\$ 7,602	\$ 7,602
Balance at end of year	193,345	193,345

Independent Auditor's Report

Independent Auditor's Report

To the Board of Directors of Nippon Electric Glass Co., Ltd.:

We have audited the accompanying consolidated financial statements of Nippon Electric Glass Co., Ltd. and its consolidated subsidiaries, which comprise the consolidated balance sheets as at December 31, 2017 and 2016, and the consolidated statements of income, statements of comprehensive income, statements of changes in net assets and statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in Japan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgement, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, while the objective of the financial statement audit is not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Nippon Electric Glass Co., Ltd. and its consolidated subsidiaries as at December 31, 2017 and 2016, and their financial performance and cash flows for the years then ended in accordance with accounting principles generally accepted in Japan.

Convenience Translation

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended December 31, 2017 are presented solely for convenience. Our audit also included the translation of yen amounts into U.S. dollar amounts and, in our opinion, such translation has been made on the basis described in Note 1 to the consolidated financial statements.

KPMG AZSA LLC

April 24, 2018
Kyoto, Japan

Global Network



Corporate Profile (as of December 31, 2017)

Founded	December 1, 1949
Company Name	Nippon Electric Glass Co., Ltd.
Head Office	7-1, Seiran 2-chome, Otsu, Shiga 520-8639, Japan Tel: +81-77-537-1700 Fax: +81-77-534-4967
Sales Headquarters (Osaka)	10F, Sumitomo Seimei Shin-Osaka Kita Bldg., 1-14, Miyahara 4-chome, Yodogawa-ku, Osaka 532-0003, Japan Tel: +81-6-6399-2711 Fax: +81-6-6399-2731
(Tokyo)	9F, Shinagawa Grand Central Tower, 16-4, Konan 2-chome, Minato-ku, Tokyo 108-0075, Japan Tel: +81-3-5460-2510 Fax: +81-3-5460-2525
Plants (in Japan)	Otsu, Shiga-Takatsuki, Notogawa, Precision Glass Center
Capital	32,155 million yen
Number of Employees	6,776 (consolidated)
Stock Exchange Listings	Tokyo Stock Exchange (1st Section)
Stock Code	5214
Fiscal Year	January 1 to December 31 of each year
General Shareholders Meeting	Held each year in March
Transfer Agent for Common Stock	Sumitomo Mitsui Trust Bank, Ltd.

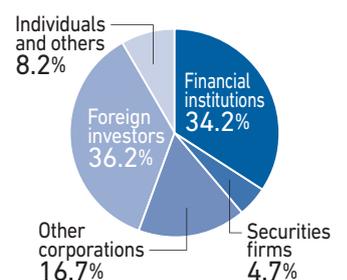
Stock Information (as of December 31, 2017)

Information about NEG Stock

Total number of shares authorized to be issued	240,000,000 shares*
Total number of shares issued	99,523,246 shares*
Shares per unit	100 shares*
Total number of shareholders	11,085

*The Company changed the number of shares per share unit from 1,000 to 100 and consolidated every five shares into one share, effective on July 1, 2017.

Distribution of Shares by Shareholder Type



Major Shareholders

Shareholder	Number of shares held (thousands of shares)	Investment stake (%)
NIPRO CORPORATION	12,715	12.8
The Master Trust Bank of Japan, Ltd. (Trust Account)	8,810	8.9
Japan Trustee Services Bank, Ltd. (Trust Account)	5,804	5.8
THE BANK OF NEW YORK 133524	1,858	1.9
Japan Trustee Services Bank, Ltd. (Trust Account No. 9)	1,772	1.8
Japan Trustee Services Bank, Ltd. (Trust Account No. 5)	1,649	1.7
The Shiga Bank, Ltd.	1,617	1.6
Trust & Custody Services Bank, Ltd. (Collateral on Unit Trust Account)	1,410	1.4
STATE STREET BANK WEST CLIENT-TREATY 505234	1,342	1.3
GOVERNMENT OF NORWAY	1,272	1.3

GLASS FOR FUTURE



Nippon Electric Glass

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