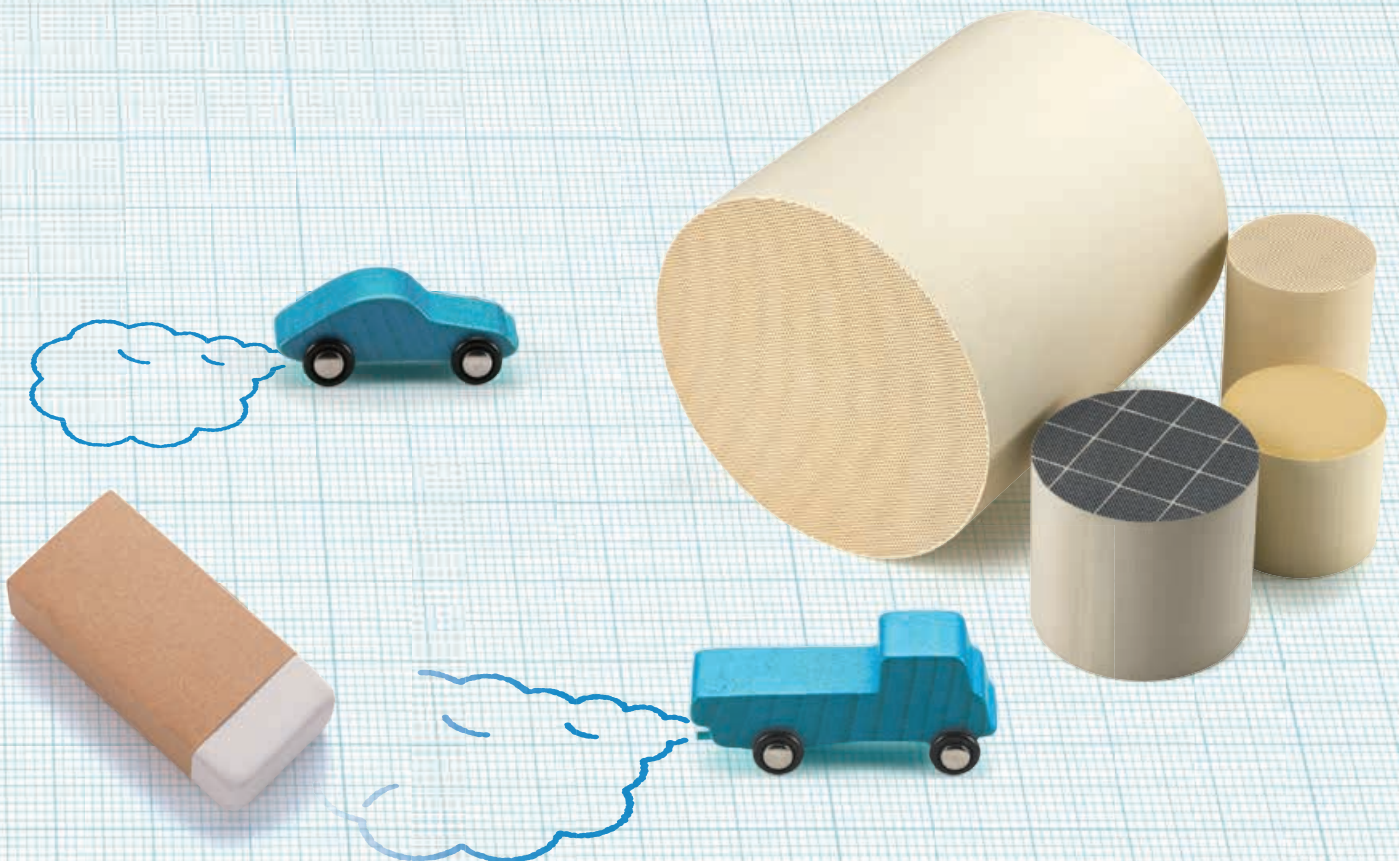


NGK Report 2017

©NGK・kero/dwarf1





Manufacturing that Contributes to a Better Societal Environment, Creating Value to Cater to Global Needs

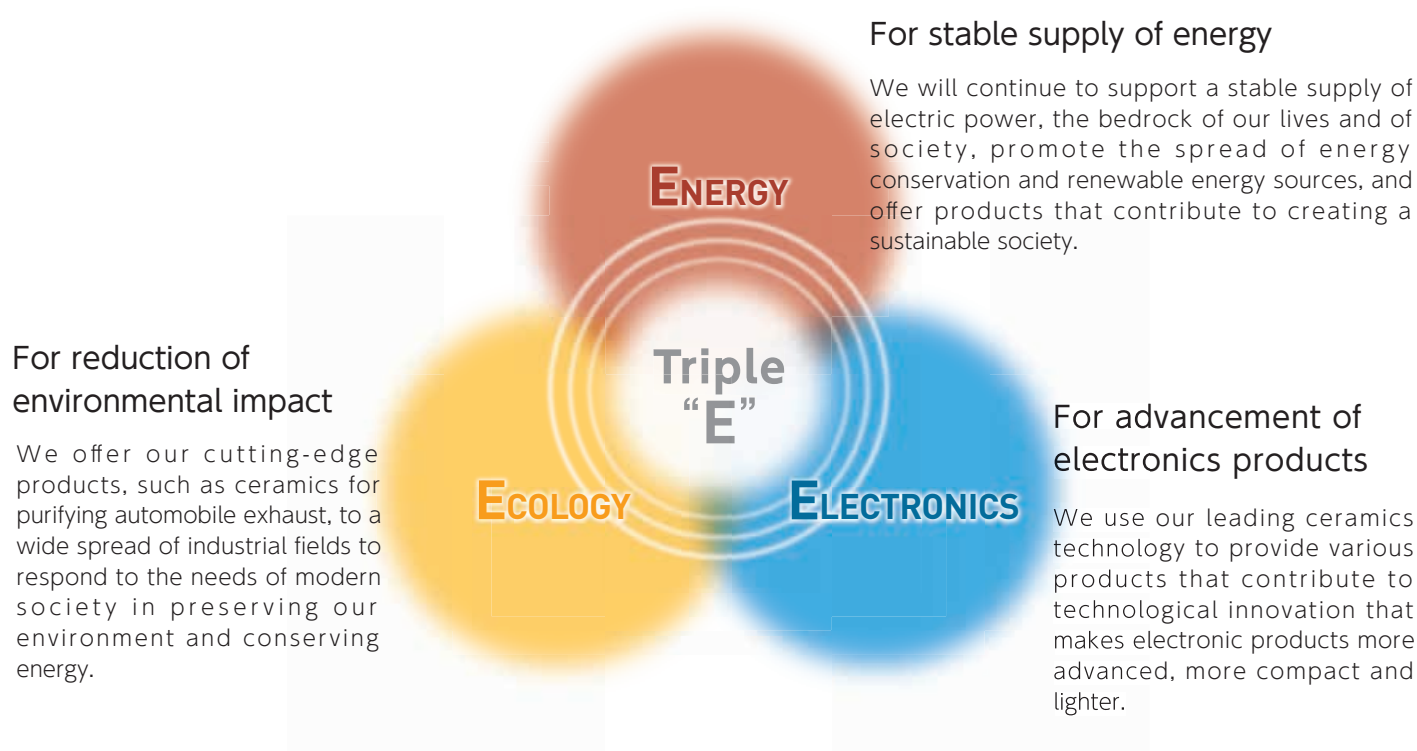
The NGK Group develops and supplies products that support social foundations and serve environmental conservation, leveraging its ceramics technologies accumulated over the many decades since its founding.

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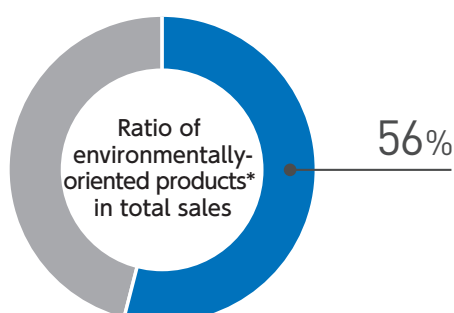
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NGK is Leveraging Our Unique Ceramics Technology to Expand Business in the “Triple E” Business Domain

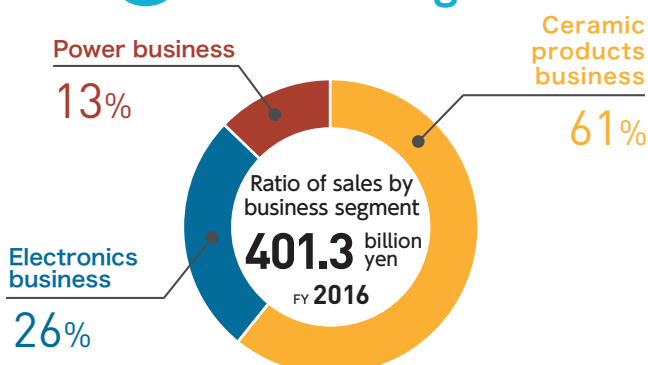
NGK utilizes ceramics as our core technology to expand our power business, ceramic products business, and electronics business into the business domains of energy, ecology, and electronics. We will continue to test the potential of new ceramics technologies with an eye on the changing needs of the times, and we aim to expand our business profitability while we also make contributions to society and the preservation of our environment.



Products contributing to environmental protection **60%**



3 business segments



*For more details on environmentally-oriented products, see page 104.

Building a Reliable Global Network that Brings Together Sophisticated Technological Capacity with Quality Craftsmanship

Consolidated subsidiaries

58

companies

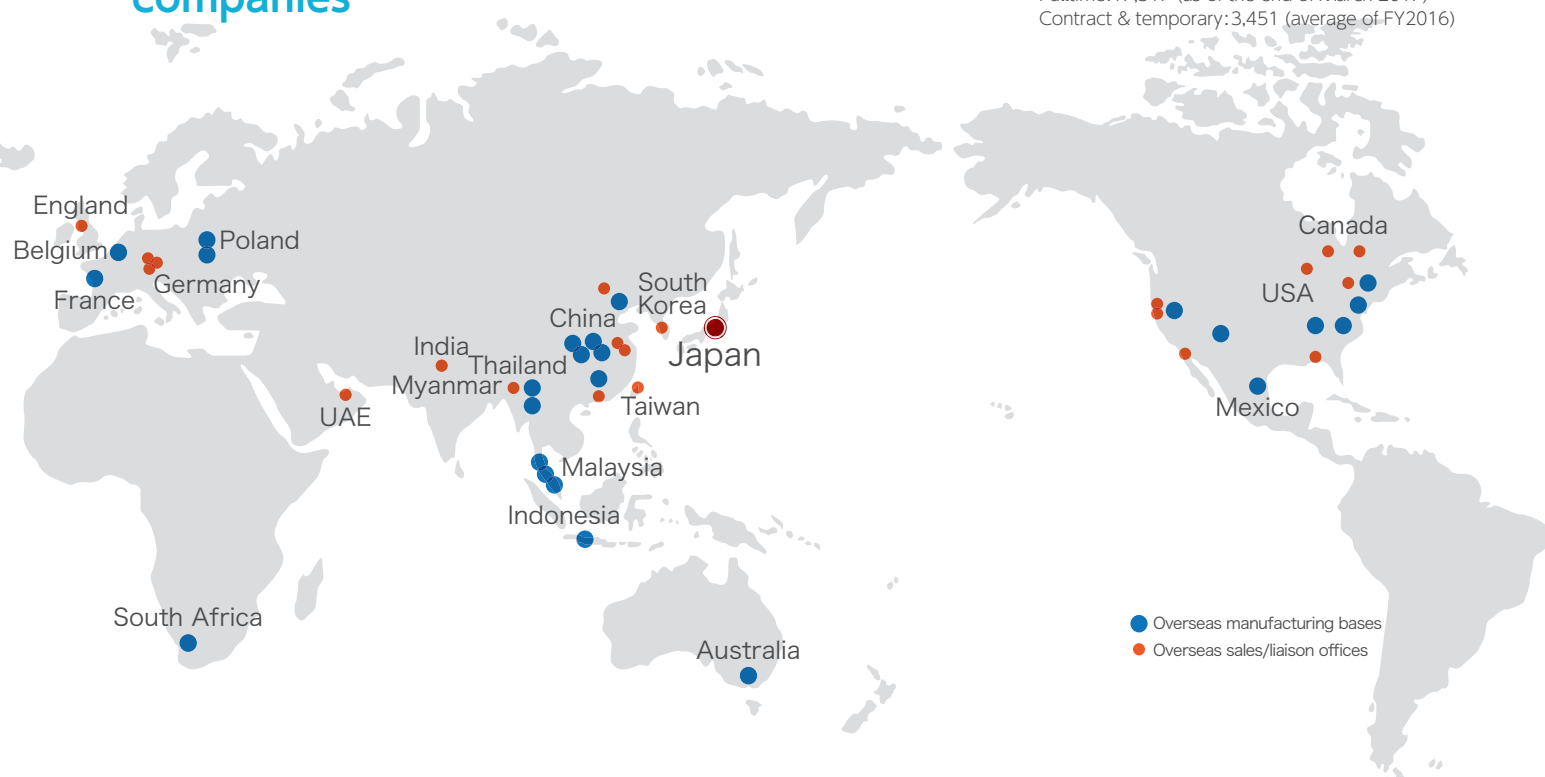
Corporate bases

20 countries and regions around the world

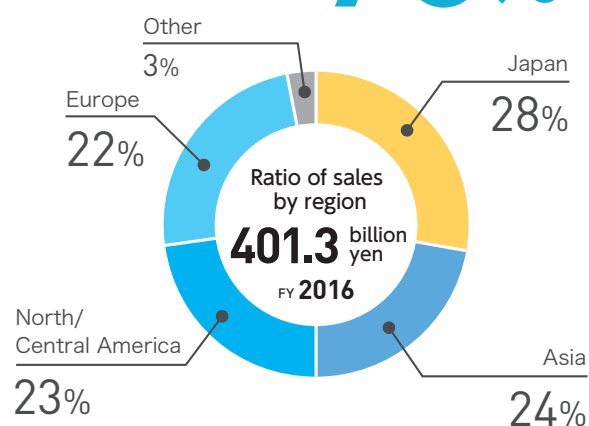
Employees Approx.

21,000

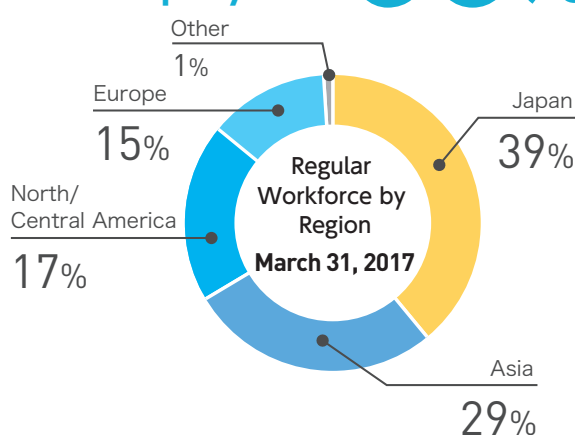
Fulltime: 17,517 (as of the end of March 2017)
Contract & temporary: 3,451 (average of FY2016)



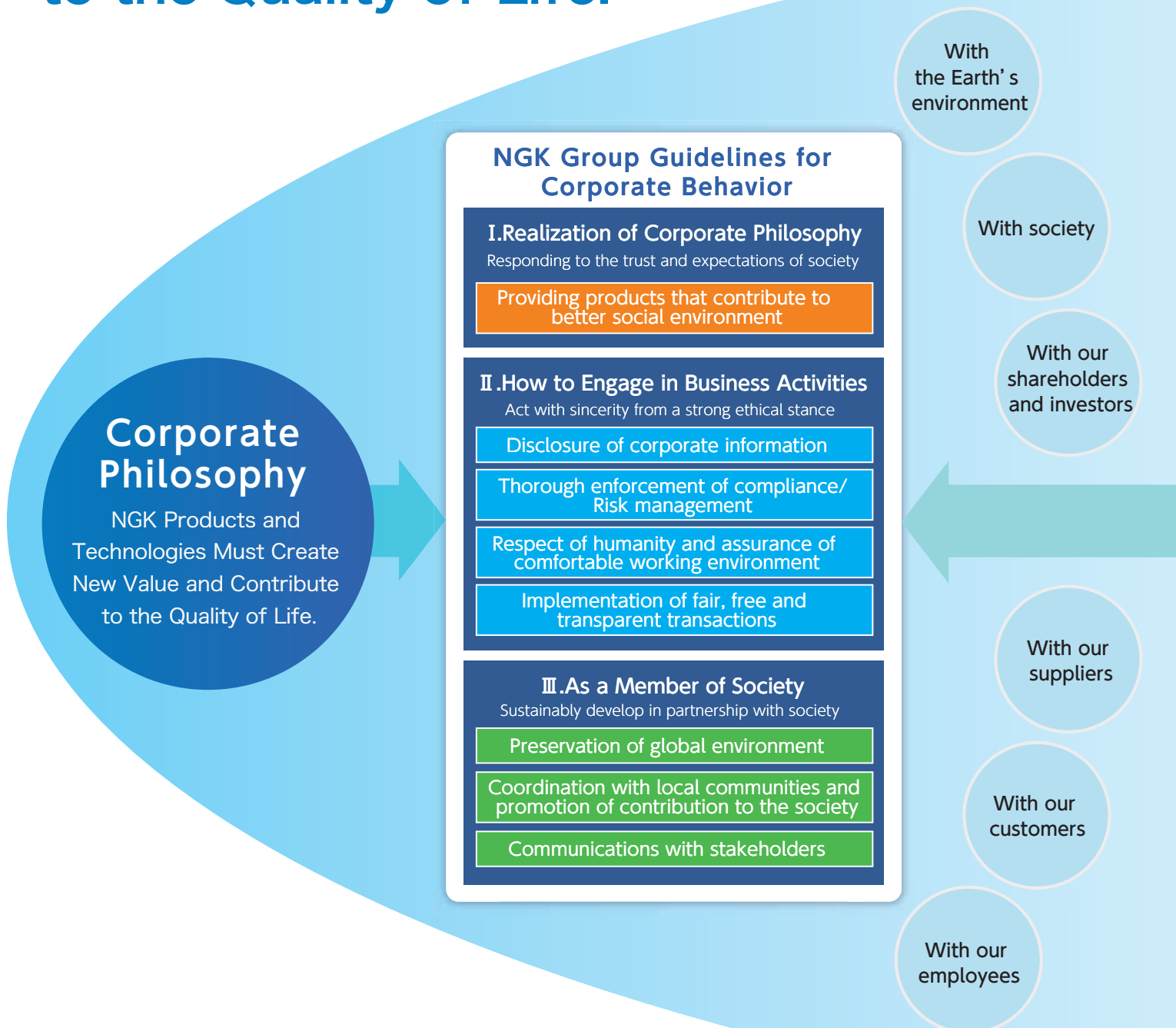
Outside Japan sales: 70%



Outside Japan employees: 60%



NGK Products and Technologies Must Create New Value and Contribute to the Quality of Life.



Making contributions to society based on our corporate philosophy

We, at NGK Group, hope to continue to provide products and services that create new value for society so that we may do our part to improving our social environment and to make contributions to society that are tangible representations of our corporate philosophy. In doing so, we hope to gain the trust and expectations of our community, and to carry out the social responsibility. This mentality is shared across the entire NGK Group, and by establishing the NGK Group Guidelines for Corporate Behavior and through our day-to-day business, we aim to make ourselves into a more trustworthy company for all of our stakeholders.

This pamphlet reports
NGK initiatives in chapter
form based on CSR objectives.

Actions and Objectives for Promoting CSR

Providing products that contribute to better social environment	<ul style="list-style-type: none"> ● Development and provision of products and services that help to preserve the natural environment ● Development and provision of products and services that embody safety and reliability ● Realization of higher quality products and services 	P50 >
Disclosure of corporate information	<ul style="list-style-type: none"> ● Enhancement of corporate information disclosure ● Consistent improvement of internal controls relating to financial reporting 	P56 >
Thorough enforcement of compliance/ Risk management	<ul style="list-style-type: none"> ● Thorough promulgation of the NGK Group Guidelines for Corporate Behavior through education ● Reinforcement of the risk management system ● Respect and protection of intellectual property rights ● Creation and consistent improvement of a framework for information security ● Strict adherence to the Anti-Monopoly Act, Subcontract Act, and other laws and regulations pertaining to business transactions ● Strict adherence to laws and regulations relating to export control 	P60 >
Respect of humanity and assurance of comfortable working environment	<ul style="list-style-type: none"> ● Maintenance and consistent improvement of safe and comfortable working environments ● Development of human capital and recruiting of human resources across the Group ● Utilization of diverse human resources ● Support for better balance between work and home life/childrearing 	P73 >
Implementation of fair, free and transparent transactions	<ul style="list-style-type: none"> ● Fair and honest evaluation of procurement partners, and extensive resource diversification ● Promotion of CSR procurement 	P92 >
Preservation of global environment	<ul style="list-style-type: none"> ● Prevention of global warming ● Adoption of environmentally friendly production processes ● Promotion of resource recycling ● Strengthening of global environmental management 	P95 >
Coordination with local communities and promotion of contribution to the society	<ul style="list-style-type: none"> ● Provision of scholarships and living assistance to foreign students ● Cooperation with local communities, labor unions, and NPOs in social contribution activities ● Support for volunteer activities by employees 	P116 >
Communications with stakeholders	<ul style="list-style-type: none"> ● Communication with customers and procurement partners ● Interaction with local communities via plant tours and open house events ● CSR Talk Live (Discussions on implementing CSR with every employee class) 	P124 >

Contributing to the SDGs through business

SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

With our corporate philosophy-NGK Products and Technologies Must Create New Value and Contribute to the Quality of Life-we understand the larger social issues, and we are making contributions to the sustainable development of society through the practical implementation of our CSR objectives.



Understanding the Needs of Our Age and Continuing to Produce New Value

NGK began in 1919 as a porcelain insulator manufacturer to help Japanese society modernize by meeting the growing demand for electricity accompanying the technological development of industry and the lives of the people.

Since then, NGK has used the technological capacity we've cultivated through the manufacture of high-quality and reliable insulators to actively work towards the diversification and globalization of our business, and to realize sustainable growth through the production of numerous products that support industry and the lives of the people in our community, as well as assist in solving complex social problems.

NGK will continue to provide the world with new value through advanced manufacturing that meets the needs of our age.

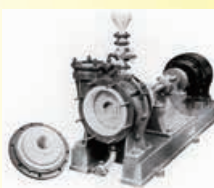
1919

Spin off of the insulator department of Nippon Toki (currently NORITAKE CO., LIMITED) to establish NGK



1931

Acid-resistant equipment for the chemical industry



1958

Beryllium-copper products



1976

HONEYCERAM®, a ceramic catalyst converter substrate for automobile exhaust purification



1978

Low-level radioactive waste treatment equipment



1989

Diesel particulate filter



1919

1930

1940

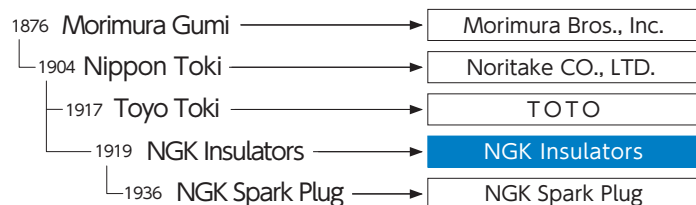
1950

1960

NGK was created to help Japanese society modernize by meeting the growing demand for electricity

Morimura Group

The ceramics group has its roots in the Morimura Group, a pioneer in the Japan trading industry.



1919

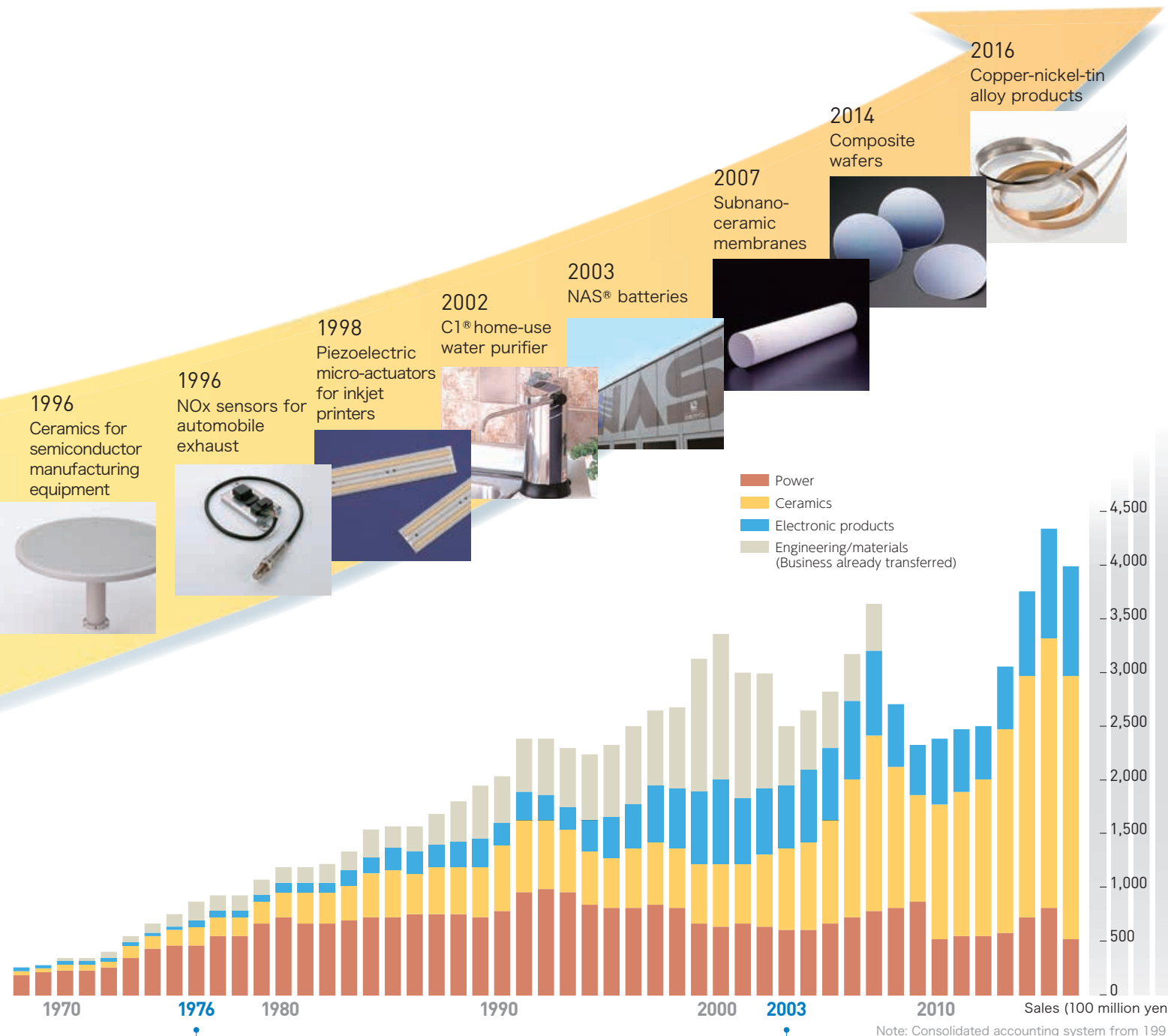


Supporting the development of industry and the lives of people



We solidified our place as the world's number one insulator manufacturer with the completion of our head office and the Atsuta plant in 1957

In 1919, the year after the end of WWI, NGK was founded amidst a time of unprecedented economic growth, and to match the growing demand for electricity, we developed ultra-high-voltage and ultra-high-strength insulators to support the development of industry and the lives of the people. We continue to support the supply of the world's electric power even today as the world's top class insulator manufacturer.



1976

Protecting clean air

As restrictions on car emissions tighten as a response to worsening air pollution, NGK has developed a ceramic substrate for catalytic converter, called HONEYCERAM (see page 32), that can be mounted right after an engine. HONEYCERAM, which can withstand the high heat and shock of high-temperature emissions, is loaded on cars around the world and contributes greatly to solving environment problem.



HONEYCERAM mass-produced product #1. In 2009, it was registered in the important science and technology history collections (Essential Historical Materials for Science and Technology) of the National Museum of Nature and Science

2003

Contributing to making a sustainable society possible

It was in the 1960s when the basic principle was described for the NAS battery, which uses ceramics in electrolytes. However, there were many technical issues and, while the many companies gave up trying to turn it into a product, NGK overcame numerous issues, like how to make it have a larger capacity and reduce costs, to finally begin mass production of the world's first NAS battery in 2003. This product is gaining attention as the key to spread and expanding renewable energy.



There are already approximately 200 working examples of the NAS battery in Japan and overseas.

Our strengths lie in the growth of our business with the skills we have developed since our founding and the people that support that growth.

Since our founding, we have leveraged our diverse set of skills to develop and offer products that support the infrastructure of society and assist in the solving of environmental problems. It's our people that are the bedrock of our strength, and their mentality to relentlessly pursue quality, to continue to push the envelope, and to give back to society has continued unabated from our founding up to today.

Pushing the envelope globally and in new fields

NGK goes right back to 1876, when Ichitaro Morimura (Ichizaemon VI) and his younger brother, Toyo, founded Morimura Gumi (currently Morimura Bros., Inc.). In an age when Japan was beginning to modernize, the Morimura brothers were pioneers in globalizing Japan and blazing a trail for Japan-US trade. NGK, having started as an insulator manufacturer, began to develop acid-resistant machinery for use in the chemical industry soon after our founding; we then actively engaged in diversifying and globalizing our business by making our first export of power transmission insulators to India in 1935 and establishing our first overseas production facility in 1973. Even now, we continue to constantly push the envelope in new fields and strive for sustained growth.



A map showing our 30-year history with overseas trading partners. The orders we receive from overseas continue, and we are increasing our factories.



Contributing to society



Kazuchika Okura, our first president. Okura was the first-born son of Magobei Okura, the brother-in-law of Ichizaemon Morimura, founder of the Morimura Group. At the age of 28, Okura was appointed as the first president of Nippon Toki (currently the Noritake CO., LTD.). He would later serve as president of Toyo Toki (currently TOTO) and NGK Insulators, as well as chairman of INAX (currently LIXIL).

During the Meiji Period when electricity first began spreading throughout Japan, insulators that could withstand high voltage had to be imported. The first president Kazuchika Okura stated, "It is our duty to our country to produce insulators in Japan." Research and development into special high-voltage insulators and the first Japanese insulators began from this keen sense of duty and clues from shards of US-made insulators.

Our founding spirit—the urge to contribute to the development of industry and the lives of the people by meeting the growing demand for electricity with a stable supply of high-quality insulators—continues today still in NGK's corporate philosophy.

Shards of US-made insulators that would serve as the starting point of the founding of NGK. Development began under the belief that with the fine techniques of Japanese craftsmen, they were certain to be able to manufacture special high-voltage insulators.



Ceramics, which are largely determined by natural phenomena like soil, water, and fire, were originally extremely difficult to make with any uniformity. However, with insulators, which have served as the supporting framework for society's lifeline for decades, even a single defective product could have an enormous impact on all of society. For NGK, which broke away from the ceramic ware-making industry and began down the path of industrial manufacturing with insulators, product uniformity was the sought after quality. By refining our core techniques with materials and processes to achieve this, we have continued to provide high quality and reliable products. NGK's manufacturing is made possible by our commitment to quality and our technical capacity.



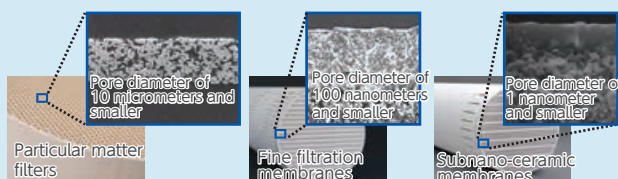
The written pledges (the Founding Pledge) of our first president, Kazuchika Okura, and his five other managers. The pledge includes the expansion of the insulator business and continuous quality improvement.

The pursuit of quality

Our Core Techniques

Materials techniques

Our materials techniques draw out synergistic effects through the combination of differing materials, rapidly produces ceramics with outstanding qualities, and controls properties like ceramic pore diameter (pore size), crystal orientation, thermal conductivity, ion conductivity, and electrical resistance. With our thorough familiarity with the mechanical, thermal, electrical, and physical properties of ceramics, and our adept manipulation of materials into a plethora of configurations, we are able to manufacture just the right products to meet the needs of society.



By controlling the pore size, ceramic filters can screen out fluids and gases at the molecular level

Production techniques

The many innovative and competitive products NGK produces come from the production equipment that we have developed using our own mass production techniques and manufacturing know-how. In order to meet the needs of our customers around the world, we quickly deploy to our overseas locations the cutting-edge production lines we have developed and we promptly build highly efficient global production systems. Additionally, rapidly introducing an analysis of big data into production management leads to improvements in quality and reductions in cost.



Improvements to productivity through innovative mass production processes

Process techniques

NGK is adroit at using various molding techniques, such as mold casting, extrusion molding, and tape molding, as well as firing and processing techniques, to achieve a variety of ceramic structures, and we also bind differing materials, such as metals, to ceramics. We develop and manufacture our products of various configurations—everything from fine and complex three-dimensional shapes to the one of the largest porcelain products in the world at 11.5 meters.



Mold casting differs from the conventional casting method where clay was formed and fired in that it is an entirely new molding method where a liquid material is introduced to a mold, and simply cooled and hardened. This method allows for complex and highly-precise shapes.

Evaluative/analytical techniques

We are constantly working to innovate in manufacturing by rapidly incorporating, fusing with our own core techniques, and advancing the latest technology, including advanced computer simulation technology that enables significant reductions in development periods and image inspection technology that never fails to overlook even the slightest defects.



Research & development, and manufacturing that utilizes superior evaluative/analytical technology

The people who underpin manufacturing

We build comprehensive educational programs so that each and every one of our employees can gain the ambition to try new things, work to build an environment of growth, and demonstrate their best performance. We are concentrated on the full training of the people who form the bedrock of our production infrastructure.

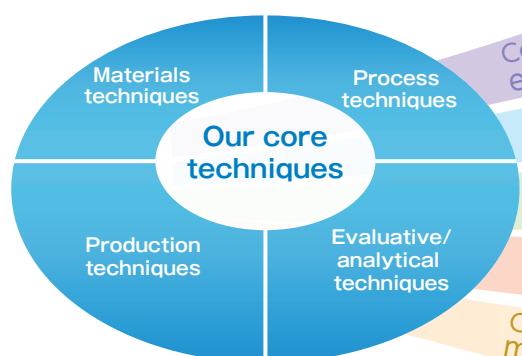
Two months after our founding, a policy to allow employees to use the skills they have in a welcoming environment was promptly created that held the development of business as the same as the advancement of happiness of the workers.



We provide products/services that contribute to solving various social issues by freely manipulating materials and properties.

Our major strength is our ability to produce a variety of products by combining our techniques with materials, such as porous ceramics and functional ceramics, with our own process techniques involving molding, firing and processing.

NGK products, adept at freely controlling unseen factors, such as electricity and heat, make solid contributions to society in the places we don't often see to help create a better environment, a future for energy, and the advancement of electronics.



Control of electricity

Control of gases/fluids

Control of light

Control of heat

Control of motion

Removing particulate matter

Diesel particulate filters

Removes 99% of particulate matter in car emissions to make the air of our world cleaner.

Purifies car emissions

HONEYCERAM®

An ultra-thin wall of only 0.05 mm purifies emissions to support the development and evolution of more eco-friendly cars.

Warms uniformly

Ceramics for semiconductor manufacturing equipment

Adapted to the increasing detail and lamination of semiconductors, this technology supports the evolution of IoT and AI.

Moves at high speeds

Piezoelectric actuator

This is a micro-sized motor that controls electronic devices with high precision at high speeds.

Supporting our electricity supply

Insulators

Compatible with the highest voltage electricity transmission systems (1 million volts, UHV). Supports transmission wires while providing insulation, to contribute to the stable supply of electric power.

Stores electricity

Electricity storage systems in the megawatt category. This contributes to the spread of renewable energy.



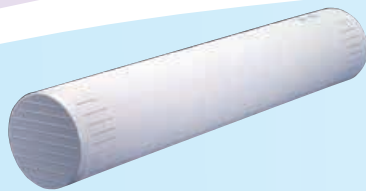
NAS® batteries

Product development and manufacturing that supports the stable supply of **energy** and the creation of a **sustainable society**.



Separates gases

This molecular sieve can separate fluids and gases at the molecular level.



Subnano-ceramic membrane filter

Measures concentrations

This is the world's first in-vehicle sensor that can measure NOx concentrations in real time with high precision.



NOx sensor

Product development and manufacturing that resolves **environmental** issues in a wide variety of fields, like automobiles, chemicals, medicine, food, and nuclear power, and contributes to a richer, safer and more secure society



Allows light to pass

This transparent (99.9%) ceramic material is used in LED circuits.



HICERAM®



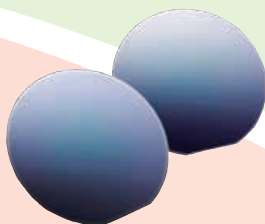
Wavelength control drying system

Dries with light

This system reduces drying time by half and allows for significant energy conservation.

Controls heat expansion

Adapted to next-generation LTE. Suppresses heat expansion to 1/3 or less than conventional products, and reduces noise. Also improves sound quality.



Bonded wafers for SAW filters

Quickly cools

Cools and hardens resin in a short period of time, and contributes to improve production efficiency and quality.



High-cycle metal dies

Product development and manufacturing that contributes to the evolution of **IoT** and **AI**, and the advancement, miniaturization and weight reduction of electronic products.



TOP COMMITMENT

President
NGK INSULATORS, LTD.

大島 卓

TAKU OSHIMA



Development for Sustainable Growth into the Future

Develop our own strengths for further growth

Since its founding, the NGK Group has been consistently expanding its business engaging in manufacturing and supplying products which make good use of ceramics technology. We have built up high proprietary technologies, expertise and quality in ceramics development, which represent our unrivaled strengths. Application areas of our ceramics technologies range broadly from ceramic catalytic substrates for automotive exhaust gas purification and NOx sensors—key tools for meeting emission regulations that are being progressively tightened around the world—to ceramic components for semiconductor manufacturing equipment, for which demand is soaring driven by the accelerating advancement of the Artificial Intelligence (AI) and the Internet of Things (IoT) technologies.

In fiscal 2016, we recorded a year-on-year decline in net sales and profits due to a generally stronger yen and a considerable increase in facility and development investments. In our plan, those investments have been made to enhance our capabilities to develop and manufacture new products, which will increase net sales and profits in the long run.

In order to develop our strengths and to achieve further growth, we are promoting a number of group-wide initiatives in parallel, including the "New/reformed manufacturing structures" initiative designed to enhance our competitiveness over the medium to long term, and the "2017 Challenge 30*" project aimed at raising the share of new products to 30% or more of total sales.

Develop our personnel, a foundation for growth

I have consistently focused on personnel development and work style reform over the past three years since assuming the presidency, which are an essential foundation for

achieving sustainable growth in business. We have been striving to create a workplace where all employees, regardless of age, gender or career, can enjoy satisfying work, demonstrating their capabilities and cultivating forward-looking views. Our efforts have been recently stepped up to particularly address the theme of women's empowerment, that is, by developing appropriate systems and measures to offer an environment where many women can play an important role and build lifelong careers. We will develop a work environment where each employee can fulfill their potential and aim to be a company that continuously achieves sustainable growth.

Develop a sustainable future

To pursue global business, the NGK Group has signed on to the United Nations Global Compact, an initiative to encourage businesses to adopt sustainable and socially responsible policies. Accordingly, we will work to undertake socially responsible actions to contribute to solving various global challenges in support of the UN Sustainable Development Goals (SDGs) and other international initiatives. It is also vital to comply with competition laws and other applicable laws and regulations and respect human rights. We in addition believe that it is important to follow internationally appropriate corporate behavior, including a fair attitude toward diverse values. Our business activities and the resolution of such social issues are integrated because the products we develop and supply are largely involving social infrastructure projects and environmental issues.

The NGK Group will be challenging by gathering our group strengths to manufacture and supply products that contribute to a better societal environment and create new value into the future.



* The project will be renamed "Keep up 30," from fiscal 2018.

Group-wide Endeavors Aimed at Sustainable Growth

01 Boosting Competitiveness
of Existing Businesses

02 Creating New Products
and Businesses

03 Strengthening Global
Business Management

04 Promoting Personnel Development
and Work Style Reform

01 Boosting Competitiveness of Existing Businesses

New/Reformed Manufacturing Structures

The NGK Group works to increase product value based on advanced technologies and improve productivity through innovating manufacturing processes.

Looking at our business environment from a medium- to long-term perspective, we are implementing our New/Reformed Manufacturing Structures initiative, which was started in 2014, to build strong capabilities to continue competing successfully in global markets toward 2020 and beyond. The initiative focuses on improving operational efficiency for existing facilities and promoting prioritized investments for greater spending effect.

In the fields of energy, ecology and electronics, NGK's three major business domains, new social and technological needs are emerging, and this is expected to create new market opportunities. Seeking to capture these future opportunities, we plan to invest a total of 300 billion yen over the coming three years. Our plan includes construction of cutting-edge lines for auto-related products outside of Japan in order to respond to the growing demand on a global scale. Thus, we aim to develop solid production capabilities to continue business growth.

Advanced Technologies

- Increase product value
- Improve productivity through innovating manufacturing processes

New/Reformed Manufacturing Structures

- Improve operational efficiency for existing facilities
- Increase effectiveness of new investments

Enhancing Global Production Structures

- Build cutting-edge production lines outside of Japan
- Establish an efficient global production structure

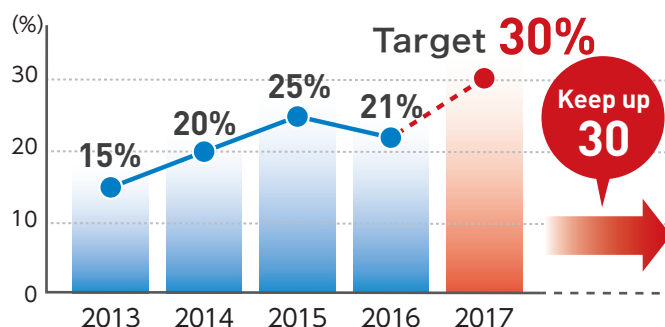


02 Creating New Products and Businesses

2017 Challenge 30

The NGK Group works to create new products and business. We set a target of raising the share of new products to 30% or more of total sales by fiscal 2017 (2017 Challenge 30), and have progressed steadily to achieve the target in fiscal 2017. From fiscal 2018, we will continue with these efforts to achieve a revised target of maintaining the share of new products at 30% or above (Keep up 30).

Sales percentage for new products
Target expected to be achieved in FY 2017



Accelerating Business Development for New Products

To accelerate business development for new products, we organize cross-divisional activities. Our two ongoing projects relate to ceramic batteries and ceramic optical components, and were launched in fiscal 2016 and 2017, respectively. In both, Corporate Manufacturing Engineering,

Corporate R&D, the relevant business division and the head office are working together to engage in the development of commercial products, mass production facilities and potential customers, seeking to expedite the commercialization of target new products.

The Optical Component Project

The company-wide, cross-divisional Optical Component Project was launched in April 2017, with a plan to establish a relevant business within the Electronics Business Group.

Gallium nitride (GaN) wafer

Features

Created with proprietary liquid phase epitaxial growth technology, our GaN wafer has achieved low defect density over the entire wafer surface. GaN wafer-based substrates can deliver ultra high brightness for lasers and LEDs.



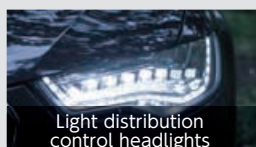
Major applications



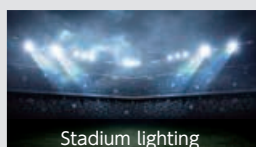
Office projectors



Cinemascope projectors



Light distribution control headlights



Stadium lighting

Ultra high brightness lasers and LEDs are expected to be employed for projectors, stadium lighting and other purposes that require higher light intensity than can be provided by conventional models.

Micro-lens for UV LED lights

Features

For the purpose of increasing the use efficiency of ultraviolet (UV) LED lighting, a high-quality complex-shape fused quartz micro-lens has been created by employing our proprietary manufacturing technologies.



Major applications

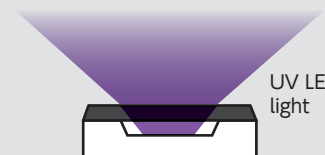
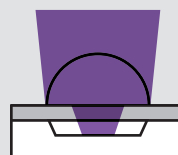
Micro-lens mounted on a UV LED light (for sterilization)

[With micro-lens]

UV LED light can condense light to demonstrate stronger sterilization power.

[Without micro-lens]

UV LED light is distributed widely, resulting in lower sterilization efficacy.



UV LED light

Currently, mercury-vapor lamps are the most popular light source for the purposes of resin cure, sterilization and purification. However, the use of mercury will be restricted from 2020, as stipulated in the Minamata Convention on Mercury. UV LED is expected to be a major alternative light source.

The Ceramic Battery Project

The Ceramic Battery Project was launched in April 2016, bringing together members from Corporate Manufacturing Engineering, Corporate R&D, the relevant business division and the head office to engage in commercialization-related activities aimed at earlier market introduction.

Chip-type ceramic secondary battery



Features

- Crystallographically-oriented ceramic positive electrode plate (Basic patented)
- Super-thin chip, high energy density, high temperature durability

Major applications

Wearable devices



Smart cards

IoT wireless modules



On-board power supplies for microprocessor



Zinc secondary battery



Features

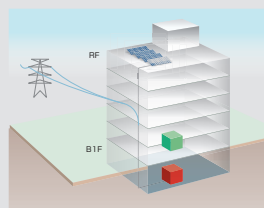
- Proprietary ceramic separators of solid electrolyte (new material)
- Water-based electrolyte (high safety), high-capacity, room-temperature functionality

Major applications

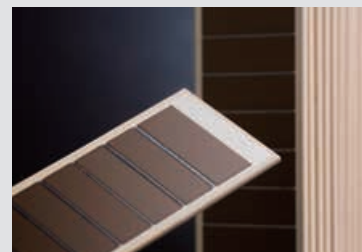
Residential power storage systems (10 kWh class)



Indoor-type power storage systems (500kWh class)
(for office and other buildings, medical and commercial facilities)



Solid oxide fuel cell (SOFC) module



Features

- Proprietary structure and materials (ceramics)
- Compact, high power generation efficiency, high durability

Major applications

Fuel cell systems for individual and collective housing (each unit)



Strengthening Marketing and Prototype-related Functions

In order to develop new products and businesses in effective response to market needs, we are strengthening marketing and prototype-related functions. In fiscal 2016, customer contact opportunities were increased to achieve substantial information exchange. Also, we organized collaborative activities involving NGK's head office and business divisions and Group companies throughout the year.

Creating a constant stream of new products

- Conduct research activities to accurately grasp market needs
- Strengthen proposal-making capabilities



03 Strengthening Global Business Management

Thorough Compliance

We have introduced international-standard competition law compliance programs to establish a group-wide system for thorough compliance. Under the system, various initiatives are conducted to raise the awareness of officers and employees at all Group companies in and outside of Japan, including regular messages from management leaders and the creation of the Competition Law Compliance Handbook in multiple languages based on local legislation.

Providing compliance training at all Group companies in and outside of Japan

- Introduce international-standard competition law compliance programs



Enhancing Head Office Capabilities

To accelerate global business development, the head office is required to perform highly specialist and strategic functions to assist business divisions, thereby underpinning the growth of the entire Group. To build head office capabilities to buttress a global enterprise, we will hold rigorous discussions

and focus efforts on selected themes, such as global personnel development and deployment and actions to reduce increasing legal risks. Also, we are carrying out measures to eliminate operational waste and allow employees to focus on truly important tasks.



- Improve specialist functions
- Enhance capabilities to flexibly respond to changes

Enhancing head office functions to support global business development

- ✓ Support safety and health activities at Group companies in and outside of Japan
- ✓ Support technological development through promoting thorough improvement of IP research and analysis systems
- ✓ Support CSR-compliant procurement at Group companies in and outside of Japan
- ✓ Support compliance promotion activities at Group companies in and outside of Japan

04 Promoting Personnel Development and Work Style Reform

Personnel System Reform

To continually pursue global expansion and the creation of new products and businesses, it is essential to raise employee motivation and provide a workplace where each employee can fulfill their potential. Based on this belief, we have reformed personnel systems. Key reforms include lifting the mandatory retirement age up to 65 from the current 60, with the salary level unchanged, to offer senior personnel opportunities to work for longer and with a sense of security.

Younger/Mid-career personnel

Encouraged to aim at a higher job grade/position



Senior personnel

Can choose to work longer with a sense of security up to the retirement age of 65



Enhancing employment systems and women's career activities



MHLW's Eruboshi certification obtained for promoting women's career activities

Develop Next-generation about Innovative Change to Our



SPECIAL TALK

President, NGK Insulators, Ltd.

Taku Oshima

| Profile |

Joined NGK in 1980; General Manager of NAS Battery Division, Power Business Group (2004); Vice President and General Manager of NAS Battery Division, Power Business Group (2007); Senior Vice President, General Manager of NAS Battery Division, Power Business Group (2011); President of NGK (2014).

Professor at College of Business,
Rikkyo University

Mika Takaoka

| Profile |

PhD in business administration. Field of study: retail business management; franchise systems; sustainable communication and consumer behavior. Membership: Ministry of Economy, Trade and Industry Industrial Structure Council Global Environment Subcommittee Evaluation/Verification WG (low-carbon society action plan follow-up), etc.

Products that can Bring Future Society and Environment



NGK's strengths to support its sustainable growth

Takaoka: NGK Insulators started as an insulator manufacturer, and from that foundation it has developed business in various areas over many years. In what areas have you been achieving notable growth recently?

Oshima: Our business is particularly growing in two key areas. One is associated with automotive exhaust system. We produce exhaust gas purification parts which are our main products with a global market share of around 50% and

NOx sensors for automobiles. The total number of vehicles sold globally in one year has reached around 90 million, and the number is growing at an annual rate of 3 to 4%. The market for zero-emissions cars, such as electric vehicles, has been expanding in recent years, but automobiles equipping internal combustion engines, including buses and trucks, still dominate the automotive market by a wide margin. Against this background, emission regulations are becoming more stringent around the world, pushing up the demand for exhaust gas purification parts and NOx sensors.

Takaoka: That indicates the grave responsibility your company bears as a supplier. In order to achieve mass-production on a large scale, what is your situation of



Seeking to meet this future demand, we are promoting R&D further.

investments in facilities and R&D?

Oshima: We are carrying out intensive investments in growth areas, including building new factories in Poland and Thailand. We plan to invest a total of 300 billion yen for all segments over the three years from fiscal 2017. Out of that total amount, 170 billion yen will be spent on automotive-related business. At the same time, we are vigorously increasing investment in the semiconductor-related business, another key growth area, to boost facility and R&D capabilities.

Takaoka: The semiconductor market has been expanding to meet soaring demand related to needs for larger-capacity and higher-speed mobile communications and increasingly popularized IoT applications. The market is expected to further grow in response to rising requirements from endeavors to accelerate technological innovation in AI and other frontier realms of social infrastructure.

Oshima: NGK plays a part in supporting the rapid progress of the pioneering technologies by supplying essential functional ceramic components of semiconductor manufacturing equipment. There are only a few ceramics companies in the world capable of manufacturing equivalent products.

Takaoka: How has NGK acquired those specialty capabilities? Having such multiple specialty technologies and products that enable you to maintain advantages against others gives you a great strength.

Oshima: That is our unique value originated with an insulator manufacturer. Insulators are a very long-lived product. To ensure the effective use of our products over decades, we have been persistently striving to achieve ever-higher quality, and developed unrivalled technologies. Also, we began in our early days to pursue business diversification. We have invested our earnings in R&D, seeking to build future growth pillars. We have continued this approach to expand the company.

Capture future needs and develop technologies

Takaoka: To plan successful R&D projects, it is vitally important to carefully read the future to correctly forecast social needs. NGK's successful diversification has proven its insight into future needs.

Oshima: The success we have had in the NOx sensors, one of our recently established mainstays, is the result of research efforts continued over two decades. Many years of assiduous works enabled us to supply them timely when the society needs.

Takaoka: Within your marketed lineup, I view NAS batteries as having huge growth potential, given the fact that currently very few enterprises commercialize large storage battery systems.

Oshima: Global efforts are being exerted to achieve a low-carbon society, where a major power source will be renewable energy. Under such circumstances, a large battery system is indispensable to achieve the stabilization of renewable energy. Seeking to meet this future demand, we are promoting R&D further.

Development of human resources and work environment to achieve further growth

Takaoka: What are your views and actions regarding human resource development?

Oshima: Development of human resources and work environment has been an important management theme since I became president. I believe that the key to accomplishing the theme is the self-initiative of individual employees. I wish to create a workplace where each employee is inspired to take up a challenge at their own initiative. I'm wondering all the time what I should do to encourage their initiative or to boost their motivation. Toward

this goal, I took the first step by touring the Group companies and manufacturing sites in Japan and overseas and every division within the company to take a firsthand look at each site in operation.

Takaoka: What did you find from this field research?

Oshima: Every factory I visited was running at its fullest-ever capacity to continue increasing production, keeping workers extremely busy. I saw this situation as needing immediate improvement so that they can effectively demonstrate their potential to perform truly important tasks. To this end, it is necessary to review each work process and practice to thoroughly eliminate waste. To carry out this task across the company, I have launched the E3 (E-Cubed) activity*. Since work style reforms require a top-down management approach in part, it has been introduced at each division under the leadership of the division head, who has established organizational policies and announced them to division members.

Takaoka: The top commitment can facilitate improvement of frontline operations. Then, the more operational efficiency will increase, the more employee motivation will rise. This is becoming increasingly important as businesses in many industries need to take steps to increase employee satisfaction to address the emerging challenge of a labor shortage.

Oshima: To be able to attract and retain quality talent that will continue to contribute to the company over the long term, we have reformed a range of personnel systems, effective from this year. Major reforms include the revision of systems for general employees to encourage mid-career or younger personnel to undertake challenging tasks, and lifting the mandatory retirement age up to 65 to offer senior personnel opportunities to work for longer and with a sense of security. The revised systems also include measures directed at women's career enhancement.

Takaoka: The gender equality issue is particularly specific to the manufacturing sector, where rates of female workers and managers are relatively low.

Oshima: Contrary to the industry trend, at NGK, the average duration of service of female employees is longer than that of males. This is partly attributable to our systems that have been enhanced to support work-life balance. However, we are behind in terms of employing female managers. To overcome this shortcoming, we have begun to implement initiatives to spur the development of future female managers.

Aim to attain further growth with bringing together all NGK forces around the world

Takaoka: The NGK Group has a sizable workforce employed globally to pursue global business.



NGK's successful diversification has proven its insight into future needs.

Oshima: Our Group currently employs a total of more than 20,000 people, and more than half of them are working outside Japan. It is very important that we uphold a shared vision to unite as one for advancing our business. In two years, NGK will celebrate the centennial of its founding and prior to this major milestone, we have begun to consider revising the corporate philosophy.

Takaoka: I am interested in the new philosophy to be announced in the near future while also looking forward to the rollout of new products that can bring about an innovative change in our future society and environment.

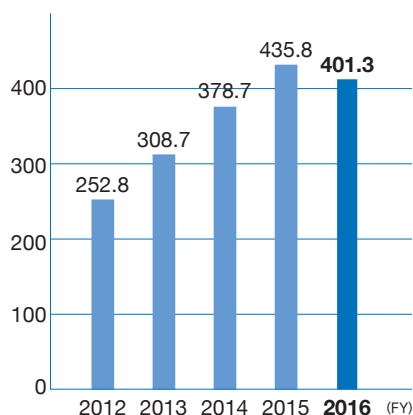
Oshima: NGK's products are indispensable parts of many products related to electricity, vehicles, communications and other forms of social infrastructure that supports modern lifestyles. We will step up our efforts across the Group to continue manufacturing and supplying quality products to contribute to a better society and environment.

* E3 (E-Cubed) activity
Pursuing our Essence
Eliminating Waste
Increasing Efficiency

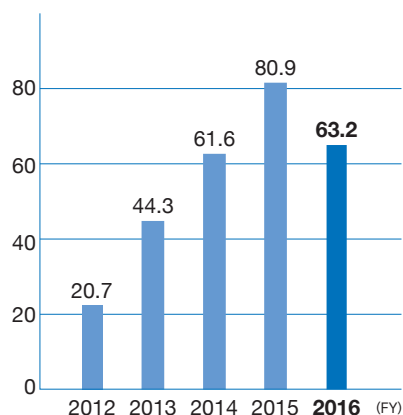
Financial Highlights

The following data includes financial results of consolidated subsidiaries
(21 domestic, 37 overseas companies as of March 31, 2017)

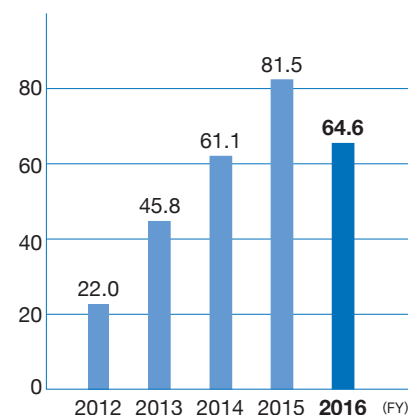
Net Sales (Billions of yen)



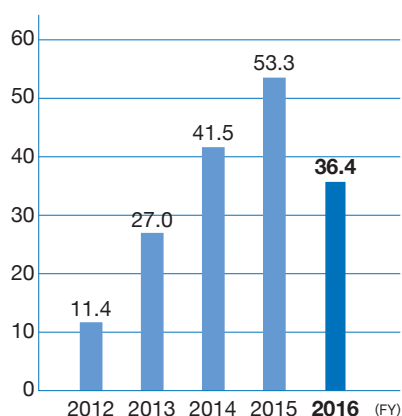
Operating Income (Billions of yen)



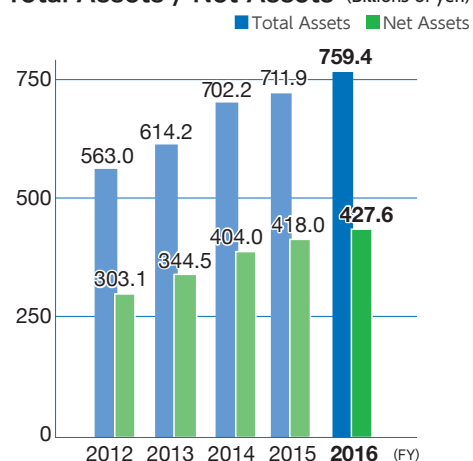
Ordinary Income (Billions of yen)



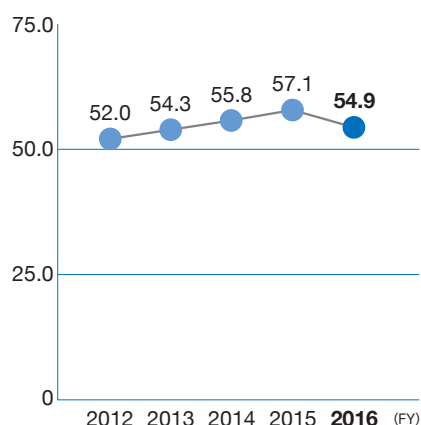
Net Income (Billions of yen)



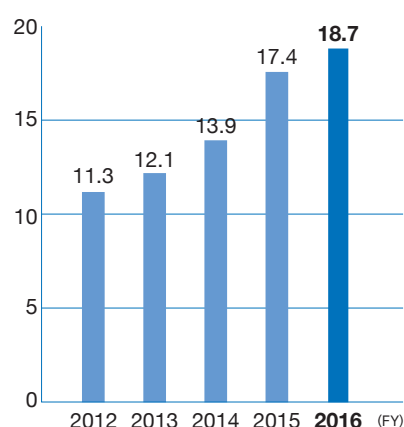
Total Assets / Net Assets (Billions of yen)



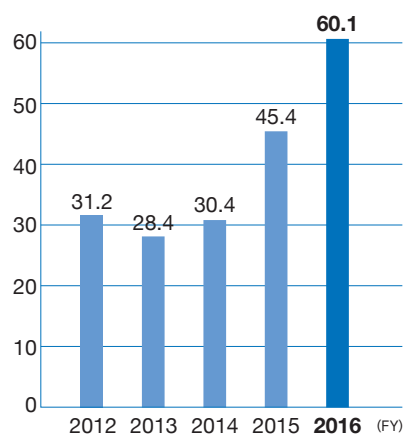
Equity Ratio (%)



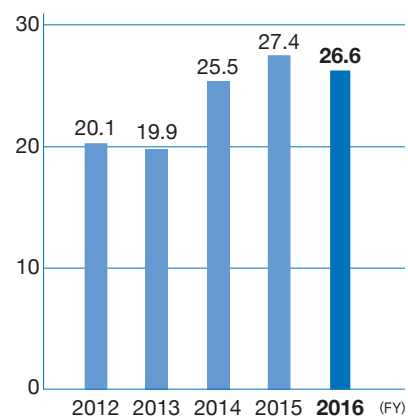
Research and Development Expenses (Billions of yen)



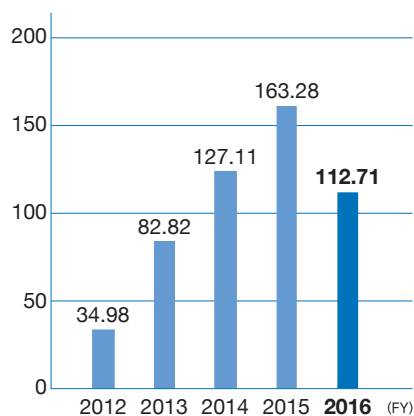
Capital Expenditures (Billions of yen)



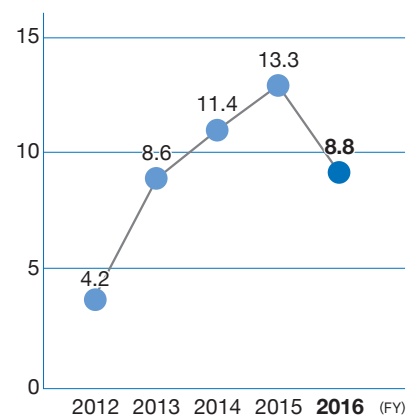
Depreciation and Amortization (Billions of yen)



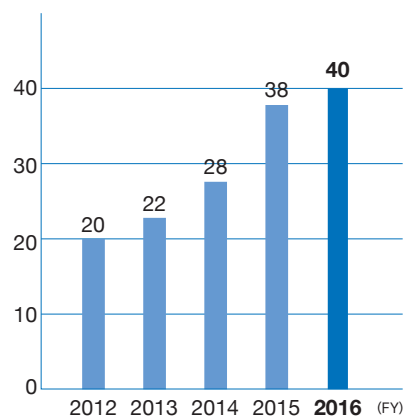
Net Income per Share (Yen)



Return on Equity (%)



Dividends (Yen)



Stock Price

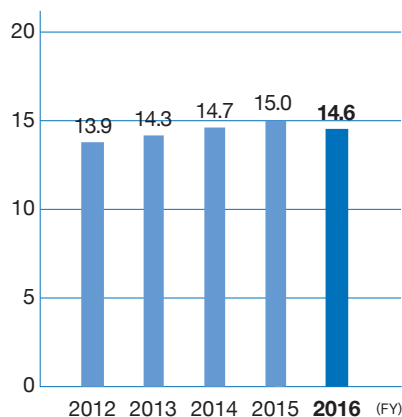
FY	2012	2013	2014	2015	2016
Highest(Yen)	1,181	2,230	2,827	3,345	2,578
Lowest(Yen)	752	946	1,864	1,904	1,800

Non-Financial Highlights

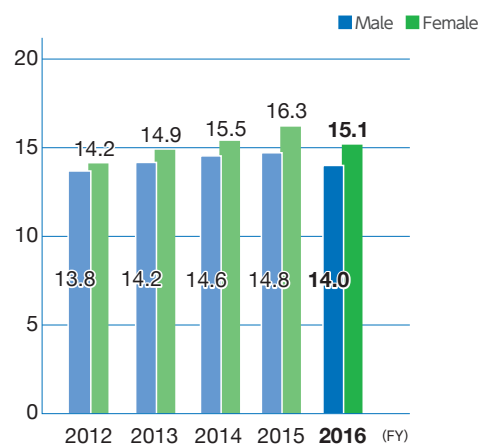
The following data includes non-financial results of consolidated subsidiaries (21 domestic and 37 overseas companies as of March 31, 2017)

Human Capital

Average Years of Service (overall)

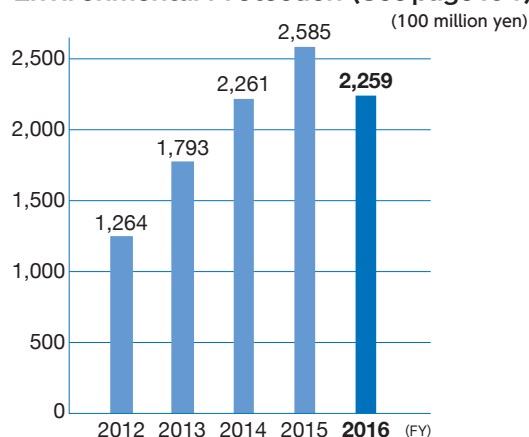


Average Years of Service (by gender)



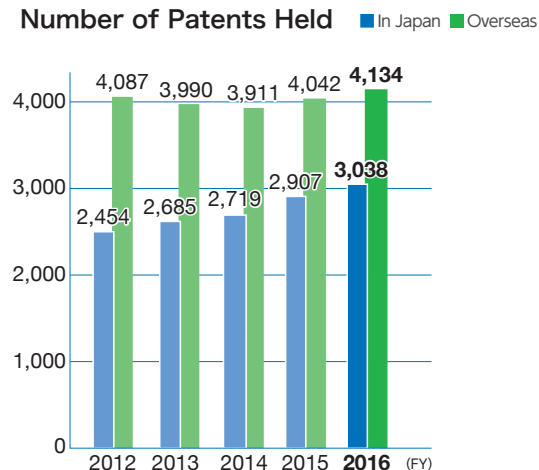
Environmental Capital

Total Sales for Products Contributing to Environmental Protection (See page 104)



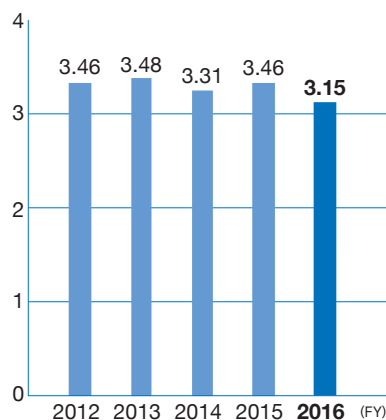
Intellectual Capital

Number of Patents Held



Social Relations Capital

Social Contribution Spending (100 million yen)



Summary of Consolidated Financial Results for Five Fiscal Years

Operating results (fiscal year)	Mar. 2013	Mar. 2014	Mar. 2015	Mar. 2016	Mar. 2017 Millions of yen	Mar. 2017 1,000 USD
Net sales	252,789	308,671	378,665	435,798	401,267	3,582,741
Cost of sales	178,052	208,052	254,387	289,266	272,435	2,432,455
Selling, general and administrative expenses	54,041	56,367	62,701	65,634	65,619	585,884
Operating income	20,696	44,252	61,577	80,898	63,213	564,402
Profit attributable to owners of parent	11,422	27,045	41,505	53,316	36,379	324,813
Capital expenditures	31,216	28,435	30,366	45,437	60,101	536,616
Depreciation and amortization	20,089	19,894	25,532	27,366	26,615	237,634
Research and development expenses	11,316	12,060	13,943	17,410	18,654	166,554
Cash flows						
Cash flows from operating activities	3,680	32,648	73,002	59,445	80,172	715,821
Cash flows from investing activities	(582)	(21,185)	(39,497)	(47,773)	(56,453)	(504,045)
Cash flows from financing activities	12,448	2,027	(26,000)	(373)	(13,013)	(116,188)
Cash and cash equivalents	102,845	119,782	128,617	136,065	144,693	1,291,902
Financial position (end of fiscal year)						
Total assets	563,030	614,220	702,234	711,897	759,434	6,780,661
Interest-bearing debt	155,816	167,296	156,203	163,973	174,150	1,554,911
Net assets	303,073	344,453	404,001	417,973	427,593	3,817,795
Per share information						
Profit per share	34.98	82.82	127.11	163.28	112.71 yen	1.006 USD
Cash dividends per share	20	22	28	38	40	0.357
Financial indicators (%)						
Operating margin	8.2%	14.3%	16.3%	18.6%	15.8%	15.8%
Return on equity (ROE)	4.2%	8.6%	11.4%	13.3%	8.8%	8.8%
Equity ratio	52.0%	54.3%	55.8%	57.1%	54.9%	54.9%

Power Business

Promoting Sustainable Energy by Staying ahead of Trends to Consistently Offer Products and Services that Exceed Customer Expectations

The Power Business Group offers products and services aimed at the support and development of electricity infrastructure around the world.

Needs for large-capacity storage batteries that help stabilize power supply have increased with the expansion of renewable energy.

We have further strengthened our business structure for insulators from customer's perspective in order to provide optimal products and services that meet customer demands in a prompt, accurate and flexible manner.

With the aim of becoming our customers' brand of choice, the NGK Group will continue to promote businesses that will contribute to the development of power infrastructure as well as the spread and expansion of renewable energy.



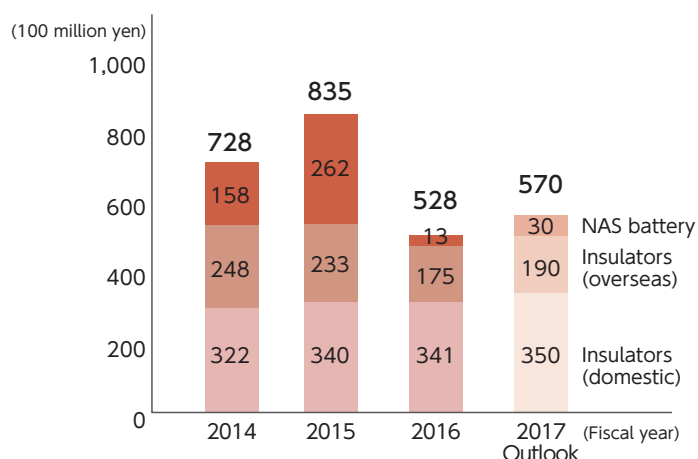
Hideaki Saito

Director and Senior
Vice President
Group Executive,
Power Business Group

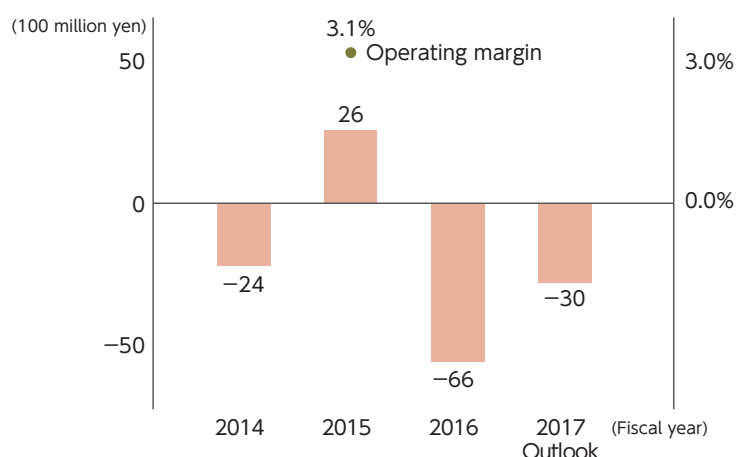
Financial Data

Financial results and outlook

Net Sales (After elimination of intersegment sales)



Operating Income (Loss)



Products

Main products

Insulators

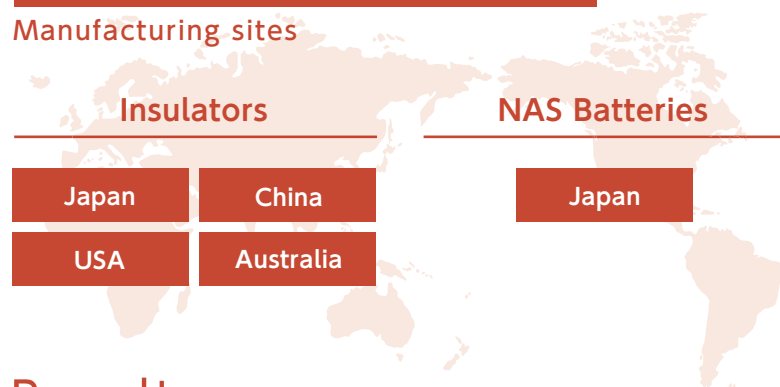
Insulators are the NGK Group's founding products made by ceramics. It helps maintaining staple power supply and ensures that transmission lines and steel towers are completely isolated. As a top insulator manufacturer, NGK manufactures and provides high-quality and highly reliable insulators and equipment for power transmission, substations and distribution.

NAS Batteries

NAS® battery systems has strengths for Large-capacity, high-energy density and long-life which ensure a stable power supply over the long term. NAS® battery systems also contribute to peak power reduction by leveling out the power load, help stabilize renewable energy, act as countermeasures against surplus power, and facilitate power savings and cost cutting.

Product Sites

Manufacturing sites



Results

Business overview for fiscal 2016

Steady Progress in Promising Projects that will Lead to Future Growth

Net sales and operating income for both the insulators business and the NAS battery business fell below the forecasts made at the beginning of the fiscal year. In the insulators business, sales decreased due to sluggish replacement demand in North America. In the NAS battery business, sales declined mainly because there were no major shipments for both Japan and overseas.

Meanwhile, there has been steady progress in promising projects that will lead to future growth both for the insulators business and the NAS battery business. In Japan, replacement demand for insulators installed during the period of high economic growth has been strong, and such demand is expected to grow in the future. In overseas, while large-scale projects have been at a standstill due to the effects of economic slowdown and a decline in the price of crude oil, there is a demand of developing power grid system to solve the transmission networks against the backdrop of power shortages in emerging markets in the Middle East, China and Southeast Asia. As for NAS batteries, a large-scale hybrid battery system demonstration project was launched in Germany, which has been actively introducing renewable energy. Conditions for the widespread use of NAS battery systems are emerging since discussions on installing electric power storage batteries have commenced in Japan toward the expansion of renewable energy.



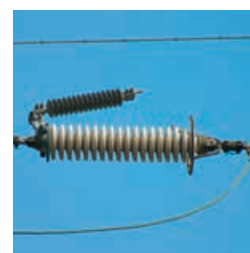
Insulators for power transmission which are indispensable for supplying power in a safe and stable manner



Insulators and equipment for power substations, the world's largest hollow insulators for substation system which resist up to 1,000kV-power transmission system (megavolt class)



Polymer insulators for power transmission which meet customer needs with a broad range of products including those made of porcelain



Equipment for power transmission such as line arresters that significantly contribute to reducing power outages



Equipment for power distribution that contributes to the maintenance and efficiency of power supply equipment



NAS battery which is the first megawatt-class electric energy storage system being utilized in the world

Summary of Fiscal 2016

Net sales 52.8 billion yen
(30.7 billion yen decrease from the previous year)

Operating income (Loss) (6.6) billion yen
(9.2 billion yen decrease from the previous year)

Insulators

Net sales 51.6 billion yen
(5.7 billion yen decrease from the previous year)
■ Japan: Steady replacement demand
■ Overseas: Decreased due to the postponement of large-scale projects, etc. (Asia, Middle East, etc.)

NAS batteries

Net sales 1.3 billion yen
(24.9 billion yen decrease from the previous year)
■ Decreased due to no major shipments for both Japan and overseas.

Present Action

Challenges and initiatives for fiscal 2017

[Insulators]

Enhancing Competitiveness and Establishing a Lean Business Structure

In the insulators business, we will continue to respond to strong replacement demand in Japan while strengthening the competitiveness of our products, approaching quality improvement and offering products and services that gain even higher levels of customer trust.

In order to respond to changes in the market conditions and demand swiftly, we will establish a lean business structure by streamlining production lines at plants, reorganizing and integrating business operations, thereby improving profits.

Furthermore, we will promote the procurement and sales of OEM* products and enhance our market presence, especially in the North American market, with the aim of responding to market calls for a broader product lineup.

[NAS Batteries]

Aggressively Developing Overseas Markets with the Aim of Generating Demand

While the environment surrounding the NAS battery business is likely to remain extremely challenging for the foreseeable future, the potential needs are high.

For example, we aim to capture the orders in Hokkaido where the discussions are on-going about installing storage battery system to stabilize the power system to help the expansion of wind power generation. Looking at overseas, especially Europe where the expansion of renewable energy is particularly prominent, there is a movement to utilize storage batteries for demand management. Also in the Middle East, the plans have been coming up which introduce solar power systems to replace thermal power generation.

Our extensive experience and track record in the installation of NAS batteries are significant advantages for approaching to such various needs above. As one another example, we have just announced that NGK will provide its NAS batteries for the large-scale hybrid battery system demonstration project to be conducted in Germany from April 2017. By actively leveraging these kinds of opportunities, we will endeavor to further enhance recognition of NAS battery systems and expand their applications.

Outlook for Fiscal 2017

Net sales 57.0 billion yen
(4.2 billion yen increase from the previous year)

Operating income (Loss) (3.0) billion yen
(3.6 billion yen increase from the previous year)

Insulators

Net sales 54.0 billion yen
(2.4 billion yen increase from the previous year)

- Japan: Replacement demand remained steady
- China: Long-distance, large-scale power transmission projects increased
- North America, South Asia, Middle East: Large-scale projects remained stagnant due to the effects of economic downturn, decline in crude oil price, etc.

NAS batteries

Net sales 3.0 billion yen
(1.7 billion yen increase from the previous year)

- Japan: While detailed studies of storage batteries for power systems are underway in Hokkaido, full-fledged adoption will take time.
- Overseas: A large-scale hybrid battery system demonstration project was launched in Germany, which has been actively introducing renewable energy.

* OEM is an abbreviation for "original equipment manufacturing," which refers to the manufacture of products to be sold under the brand of the entrusting firm (entrustment of manufacturing using the NGK brand).

Topics1

Contributing to Enhancing Safety and Reliability of Power Distribution Networks Expansion into Myanmar, Asia's Last Frontier

Myanmar has been maintaining a high rate of economic growth, the highest level in Asia, in fact. Following the 2011 shift in power away from military rule, the modernization of the country's infrastructure such as roads, railways, electricity, etc. has progressed.

While the Myanmar government has a national policy to improve its electrification rate from 30% in 2014 to 100% by 2030, the existing power distribution networks that cover the nation are made up of bare power cables and exposed cut-outs, which are susceptible to electric shock hazards and blackouts.

Given such situation, the NGK Group established a local entity in August 2016 by initiating the standardization of sealed cut-outs without exposure in the charger. We have since been providing instructions on manufacturing technologies and quality management to local alliance partners. It is our aim to enhance the safety and reliability of power distribution networks through the isolation of power cables, thus contributing to realizing a better standard of living and economic growth for people in Myanmar.

Cut-outs

There is a fuse inside the cut-out, which stops the flow of current when an overcurrent is detected safely and promptly due to an accident involving the power distribution line, etc., thereby protecting power distribution equipment. Cut-outs manufactured by Energy Support Corporation being used by all electric companies and boast significant market share across Japan for their high reliability.



Conclusion of business alliance between Energy Support Corporation and a local company

Next Vision

Future outlook and initiatives

[[Insulators]

Establishing Sustainable Business Structure and Enhancing Brand Value

In the insulators business, we will endeavor to establish a business structure that can deliver high profitability. Replacement demand is expected to expand in the future since the aging of power equipment both in Japan and the U.S. NGK's products have been highly recognized for their track records and quality and what we must focus on now is establishing a lean production system and a sustainable business structure. In addition, we will aim to further strengthen our systems from the customers' perspective in order to provide even more optimal products and services in a prompt, accurate and flexible manner.

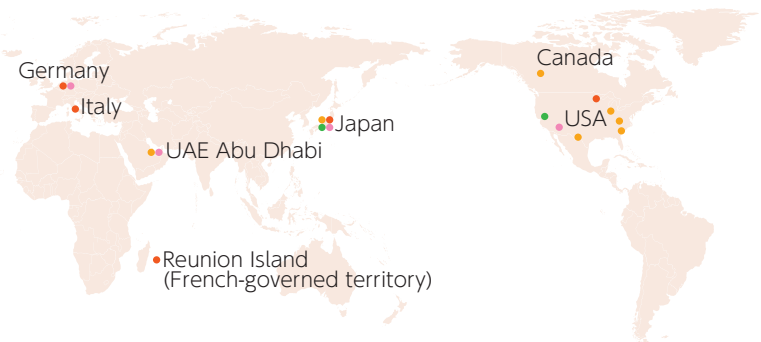
[[NAS Batteries]

Capturing Demand by Taking Advantage of Global Expansion of Renewable Energy

In the NAS battery business, we will strive to grow business in line with the global expansion of renewable energy by leveraging our strengths in large capacity, compact size and superior cost performance as the large capacity storage battery. It is expected that renewable energy will be fully introduced as energy infrastructure around the period between 2020 and 2025. Since NAS® battery systems have high demand potential, we will actively engage in demonstration experiments in various countries and regions in the next few years and prepare for an increase in demand in the future. By doing so, we will be possible to offer more practical solutions by accumulating insights and building up a track record as

Track record of NAS battery installation

Approximately 200 locations worldwide, with power output amounting to approximately 530,000 kWh and storage capacity of 3,700,000 kWh



Applications of NAS batteries

- Peak reduction shift
- Power system measures, built with renewable energy
- Frequency adjustment
- Smart grid

there are significant background differences in reasons for introduction and use environment for storage batteries, depending on the customers. In addition, we are striving to establish operations related to remote monitoring systems after installing and also the after-sales services expected to cause as customers' needs. As a leading company of large-capacity storage batteries, NGK has been preceding its competitors in terms of both track record and performance. Looking ahead to the large-capacity storage battery market to emerge in three to four years' time, we will promote our sales activities and demonstration projects in overseas markets which leads us to be a top brand that is chosen by customers.

Topics2

Demonstration Project Commenced in Germany, Environmentally Advanced Country

NGK Offers NAS Battery Systems for Three Years from April 2017

The NGK Group has been endeavoring to be a highly proven and known brand for NAS batteries in the European market especially in Germany. Germany is an advanced country actively introducing renewable energy and in the meanwhile, they are facing imbalances and grid voltage instability due to the vulnerable power transmission network while a large amount of power generated in the northern region is sent to south, the consumption area.

To address these problems, Japan's New Energy and Industrial Technology Development Organization (NEDO*) has worked for the commencement of the "Large-Scale Hybrid Battery System Demonstration Project" with the Ministry for Economics, Labour and Transport of Niedersachsen, where is the region in

Signing ceremony held in March 2017. Germany aims to shift more than 80% of its domestic electric power demand to renewable energy by 2050.



Germany that produces wind power the most. They signed a memorandum of understanding in March 2017. At the same time, one Japanese power company, NGK Insulators, Ltd a company commissioned by NEDO, and the energy provider in Germany have agreed to collaborate the project and concluded an implementation document. Our aim by introducing NAS batteries is to stabilize the distribution grid, and thereby control the electric power supply and demand balance. Another aim is to establish a new business model for electricity trading using the battery system.

Ceramic Products Business

Developing Products and Technologies that Contribute to Solving Environmental Issues, Including Automobile Exhaust Gases, and Responding to Energy-saving Needs

The Ceramic Products Business Group offers a line-up of ceramic products, led by ceramic substrates for automotive exhaust gas purifiers, that serves a broad range of industries and provides smart solutions for modern requirements such as environment protection and energy conservation.

It is one of our social responsibilities to ensure a stable supply of high-quality products and to continue to offer products that correspond to new environmental regulations in a timely manner.

We will deliver products that will meet social needs to international markets through our global production system comprising 18 plants located in nine countries.



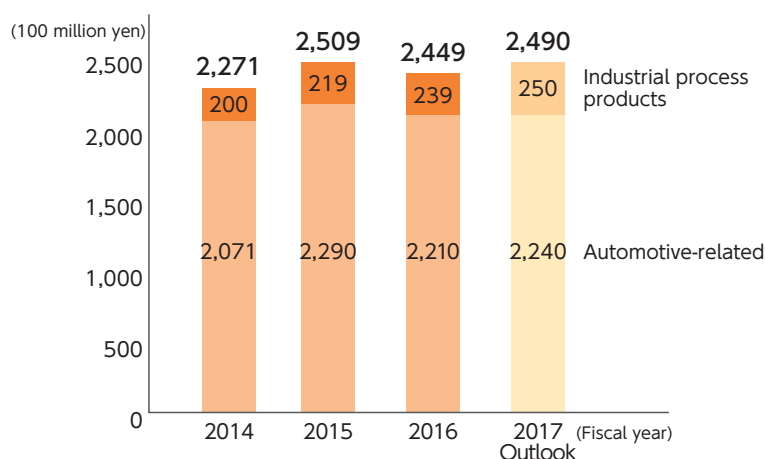
Hiroshi Kanie

Director and Senior Vice President
Group Executive, Ceramic Products Business Group

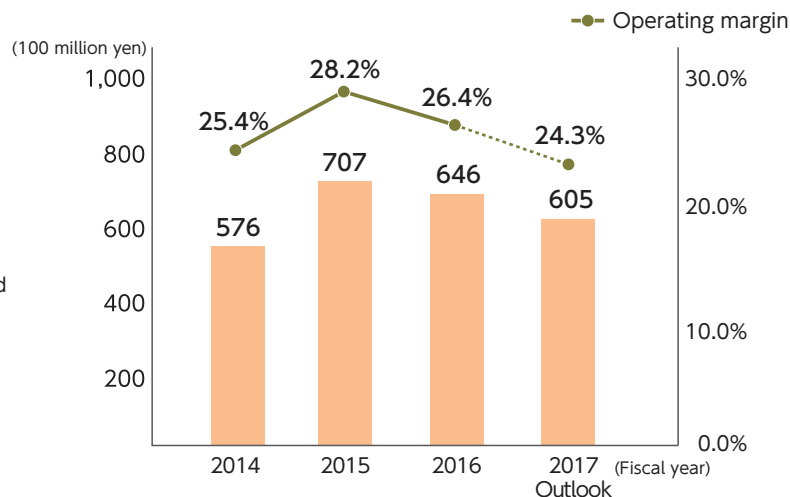
Financial Data

Financial results and outlook

Net Sales (After elimination of intersegment sales)



Operating Income

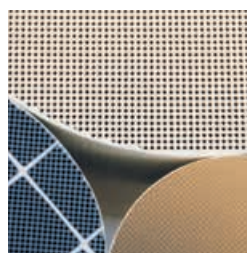


Products

Main products

Automotive-related

Our business is focused on HONEYCERAM® ceramic substrates for automotive catalytic converters used to purify exhaust gases, diesel particulate filters (DPF) and gasoline particulate filters (GPFs) that eliminate particulate matter (PM), and NOx sensors used to measure concentrations of nitrogen oxides (NOx).



HONEYCERAM, which holds the world's top share DPFs that eliminate up to 99% of PM



The world's first **in-vehicle high-accuracy NOx sensors** that can measure NOx concentrations in real time with high precision

Industrial Process Products

We offer a line-up of ceramic products, including heating devices, kilns, refractories, ceramic membranes, separators, corrosion-resistant equipment and low-level radioactive waste treatment systems, that serves a broad range of industries and provides smart solutions for modern requirements such as environment protection and energy conservation.



C1 Home-use water purifier



Heating devices and refractories using firing technologies gained through manufacturing of ceramic products



Low-level radioactive waste treatment systems that have been adopted by nuclear power facilities around Japan and contribute to reducing waste

Product Sites

Manufacturing sites

Automotive-related			Industrial Process Products	
Japan	Poland	Indonesia	Japan	
USA	China	South Africa	China	
Mexico	Belgium	Thailand	Thailand	
			Production to commence in 2018	



Corrosion-resistant equipment and systems including pumps, valves and glass linings with strong corrosion resistance



Ceramic membranes and separators used for purification and filtration of pharmaceutical products and food and treatment of wastewater and exhaust gas in chemical and electronics plants

Results

Business overview for fiscal 2016

Profits Improved Backed by Demand Growth and Business Restructuring

While sales and profits decreased from the previous year due to the effect of yen appreciation, production output saw an increase on a year-on-year basis as demand in the automobile market remained brisk globally. The automotive-related business posted net sales and profits exceeding our initial forecasts as the needs for NGK products continued to rise due to favorable factors including tighter automobile exhaust gas regulations around the world and an increase in sales of small-sized passenger vehicles and trucks in China. In the industrial process products business, we saw an increase in demand, mainly in China, for heating devices for cathode materials used in lithium-ion batteries of electric vehicles. In addition, new projects and maintenance demand related to nuclear power facilities have been increasing gradually. Moreover, as a result of our ongoing efforts for business restructuring of kiln and refractory products, profitability continued to improve.

Summary of Fiscal 2016

Net sales 244.9 billion yen
(6.0 billion yen decrease from the previous year)

Operating income 64.6 billion yen
(6.1 billion yen decrease from the previous year)

Automotive-related

Net sales 221.0 billion yen
(8.0 billion yen decrease from the previous year)

- Volume of automotive ceramics increased due to strong sales of passenger vehicles in the Chinese and European markets as well as trucks in the Chinese market.
- Net sales decreased as a result of yen appreciation while profits decreased reflecting increases in development costs and capital investment.

Industrial process products

Net sales 23.9 billion yen
(2.0 billion yen increase from the previous year)

- Sales of heating devices for cathode materials used in lithium-ion batteries remained strong in Japan and China.
- Increase in new projects and repairs of nuclear power facilities, and the market conditions remained strong in key industries including the electronics, steel and chemical industries.

Present Action

Challenges and initiatives for fiscal 2017

Profits are expected to continue to decrease as in fiscal 2016 against the backdrop of prolonged yen appreciation, capital investment toward boosting supply capacity and active investment in new product development and human resources development, among other efforts. We have been pushing forward with the establishment of additional production lines and the launch of new plants around the world in an effort to further strengthen supply capability, which is one of strengths of the NGK Group.

[Automotive-related]

Strengthening Steady Supply of Uniform Quality around the World

In the automotive-related business, we will aim to improve productivity and strengthen the provision of consistent quality globally by adding new lines in Poland, establishing a new plant in Thailand (see page 15) and renewing equipment at other existing plants. As a global company, it is critical to ensure the steady supply of products with consistent quality. For that purpose, we regularly conduct GOMs (Global Operation Meetings), where plant managers get together to solve issues and share information, and PEMs (Process Expert Meetings), where persons in charge of manufacturing technology divisions gather to exchange opinions. We also tackle the standardization of quality from the equipment perspective.

We have been making constant efforts for technological innovation by placing state-of-the-art production lines to multiple plants. For example, such new production technology for HONEYCERAM® ceramic substrates was initially installed to the Ishikawa Plant then being done to Thailand, and, as same way, for silicon carbide diesel particulate filters (SiC DPFs) initially was to the Komaki Plant then was to Poland. Furthermore, we steadily respond to market and customer needs in the automotive-related business by launching new products and developing mass production systems to coincide with the introduction of new regulations and the establishment of new markets.

[Industrial Process Products]

Enhancing Business Base

In the industrial process products business, equipment demand for automotive materials such as cathode materials used in lithium-ion batteries has remained at a high level. In addition, we are expected to win a project related to a new low-level radioactive waste treatment system. We believe that we will be able to secure steady net sales and profits by making continuous efforts to enhance the business base such as by exploiting our manufacturing and engineering capabilities.

Outlook for Fiscal 2017

Net sales 249.0 billion yen

(4.1 billion yen increase from the previous year)

Operating income 60.5 billion yen

(4.1 billion yen decrease from the previous year)

Automotive-related

Net sales 224.0 billion yen

(3.0 billion yen increase from the previous year)

- Volume of automotive ceramics is likely to increase due to an increase in sales of trucks in the Chinese market and tighter automobile exhaust gas regulations in Europe.
- Profits are expected to decrease as a result of increases in development cost and depreciation cost.

Industrial process products

Net sales 25.0 billion yen

(1.1 billion yen increase from the previous year)

- Active capital investment for automotive-related materials centering on cathode materials used in lithium-ion batteries.
- Conditions of key industries including the electronics, steel and chemical industries are expected to remain robust.

Topics1

Drying through “Light” Wavelength Control Drying System

The Industrial Process Division focuses on the development of wavelength control drying systems that enable low-temperature drying, which was impossible with traditional drying methods utilizing hot air. By using infrared light with specific wavelengths, it becomes possible to dry objects quickly without the need to raise the temperature of the objects. As it produces no heat-related deformation or deterioration, the technology is expected to be utilized for the manufacturing process of various high-functional films in the electronics industry. In addition, selective irradiation of infrared light that is effective to evaporate solvent will help curb unnecessary energy use and significantly reduce power consumption. We are currently working on evaluation testing with a focus on electronics at a heating test laboratory at our Chita Site, with a plan to expand the target to the pharmaceutical and food sectors.



Wavelength control drying systems providing innovative solutions for the drying process in manufacturing

30-50% **conserving heat energy and reducing power consumption by compared with traditional methods**

Applications



Automotive- and lighting

- Lithium-ion batteries
- LEDs (light-emitting diodes)
- Organic EL (electroluminescent)
- Fuel cells
- Circuit boards



Information appliances-related

- Ceramic capacitors
- Ceramic sheets
- Polarizing films
- Magnetic sheets



Medical

- Pharmaceuticals
- Cosmetics



Food

- Packaging materials
- Barrier films

Next Vision

Future outlook and initiatives

[Automotive-related]

Responding to Market Growth with Extensive Product Line-up

The market environment surrounding the Ceramic Products Business Group is anticipated to significantly grow in and after fiscal 2018, especially in the automotive-related business.

Substantial growth is expected for the gasoline particulate filter (GPF) market in line with the full-fledged introduction of regulations on the number of particulate matter (PM) emitted from gasoline-fueled vehicles. Under such circumstances, the NGK Group has commenced the mass production and shipment of GPFs, mainly in Europe.

Meanwhile, the NGK Group will also start the mass production of a new NOx sensor product. Given the serious air pollution that is plaguing China and India, it is a certainty that automobile exhaust gas regulations will be tightened in the future. As a result, demand for HONEYCERAM®, DPFs, GPFs and NOx sensors is expected to increase from a medium- to long-term perspective.

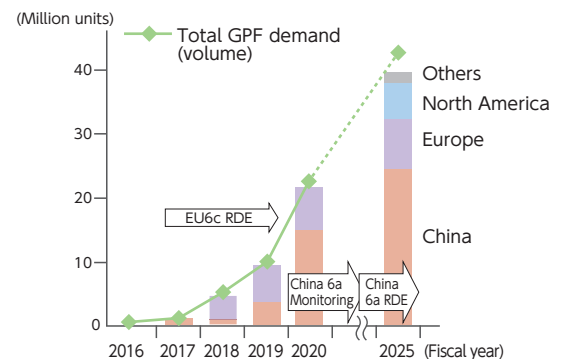
The NGK Group boasts a wide-ranging product line-up that can meet various needs of customers in different regions. Our aim is to establish a position as a top supplier by offering products for passenger vehicles, large-sized vehicles, diesel-fueled vehicles, gasoline-fueled vehicles and hybrid vehicles and attaining large market shares in every market. Through these efforts, we will strive to quickly identify technological trends of automobile manufacturers and push forward with technology and product development that looks ahead to future needs.

[Industrial Process Products]

Entering New Markets by Leveraging Broad Industry Channels

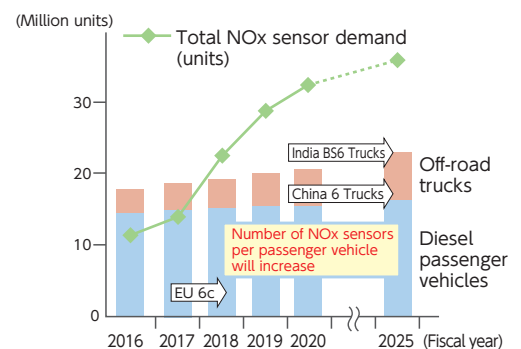
In the industrial process products business, we will promote selection and concentration in prospective markets by leveraging our broad industry channels covering a wide range of products, from various types of corrosion-resistant equipment to heating devices. Specifically, we have been endeavoring to develop new products and explore new applications for existing products in fields such as secondary battery materials, multilayer ceramic capacitors, biopharmaceuticals and medical equipment.

Number of passenger vehicles with GPFs and total GPF demand



GPF demand will dramatically increase as a result of the introduction of RDE (Real Driving Emissions) testing in Europe and tighter regulations in China (China 6a and China 6b).

Number of vehicles requiring diesel engine aftertreatment and NOx sensor demand



The number of NOx sensors installed for diesel passenger vehicles will increase as a result of tighter regulations in Europe (Euro 6c).

Topics2

Further Measures to Develop Global Human Resources

With the aim of promoting consistent quality globally, we have embarked on a project to establish the training center (provisional name) for developing global human resources. We will develop and inculcate the NGK Group's framework on quality and safety that must be observed in each country regardless of cultural and ideological differences while formulating optimal management and operational methods for each plant. It is our plan to promote discussions and preparations from fiscal 2017 and 2018 and to launch the training center within NGK's headquarters/Nagoya site by fiscal 2019.



Topics3

Developing Next-Generation Products

Motor-equipped vehicles that do not require constant engine operation such as hybrid vehicles and electric vehicles produce a shortfall in heat energy used for heating and other purposes compared with diesel-fueled vehicles and gasoline-fueled vehicles. Therefore, a system enabling the effective use of heat energy is crucial for such vehicles. The NGK Group has embarked on the development of heat energy management technology jointly with automobile manufacturers and other companies. Our focus is the development of key systems for the advancement and introduction of next-generation automobiles.

Electronics Business

Contributing to the Development of Communications Infrastructure to Bring More Comfortable Living through Functional Enhancements and Miniaturization of Products

With the rise of AI (Artificial Intelligence) and the IoT (Internet of Things), the era of exchanging enormous amounts of information at high speed is upon us. Beryllium copper products widely used in ceramic components for semiconductor manufacturing equipment and electronics components that we develop and manufacture, as well as smartphones, home appliances, automobiles, industrial equipment, etc., are closely associated with such next-generation information infrastructure.

The NGK Group provides products that meet the constantly evolving needs of society by leveraging its unique differentiation technologies for materials and manufacturing processes.



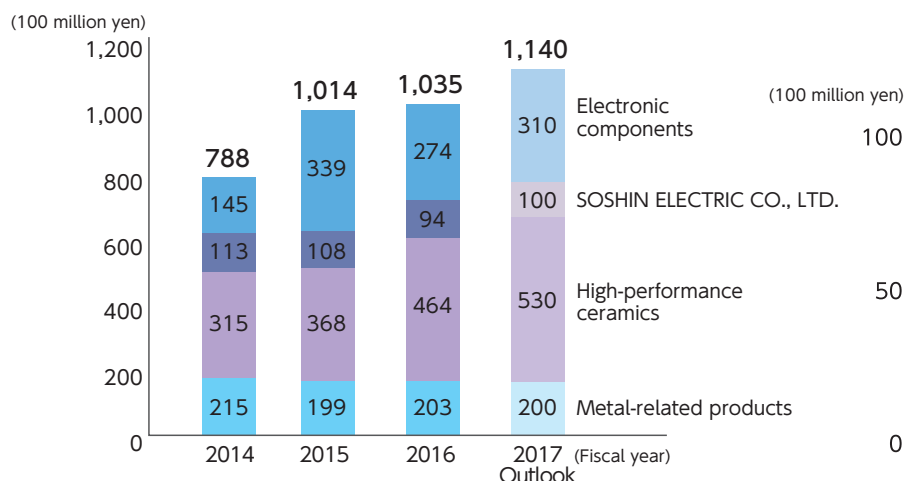
Shuhei Ishikawa

Director and Senior
Vice President
Group Executive,
Electronics Business Group

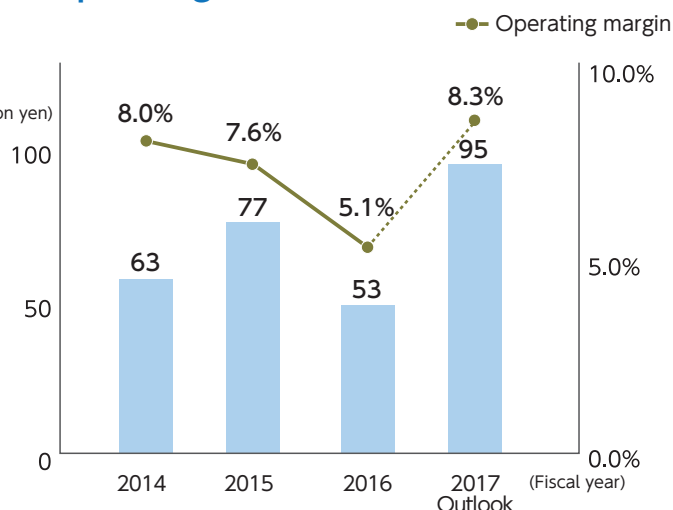
Financial Data

Financial results and outlook

Net Sales (After elimination of intersegment sales)



Operating Income



Products

Main products

High-performance Ceramics (Ceramics for Semiconductor Manufacturing Equipment)

We provide ceramic functional components (susceptors) that support silicon wafers as a semiconductor material inside semiconductor manufacturing equipment as well as chamber components. In the face of the increasing integration of semiconductors, our products respond to increasing demand for memory and miniaturization as well as energy conservation needs for electronics components.

Metal-related Products

Beryllium copper, which is made by adding a small percentage of beryllium to copper, has characteristics including excellent fatigue resistance and a long service life. It is widely utilized as a material for highly reliable conductive springs and contact points. The NGK Group has also been providing nickel-tin strips since 2016.

Electronic Components

By fully exploiting our proprietary technologies cultivated over years in ceramics projects, we provide substrates for electronic devices and arc tubes for lighting purposes. In addition, electronic components for communication devices are manufactured and sold by Soshin Electric Co., Ltd. and ceramic packages by NGK Electronics Devices, Inc.



Ceramics for semiconductor manufacturing equipment that streamline the production process for semiconductors



Beryllium copper that improves reliability of electronic devices and realizes miniaturization



Bonded wafers delivering a level of performance and functionality that cannot be achieved with wafers made from a single material

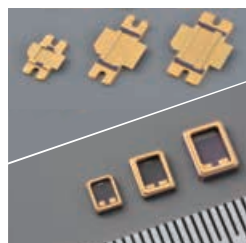


Translucent **HICERAM®** alumina ceramics used as element substrates for LED devices

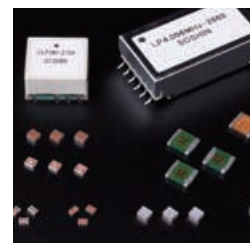
Product Sites

Manufacturing sites

High-performance Ceramics	Metal-related Products	Electronic Components
Japan	Japan	Japan
USA	USA	China
	France	Malaysia



Ceramic packages for high-frequency devices that hold the world's top market share



Electronic components for communication devices such as multilayered dielectric filters and couplers

Results

Business overview for fiscal 2016

Accelerating Capital Investment in Response to Strong Demand

The Electronics Business Group on the whole posted increased sales and decreased profits compared to the previous year. This is attributable to the fact that sales remained strong backed by growth in the semiconductor market while there was a delay in recovery of demand for ceramic packages.

In the high-performance ceramics business, strong results were posted as capital investment by semiconductor manufacturers remained at a high level on the back of increasingly multilayered and miniaturized semiconductors. We also accelerated capital investments in response to strong demand.

In the metal-related products business, sales increased only slightly due to the appreciation of the yen despite an increase in shipment of beryllium copper products for industrial equipment in the Chinese market.

In the electronic components business, sales decreased as a result of the delay in investment in base stations for mobile phones in China, which negatively impacted the demand for ceramic packages.

Summary of Fiscal 2016

Net sales 103.5 billion yen (2.1 billion yen increase from the previous year)

Operating income 5.3 billion yen (2.4 billion yen decrease from the previous year)

High-performance ceramics

Net sales 46.4 billion yen (9.6 billion yen increase from the previous year)

Sales increased from the previous year reflecting strong shipments of ceramic components for semiconductor manufacturing equipment as capital investment by semiconductor manufacturers and foundries (subcontracted semiconductor manufacturers) remained at a high level on the back of increasingly multilayered and miniaturized semiconductors.

Metal-related products

Net sales 20.3 billion yen (0.4 billion yen increase from the previous year)

Sales increased from the previous year reflecting strong shipments of beryllium copper products mainly for industrial equipment in the Chinese market.

Electronic components

Net sales 27.4 billion yen (6.5 billion yen decrease from the previous year)

Sales declined from the previous year due to sluggish demand for ceramic packages in the Chinese market despite increased volume of bonded wafers.

Soshin Electric Co., Ltd.

Net sales 9.4 billion yen (1.4 billion yen decrease from the previous year)

Sales in the fields of both industrial equipment and information communication devices remained sluggish due to a slowdown in the growth of the Chinese economy and a decline in investment in base stations

Present Action

Challenges and initiatives for fiscal 2017

Increased Sales and Profits Expected on the Back of Continued Booming of the Semiconductor Market

Increased sales and profits are expected for fiscal 2017 in the Electronics Business Group as a whole on the back of the continued booming of the semiconductor market.

In the high-performance ceramics business, capital investment by semiconductor manufacturers and foundries will remain at a high level. In order to respond to robust demand, we will expand production areas of existing plants and build new plants while focusing on the development of next-generation products in line with the increasing integration of semiconductors.

In the metal-related products business, growth has been slowing in the market for beryllium copper products and the prices of raw materials have been rising. We will redevelop our revenue structure of existing products and promote the expansion of sales of new materials and products for new applications with the aim of achieving the steady growth of profits.

In the electronic components business, we have been ramping up mass production of bonded wafers for SAW filters, looking ahead to the expansion of the high-performance filter market for mobile communication devices. As we anticipate that demand for ceramic packages will remain flat for existing products, we will accelerate the development of new products with the aim of contributing to earnings as soon as possible.

Outlook for Fiscal 2017

Net sales 114.0 billion yen

(10.5 billion yen increase from the previous year)

Operating income 9.5 billion yen

(4.2 billion yen increase from the previous year)

High-performance ceramics

Net sales 53.0 billion yen

(6.6 billion yen increase from the previous year)

■ Sales and profits are expected to increase year-on-year as capital investment by semiconductor manufacturers and foundries is likely to continue at a high level on the back of increasing integration and segmentation of semiconductors.

Metal-related products

Net sales 20.0 billion yen

(0.3 billion yen decrease from the previous year)

■ Demand for beryllium copper products will remain flat. We will aim to expand the sales of new materials and products for new applications.

Electronic components

Net sales 31.0 billion yen

(3.6 billion yen increase from the previous year)

■ Demand for bonded wafers will increase on the back of expansion of the high-performance filter market for mobile communication devices. As we anticipate that demand for ceramic packages will remain flat for existing products, we will launch and expand the sales of new products.

Soshin Electric Co., Ltd.

Net sales 10.0 billion yen

(0.6 billion yen increase from the previous year)

■ Sales are expected to increase as a result of the expansion of sales of mainstay products in the businesses related to noise reduction, among others, by launching new products onto the market.

Topics1

Boosting Production System in Response to Demand Increase

Boosting Production System in Response to Demand Increase

In the high-performance ceramics business, we have been boosting our production capacity through aggressive capital investment in light of the brisk semiconductor market. It is our aim to remain a top supplier by responding to customer demand for increased production through advanced capital investment during the phase in which makers of semiconductor manufacturing equipment are increasing production.

In Japan, we will expand production areas at our Komaki Site in order to boost production of functional components (susceptors) that support silicon wafers as a semiconductor material while establishing a new plant in Tajimi City in Gifu Prefecture. Overseas, we will open a new plant at FM Industries, Inc., our production site in the U.S., to boost production of chamber components. We will collaborate with customers in swiftly launching next-generation products onto the market, thus staying at the forefront of electronics with our advanced ceramic technologies.



Ceramics for semiconductor manufacturing equipment (susceptors)

Boosting production capacity by
25%

Establishing new production site in Tajimi City, Gifu Prefecture

Name:

TAJIMI PLANT, NGK CERAMIC DEVICE CO. LTD. (provisional name)

Investment amount:

Approx. 20.0 billion yen

Commencement of construction:

March 2018 (scheduled)

Commencement of production:

April 2020 (scheduled)



Topics2

Intelligent Plants

At this plant for beryllium copper strips, we engage in intelligent projects for production systems by utilizing big data. By accumulating all sorts of production data in real time during the strip manufacturing process and analyzing the interactions of production criteria and quality information using big data, we can produce findings that will contribute to quality management and the forecasting of abnormalities in production lines, among other purposes. These efforts will also result in the enhancement of yield and cost reduction. We will promote similar data gathering and analysis at other plants with the aim of further expanding such efforts to electronic components plants in the future.

Next Vision

Future outlook and initiatives

Achieving Mass Production of High-Function Products

With the arrival of the era of IoT and AI, a wide range of technological innovations are expected to emerge in response to the increasing volume of information and communications as well as next-generation high-speed communications. There will be opportunities for the Electronics Business Group to expand and generate new products in line with such technological innovations.

For example, future growth is expected through business expansion by launching new models of bond wafers, ceramic packages and beryllium copper strips in the areas of infrastructure development for next-generation communications and enhancement of high-speed communications and by delivering high-functional ceramic components for semiconductor manufacturing equipment in response to increased demand for semiconductor memories for data centers. On the manufacturing and development front, we have been promoting the establishment of optimal production and development systems throughout the value chain.

In the high-performance ceramics business, we respond to customer demand for increased production by developing cooperative systems (capital investment, equipment lending, guidance on manufacturing, etc.) with subcontracted processing plants. We work on the development of next-generation manufacturing equipment in close coordination with the development programs of customers.

In the metal-related products business, we promote the

integration and standardization of specifications in collaboration with material manufacturers and customers, thereby addressing the inefficiency of low-volume high-mix manufacturing.

In the electronic components business, we share key factors for quality control with material manufacturers in order to differentiate ourselves in terms of product characteristics, thus achieving mass production of high-function products. Based on material and molding technologies, we carry out a broad range of joint development projects and prototype making with companies and research institutes in various fields with the aim of developing new products.

Bonded Wafers for SAW Filters

That Enhance Communication Quality for Smartphones and Other Devices



While conventional SAW (Surface Acoustic Wave) filters suffer from the disadvantage of being susceptible to a high degree of expansion and contraction based on temperature, NGK's bonded wafers realize a significant reduction in thermal expansion, thus offering solutions for next-generation LTE that require filtering functions with higher precision.

that Utilize Big Data



The NGK Group commenced preparations for the introduction of big data analysis in 2013 and has been a leader in this field among material manufacturers.



As the NGK Group's efforts to realize cost reduction through the usage of big data received attention, Senior Vice President Ishikawa was invited to speak about the NGK Group's initiatives.

① June 2016: Special program at an IT-related exhibition
② April 2017: Special lecture organized by a manufacturer

Topics3

Generating New Products Targeting New Markets and Next-Generation Products

The NGK Group has embarked on company-wide projects including the Ceramic Battery Project, which was formed last year, and the Optical component Project, which was kicked off this year (see pages 16-17). We aim to commercialize some of the products being developed in these projects within the Electronics Business Group, which will pave the way for us to enter new markets. By engaging in activities to solve problems concerning marketing, quality assurance and manufacturing from the development stage, we will strive to achieve smooth commercialization based on our business operation experience and insights.

We have been strengthening collaboration not only within NGK Insulators, Ltd. but also with Group companies. This includes our collaboration with Soshin Electric Co., Ltd. and NGK Electronics Devices, Inc. in exploring new products for the next-generation high-speed communications market. We will promote the development of new products for future growth by bringing together strengths of each company, including the material technologies of NGK Insulators, Ltd., broad network in the electronic components industry of Soshin Electric Co., Ltd., and mass production process of NGK Electronics Devices, Inc.



Optical communication packages that are used for the conversion parts of optical fiber communications. Demand is expected to increase on the back of the enhancement of high-speed communications.



Insulated circuit boards that maximize the performance of power semiconductors. Our focus has been the expansion of sales targeting the markets for industrial machinery and hybrid and electric vehicles, which offer promising growth prospects.

CSR Management

CSR Activities Concepts and Systems

The NGK Group aims to realize its corporate philosophy through the provision of products and services that will bring new value to society and contribute to the creation of a better social environment. We will fulfill our social responsibilities through these activities, establishing and continually strengthening CSR objectives to meet the expectations and earn the trust of society. CSR objectives are developed every year based on the CSR Promotion Items in line with the NGK Group Guidelines for Corporate Behavior.

Corporate Philosophy

NGK Products and Technologies Must Create New Value and Contribute to the Quality of Life.

NGK Group Guidelines for Corporate Behavior	Action for Promoting CSR	CSR Objectives
Behavior guidelines for realizing our corporate philosophy	Eight CSR actions established to match the eight actions in the Guidelines for Corporate Behavior	Detailed objectives in accordance with eight actions Formulate annual activities plan for each objective
I. Realization of Corporate Philosophy Responding to the trust and expectations of society	Providing products that contribute to better social environment	<ul style="list-style-type: none"> ● Development and provision of products and services that help to preserve the natural environment ● Development and provision of products and services that embody safety and reliability ● Realization of higher quality products and services
	Disclosure of corporate information	<ul style="list-style-type: none"> ● Enhancement of corporate information disclosure ● Consistent improvement of internal controls relating to financial reporting
	Thorough enforcement of compliance/ Risk management	<ul style="list-style-type: none"> ● Thorough promulgation of the NGK Group Guidelines for Corporate Behavior through education ● Reinforcement of the risk management system ● Respect and protection of intellectual property rights ● Creation and consistent improvement of a framework for information security ● Strict adherence to the Anti-Monopoly Act, Subcontract Act, and other laws and regulations pertaining to business transactions ● Strict adherence to laws and regulations relating to export control
	Respect of humanity and assurance of comfortable working environment	<ul style="list-style-type: none"> ● Maintenance and consistent improvement of safe and comfortable working environments ● Development of human capital and recruiting of human resources across the Group ● Utilization of diverse human resources ● Support for better balance between work and home life/childrearing
II. How to Engage in Business Activities Act with sincerity from a strong ethical stance	Implementation of fair, free and transparent transactions	<ul style="list-style-type: none"> ● Fair and honest evaluation of procurement partners, and extensive resource diversification ● Promotion of CSR procurement
	Preservation of global environment	<ul style="list-style-type: none"> ● Prevention of global warming ● Adoption of environmentally friendly production processes ● Promotion of resource recycling ● Strengthening of global environmental management
	Coordination with local communities and promotion of contribution to the society	<ul style="list-style-type: none"> ● Provision of scholarships and living assistance to foreign students ● Cooperation with local communities, labor unions, and NPOs in social contribution activities ● Support for volunteer activities by employees
III. As a Member of Society Sustainably develop in partnership with society	Communications with stakeholders	<ul style="list-style-type: none"> ● Communication with customers and procurement partners ● Interaction with local communities via plant tours and open house events ● CSR Talk Live (Discussions on implementing CSR with every employee class)
Behavioral Guidelines Guidelines indicating how to conduct one self in daily work activities based on the Guidelines for Corporate Behavior		Review activities according to plans each year

Establishing CSR Promotion Items (Materiality)

Aiming to develop a sustainable society and in consideration of a variety of stakeholder demands, the NGK Group established eight items from NGK Group Guidelines for Corporate Behavior as CSR promotion items determining the specific objectives and achievements for each item. Each year, we verify the achievement status of each objective in an attempt to continuously improve these efforts.

Process of identifying materiality

The NGK Group has identified specific CSR Promotion Items, which constitute our CSR materiality, based on the Corporate Philosophy and the Guidelines for Corporate Behavior. In establishing the CSR promotion items that constitute an integral part of our core values and principles along with the Corporate Philosophy and the Guidelines for Corporate Behavior, we took social trends and needs into consideration and developed systems for information disclosure and promotion.

In line with this policy, we will address the needs of the times appropriately, based on feedback from our stakeholders and readers of this report.

Process of establishing CSR Promotion Items

1986	Formulated the Corporate Behavior Principles, Management Philosophy, and code of conduct
1999	Formulated the Guidelines for Corporate Behavior
2008	Revised the NGK Group Guidelines for Corporate Behavior The Guidelines were revised and positioned as guidelines for implementing the Corporate Philosophy from the Corporate Philosophy and CSR viewpoints. With due consideration paid to changes in social issues, the Guidelines set forth the ban on entertainment and gifts for the purpose of gaining dishonest profits, and initiatives for achieving a sound work-life balance.
2009	Established CSR Promotion Items The CSR of the NGK Group was defined as activities to realize our corporate philosophy, and the following promotion items (issues of materiality) were identified. (1) Provision of products that contribute to a better social environment (2) Disclosure of corporate information (3) Thorough enforcement of compliance; Risk management (4) Respect for humanity and assurance of a comfortable working environment (5) Implementation of fair, free, and transparent transactions (6) Preservation of the global environment (7) Coordination with local communities and promotion of contributions to society (8) Communications with stakeholders
2011	Revised the NGK Group Guidelines for Corporate Behavior To meet social demands, such as ISO26000, more appropriately, the Guidelines for Corporate Behavior were fully integrated with the CSR Promotion Items to represent a comprehensive corporate principle.

CSR Promotion Framework

To promote CSR activities, the NGK Group has established the CSR Committee, the Environmental Protection Committee, the Quality Committee, the Safety and Health Committee and the Internal Controls Committee.

In terms of legal and corporate ethics compliance activities, the CSR Committee discusses items necessary to assist decision-making by the president and CSR Committee chair, provides support in matters determined to potentially have a substantial impact on the company, reviews and evaluates the promotion plans of each subcommittee, and conducts a wide range of activities, including the discussion of CSR-related items, determined to be important by the Committee chair.



CSR Objectives and Achievements

*Evaluation standards: ○ Target achieved △ 80% or more of target achieved × Less than 80% of target achieved

Providing Products that Contribute to Better Social Environment

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Development and Provision of Products and Services That Help to Preserve the Natural Environment

Increase sales growth rate for environmental products by 60% or above by fiscal 2020 (compared to fiscal 2013). NAS battery (wider use of renewable energy) DPF, HONEYCERAM, NOx sensor (automobile exhaust gas purification) Low-Level Radwaste Treatment System (NGK Group)	Increase sales growth rate for environmental products by 26% (compared to fiscal 2013) (NGK Group)	○	Increase sales growth rate for environmental products by 30% or above (compared to fiscal 2013) (NGK Group)
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Enhancement of Quality of Products and Services, Development and Provision of Safe and Secure Products and Services

Conduct rigorous verification for modifications and changes to eliminate risks associated with design and manufacturing. Continue to pursue numerical targets for achieving zero major market complaints and reducing defect costs. (NGK Group)	Reduced complaint- and defect-related costs by approx. 20% each; failed to achieve zero major market complaints. (NGK Group)	△	Realize higher quality by enhancing awareness and knowledge of eliminating risks. Continue to pursue numerical targets for achieving zero major market complaints and reducing defect costs. (NGK Group)
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Disclosure of Corporate Information

P FY2016 Plan and Targets

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Enhancement of Corporate Information Disclosure

Enhance and continue to provide fair and honest information disclosure in a timely and appropriate manner. (NGK Group)	Conducted ongoing fair and honest information disclosure in a timely and appropriate manner. (NGK Group)	○	Enhance and continue to provide fair and honest information disclosure in a timely and appropriate manner. (NGK Group)
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Consistent Improvement of Internal Controls Relating to Financial Reporting

Improve items identified during audits. (NGK Group)	Improved all items identified by audits within the fiscal year.	○	Improve items identified during audits. (NGK Group)
Raise efficiency in assessment and audit of processes rated favorably in the previous fiscal year. (NGK Group)	Raised efficiency in assessment and audit of processes rated favorably in the previous fiscal year. (NGK Group)	○	Raise efficiency in assessment and audit of processes rated favorably in the previous fiscal year. (NGK Group)

Thorough Enforcement of Compliance; Risk Management

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Thorough Promulgation of the NGK Group Guidelines for Corporate Behavior Through Education

Continue thorough awareness and inculcation of NGK Group Guidelines for Corporate Behavior and behavioral guidelines. (NGK Group)	Familiarized employees with career training, created a paper on awareness summarizing guidelines of corporate behavior and distributed it to all employees.	○	Continue thorough awareness and inculcation of NGK Group Guidelines for Corporate Behavior and behavioral guidelines. (NGK Group)
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Reinforcement of the Risk Management System

The CSR Committee will regularly follow-up on the status of Company-wide risk countermeasures. (NGK Group)	CSR Committee met three times, followed up on the status of risk countermeasures.	○	The CSR Committee will regularly follow-up on the status of Company-wide risk countermeasures. (NGK Group)
Conduct CSA questionnaires for directors and managers in Group companies in Japan. (NGK Group)	Conducted CSA questionnaires for a total of 458 officers and managers within Group companies in Japan (NGK and Group companies in Japan)	○	Conducted CSA questionnaires for those in the position of section manager/supervisor and above at NGK (NGK and Group companies in Japan)

Respect and Protection of Intellectual Property Rights

Conduct awareness program for manager-level employees. (NGK)	Conducted an awareness program for manager-level employees, inviting external experts, in which 116 employees participated. (NGK)	○	Conduct awareness program for manager-level employees. (NGK)
Continue to conduct small group discussion-based seminars for young engineers and provide e-learning programs for basics of patents. (NGK)	Conducted eight small group discussion-based seminars for young engineers in the R&D and business divisions, attended by a total of 103 employees. Provided e-learning programs on the basics of patents, attended by a total of 58 employees. (NGK)	○	Continue to conduct seminars for young engineers and provide e-learning programs on the basics of patents. (NGK)

Creation and Consistent Improvement of a Framework for Information Security

Continue to follow up on security measures and strengthen software licensing management. (NGK Group)	Visited seven overseas Group companies and checked and provided guidance on IT security measures and software management status. Conducted information security training (including e-learning programs) for a total of 4,613 employees. (NGK Group)	○	Continue to follow up on security measures and strengthen software licensing management. (NGK Group)
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Strict Adherence to the Anti-Monopoly Act, Subcontract Act, and Other Laws and Regulations Pertaining to Business Transactions

Introduce e-learning programs to increase training opportunities. (NGK and domestic Group companies) Create overseas editions of the competition law compliance handbook (U.S., China) Revise the Compliance Card. (NGK and domestic Group companies) Launch e-mail archiving systems for Group companies (Japan and U.S.)	Conducted competition laws training for newly appointed officers, lectures on competition laws compliance (for officers, manager-level employees and salespeople), competition laws training targeting overseas Group companies and Group companies in Japan, and training by division provided by in-house lecturers. Prepared the U.S. and China versions of the Competition Laws Compliance Handbook and distributed them to Group companies in the U.S. and China, respectively. Revised the Compliance Card (NGK and Group companies in Japan)	○	Provided training on relevant matters as a part of position-based internal training. Held seminars given by external lecturers. (Group companies in Japan and overseas Group companies)
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Anti-corruption Measures

Launch internal anti-bribery rules involving foreign public officials. (NGK Group) Provide training for anti-bribery regulations involving foreign public officials. (NGK Group)	Provided training on anti-bribery regulations involving foreign public officials, as part of expatriate training. (NGK Group) Provided training on anti-bribery regulations for nine companies in North America, three companies in Europe and nine companies in Asia. (NGK Group)	○	Provided training on relevant matters as a part of position-based internal training. Held seminars given by external lecturers. (Overseas Group companies)
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Strict Adherence to Laws and Regulations Relating to Export Management

Inculcate thorough awareness of import/export handbook. (NGK)	Organized nine training sessions for responsible persons from each division to raise awareness of the importance of the import/export handbook, attended by a total of approx. 199 persons. (NGK)	○	Inculcate thorough awareness of import/export handbook. (NGK)
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Respect of Humanity and Assurance of Comfortable Working Environment

P FY2016 Plan and Targets

D FY2016 Activities Summary

C Evaluation

A FY2017 Plan and Targets

Maintenance and Consistent Improvement of Safe and Comfortable Working Environments

Focus efforts on safety training to prevent accidents before they occur. (NGK Group)	Promoted experience-based safety training (NGK)	○	Focus efforts on safety training to prevent accidents before they occur. (NGK Group)
Continue health management for employees who routinely work long hours. (NGK)	Reduced the number of employees with more than 80 hours of overtime per month by 60% and continued to offer health management programs, in which 108 employees participated. (NGK)	○	Continue health management for employees who routinely work long hours. (NGK)

Development of Human Capital and Recruiting of Human Resources across the Group

Plan highly effective human resource training. (NGK)	Promoted systematic training through approximately 120 programs.	○	Plan highly effective human resource training. (NGK)
Promote systematic training in attempt to strengthen onsite capabilities. (NGK Group)	Reviewed the content of training given by in-house instructors. Shared textbooks among Group companies. (NGK Group)	○	Promote systematic training in attempt to strengthen onsite capabilities. (NGK Group)
Ongoing language training (Goal: 80% of new hires score 600 or higher on the TOEIC). (NGK)	Provided training amounting to 128 hours per year per employee. A total of 87% of new hires achieved a TOEIC score of 600 points or higher. (NGK)	○	Ongoing language training (Goal: 80% of new hires score 600 or higher on the TOEIC). (NGK)

Utilization of Diverse Human Resources

Maintain disabled employment rate at 2.0% or higher, as required by law. (NGK)	Achieved a 2.03% disabled employee ratio. (NGK)	○	Maintain disabled employment rate at 2.0% or higher, as required by law. (NGK)
Raise career awareness of female employees and provide them with opportunities to demonstrate their potential. Increase the ratio of new female graduate employment and diversity of job assignment for females. (NGK)	Nine employees transferred to main career track positions. New female graduate employment ratio increased to 28.7% from 23.1% in the previous fiscal year. (NGK)	△	Raise career awareness of female employees and provide them with opportunities to demonstrate their potential. Increase the ratio of new female graduate employment and diversity of job assignment for females. (NGK)

Support for Better Balance between Work and Home Life/Childrearing

Work with labor union to promote rectification of long working hours. (NGK)	In cooperation with the workers' union, reviewed causes of increasing overtime work hours and examined and conducted improvement actions, significantly reducing overtime exceeding 45 hours per month. The number of employees who work long hours (exceeding 600 hours per year) has decreased for five consecutive years.	○	Work with labor union to promote rectification of long working hours. (NGK)
Increase use of expanded childrearing support measures. (NGK)	A total of 51 employees (44 females and 7 males) used systems to take a childcare leave of absence; and a total of 57 employees used reduced working hours options for parents of young children. (NGK)	○	Increase use of expanded childrearing support measures. (NGK)

Fair and Honest Evaluation of Procurement Partners and Extensive Resource Diversification

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D FY2016 Activities Summary

C Evaluation

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Fair and Honest Evaluation of Procurement Partners, and Extensive Resource Diversification

Conduct assessments, focusing on new and important suppliers (representing around 10% of all applicable). (NGK)	Visited and assessed a total of 123 suppliers consisting of 21 new and 102 existing companies. (NGK)	○	Conduct assessments, focusing on new and important suppliers (representing around 10% of all applicable). (NGK)
Discuss BCP measures with individual suppliers, considering specific business relationships. (NGK)	Discuss BCP measures with individual suppliers, considering specific business relationships. (NGK)	○	Discuss BCP measures with individual suppliers, considering specific business relationships. (NGK)

Promotion of CSR Procurement

Maintain ongoing activities through reconfirming understanding and agreement of suppliers. (NGK Group)	Changed to a system to obtain written agreements from suppliers every year. (NGK Group)	○	Maintain ongoing activities through reconfirming understanding and agreement of suppliers. (NGK Group)
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Preservation of Global Environment

P FY2016 Plan and Targets

D FY2016 Activities Summary

C Evaluation

A FY2017 Plan and Targets

Prevention of Global Warming

Basic unit per net sales: Reduce by 9% or more compared to fiscal 2013. (NGK Group)	Curb CO ₂ emissions. Basic unit per net sales: Reduce by 10% or more compared to fiscal 2013. (NGK Group)	○	Curb CO ₂ emissions. Basic unit per net sales: Reduce by 11% or more compared to fiscal 2013. (NGK Group)
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Promotion of Resource Recycling

Curb amount of discarded materials generated. Basic unit per net sales: Reduce by 13% or more compared to fiscal 2013. (NGK Group)	Curb amount of discarded materials generated. Basic unit per net sales: Reduce by 19% or more compared to fiscal 2013. (NGK Group)	○	Curb amount of discarded materials generated. Basic unit per net sales: Reduce by 17% or more compared to fiscal 2013. (NGK Group)
Maintain recycling rate of at least 99% in Japan. (NGK Group)	In Japan: Maintained a recycling rate of 99.2% in Japan. (NGK Group)	○	Maintain recycling rate of at least 99% in Japan. (NGK Group)

Strengthening of Global Environmental Management

Support bases that need to improve risk control; change regulatory value control methods, shifting focus from point-based to trend-based management. (NGK Group)	Introduced a system to take preventative measures by predicting deviations of management status based on the environmental data trend for all Group companies. (NGK Group)	○	Continue to promote initiatives, including trend-based management, environmental risk diagnosis, etc. (NGK Group)
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Coordination with Local Communities and Promotion of Contribution to the Society

P FY2016 Plan and Targets

D FY2016 Activities Summary

C Evaluation

A FY2017 Plan and Targets

Provision of Scholarships and Living Assistance to Foreign Students

Maintain support to foreign students. (NGK)	Provided housing for 40 students from eight countries, and scholarships for 20 students from 11 countries. (NGK)	○	Maintain support to foreign students. (NGK)
Continue to hold language classes and cross-cultural exchange meetings led by foreign students conducted within and outside the company. (NGK)	Held 16 Chinese and 16 Korean language classes, with 24 people from local communities attending each class. Hosted 12 cross-cultural exchange sessions with foreign students from 12 different countries, which were participated in by 23 people from local communities. (NGK)	○	Continue to hold language classes and cross-cultural exchange meetings led by foreign students conducted within and outside the company. (NGK)
Distribute information after support ends. (NGK)	Sent New Year's greetings to approximately 300 supported students, including alumni; and issued NGK International Friendship Club Membership Cards to students upon expiration of the support period. (NGK)	○	Distribute information after support ends. (NGK)

Cooperation with Local Communities, Labor Unions, and NPOs in Social Contribution Activities

Ascertain activity status and maintain distribution of information connected to the upcoming activities at each Group company. (NGK Group)	Received 88 articles from Group companies on social contribution activities, and posted several on NGK's website as a part of corporate information sharing. (NGK Group)	○	Ascertain activity status and maintain distribution of information connected to the upcoming activities at each Group company. (NGK Group)
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Support for Volunteer Activities by Employees

Continue to create an environment enabling employees to easily take part in volunteer activities. (NGK)	Continued to provide employees with various types of volunteer activity opportunities, including: assistance at science events, participation in the Table for Two (TFT), assistance at marathon races, the NGK Eco Point System, and tree-planting projects. (NGK)	○	Continue to create an environment enabling employees to easily take part in volunteer activities. (NGK)
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Communications with Stakeholders

P FY2016 Plan and Targets

D FY2016 Activities Summary

C Evaluation

A FY2017 Plan and Targets

Communication with Customers and Procurement Partners

Hold earnings results presentations for major suppliers. (NGK)	Held earnings results presentations for 131 major suppliers. (NGK)	○	Hold earnings results presentations for major suppliers. (NGK)
Continue to operate the supplier helpline.	Continue to operate the supplier helpline. (NGK)	○	Continue to operate the supplier helpline.
Conduct assessments, focusing on new and important suppliers (representing around 10% of all applicable). (NGK)	Visited and assessed a total of 123 suppliers, consisting of 21 new and 102 existing companies. (NGK)	○	Conduct assessments, focusing on new and important suppliers (representing around 10% of all applicable). (NGK)

Interaction with Local Communities via Plant Tours and Open House Events

Continue to interact with local communities. (NGK)companies)	Interacted with local communities through seven plant tours held at three sites, attended by 219 participants. (NGK)	○	Continue to interact with local communities. (NGK)companies)
Enhance communication with external stakeholders. (NGK)	Exchanged opinions with individuals mainly from local administrations. (NGK)	△	Enhance communication with external stakeholders. (NGK)

CSR Talk Live (Discussions on Implementing CSR with Every Employee Class)

Continue two-way communication events with NGK and domestic Group company employees. (NGK and domestic Group companies)	Held nine Talk Live sessions in eight locations in Japan, attended by approx. 330 employees. The total number of participants so far has reached 3,339 employees.	○	Continue two-way communication events with NGK and domestic Group company employees. (NGK and domestic Group companies)
Enhance CSR-Web content and use it for employee training. (NGK and domestic Group companies)	Established routine operations for real-time information communications and updated contents featuring familiar topics; and initiated employee training. (NGK and Group companies in Japan)	○	Enhance CSR-Web content and use it for employee training. (NGK and domestic Group companies)

The NGK Group promotes an understanding of our business among customers, suppliers, shareholders, investors, regional communities, governments, international organizations, universities, research institutions and employees. We are continuously improving our activities and initiatives through dialogues with all our stakeholders.

In fiscal 2016, we conducted the CSR Report Survey targeting general consumers and the Survey of Expectations regarding CSR Promotion Actions targeting our employees.

As a result of these surveys, it was revealed that among the NGK Group's CSR activities, general consumers are interested in the environment and global environmental conservation and that our employees have high expectations for CSR activities leading to the "provision of products that contribute to quality of life."

In order to make continued future contributions to environmental conservation, for which general consumers have shown a special interest, we will promote the provision of products that contribute to quality of life as per the expectations of our employees.

In addition, we will incorporate opinions gathered through the survey into our CSR reporting for next year and beyond as well as our future CSR activities.



Connection with Customers

To earn and maintain the trust of customers, we engage in the creation of new value through the provision of products and services realizing global environmental conservation and social safety and peace of mind from a long-term and global perspective.

Connection with Suppliers

With a basic policy centered on the three principles of openness and fairness, partnership and relationship with society, the NGK Group is engaged in fair, free and transparent business transactions with the procurement partners in our supply chain. We also established a supplier helpline to provide unwavering support for important inquiries in an effort to build and maintain fair supplier relationships.

Connection with Shareholders and Investors

The NGK Group aims to meet expectations for enhanced corporate value through dialogues and efforts to disclose information pertaining to management, finance, products, and services in a timely and appropriate manner.

Connection with Regional Communities

We proactively engage in social contribution activities in response to community needs with the intent of becoming a corporate citizen trusted by society with concern for social issues in all countries and regions where we do business.

Connection with Governments and International Organizations

We proactively participate in international initiatives and other activities in order to realize mutual cooperation as key actors seeking to resolve social problems.

Connection with Universities and Research Institutes

Through research and educational activities based on industry-academia collaboration, we have been pushing forward with the development of scientific technologies and other technologies that will contribute to solving social problems.

Connection with Employees

The NGK Group strives to create a safe and comfortable workplace environment with respect for employee humanity. We also support the growth of human resources and fair treatment enabling each employee to maximize their skills.

Implementation Status of Stakeholder Engagement

Stakeholders	Objectives	Communication methods	Reference page	Frequency
Customers (including general consumers)	Enhance customer services Improve quality	Official website		Regularly
		Contact desk		Regularly
		Participation in exhibitions		A few times a year
		Open innovation		Regularly
Suppliers	Realize fair, free and transparent transactions Exchange information with suppliers Establish better supply chain	Financial results presentations		Once a year
		Supplier helpline		Regularly
		Individual visits to suppliers in Japan and overseas		Regularly
Shareholders and Investors	Enhance corporate value	General shareholders meetings		Once a year
		Information sessions		Twice a year each in Japan and overseas
		Individual visits and interviews		Regularly
		Participation in IR events		Once a year
		Countermeasures for socially responsible investment (SRI)		Regularly
		Official website		Regularly
Regional Communities	Contribute to regional communities as a trusted corporate citizen	Collaboration activities with NPOs, etc.		Regularly
		Volunteer activities by employees		Regularly
		Social contribution activities in cooperation with labor unions		Regularly
		Invitation to plant tours and events		Regularly
Governments and International Organizations	Promote initiatives to solve social problems	Participation in international initiatives		Regularly
Universities and Research Institutes	Develop scientific technologies Develop technologies that will contribute to solving social problems	Joint research		Regularly
Employees	Respect the humanrights of employees Develop safe and comfortable workplace environments Conduct surveys on workplace environment and employee satisfaction Inculcate corporate philosophy and policies	Company newsletters		Once a month
		Video news		Twice a month
		CSR Talk Live		Approximately 10 times a year
		Intranet		Regularly
		Labor-Management Advisory Board meetings and Regular Labor-Management Council meetings		Once a year/Once a year
		Survey on workplace vitality		Once in two years
		Compliance awareness survey		Once in two years
		CSA (Control Self Assessment) survey		Once a year
		Expectation survey on CSR promotion actions		Once a year
		Helpline		Regularly
		Hotline		Regularly

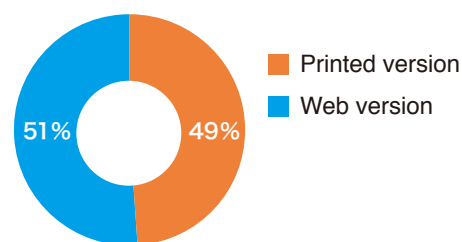
Results of NGK Report Readers Survey

Survey period: August 9, 2016 to October 13, 2016
Number of respondents: 344

Attributes of survey respondents :

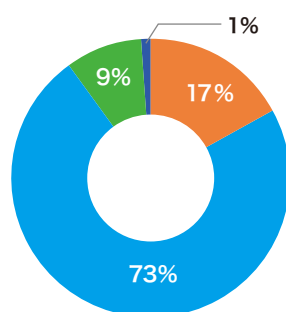
[By gender] Male: 74% Female: 26%

[By age group] Teens and under: 3% 20s: 9% 30s: 19% 40s: 31%
50s: 24% 60s: 10% 70s: 3%



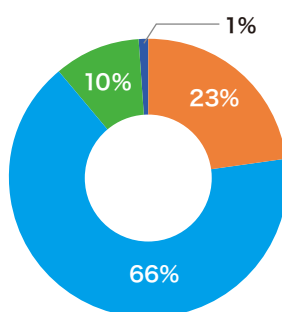
Format of the NGK Report

Q.1 Top Management's Commitment

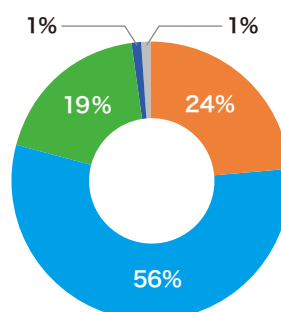


Message was well delivered
Message was delivered
Message was not delivered very well
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Q.2 Special Feature: New Five-year Environmental Action Plan and Environmental Products



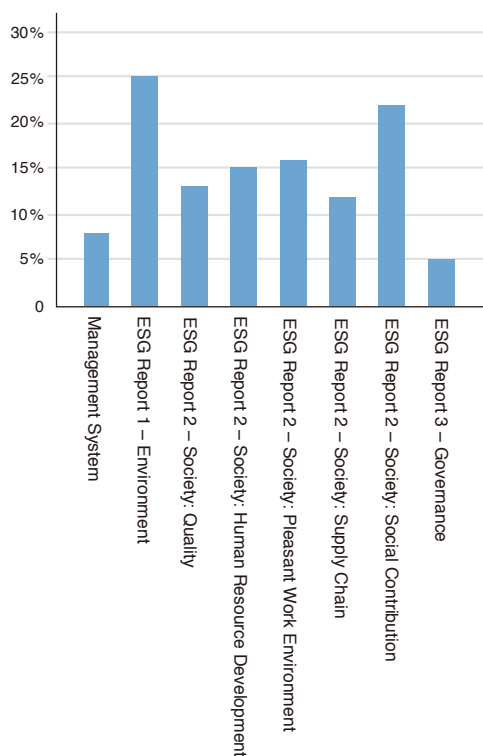
Message was well delivered
Message was delivered
Message was not delivered very well
Message was not delivered



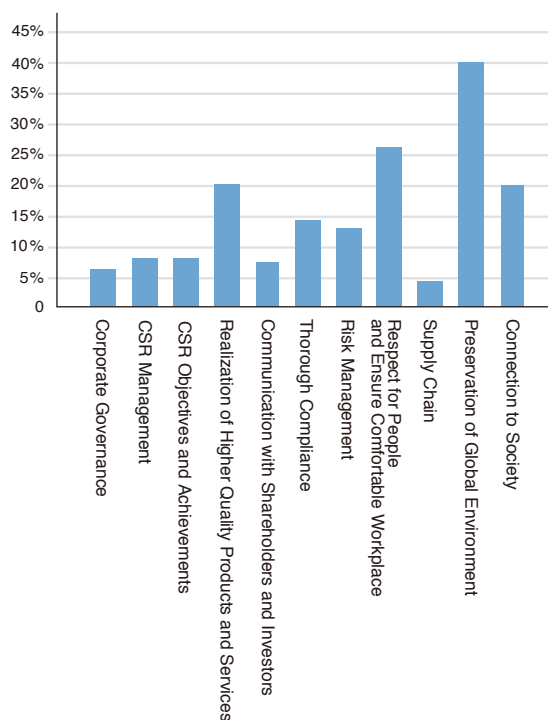
Can be highly applauded
Can be applauded
Average
Cannot be highly applauded
Cannot be applauded

Q.3 Items of interest

< Readers of printed version >



< Readers of web version >



Having established respect for humanity in its Guidelines for Corporate Behavior, the NGK Group uses its intranet, which is available to all domestic Group company employees, to explain and disseminate the United Nations "Universal Declaration of Human Rights"^{*1} and "Guiding Principles on Business and Human Rights."^{*2} The NGK Group took advantage of its signing of the UN Global Impact in 2015 as an opportunity to proactively spread awareness about the protection of human rights, and continued to conduct a seminar on human rights in fiscal 2016 by involving its Group companies.

NGK participates in the educational workshop on human rights by the Global Compact Network Japan, studying human rights initiatives. We are also producing materials for internal seminars and training sessions on human rights.

Reference Page

> Promoting Compliance Education

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^{*1} Adopted on December 10, 1948 at the Third United Nations General Assembly Session, this declaration expresses the rights to which all human beings in all nations are inherently entitled (General Assembly Resolution 217 (III)). The formal name is the Universal Declaration of Human Rights.

^{*2} UN Guiding Principles on Business and Human Rights: Based on the "Report on Human Rights and Transnational Corporations and Other Business Issues" by John Ruggie, UN Secretary-General's Special Representative for Business and Human Rights (at that time).



The UN Global Compact is a global framework for realizing sustainable growth through companies and organizations acting as good members of society. Participating corporations support ten principles in the areas of human rights, labor, the environment and anti-corruption required in the practice of corporate activities.

[The Ten Principles of the UN Global Compact]

Human Rights Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
Principle 2: make sure that they are not complicit in human rights abuses.

Labor Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
Principle 4: the elimination of all forms of forced and compulsory labor;
Principle 5: the effective abolition of child labor; and
Principle 6: the elimination of discrimination in respect of employment and occupation.

Environment Principle 7: Businesses should support a precautionary approach to environmental challenges;
Principle 8: undertake initiatives to promote greater environmental responsibility; and
Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Commencing Human Rights Due Diligence

The NGK Group has commenced human rights due diligence across the Group as of fiscal 2016. Human rights due diligence is a step that should be taken by companies in order to recognize, prevent and address negative impacts on human rights and it involves the formulation of policies related to human rights, assessment of impacts of corporate activities on human rights, follow-up and disclosure of performance results, etc.

In reference to the EICC (Electronic Industry Citizenship Coalition) Code of Conduct and the United Nations' Guiding Principles on Business and Human Rights, the NGK Group set specific survey items with support from external consultants. We embarked on the activities involving Group companies in Japan in November 2016. In fiscal 2017, we will gradually expand the scope of activities to our headquarters and overseas Group companies.

TOPIC

Holding Lectures on Human Rights

From March to April 2017, we held lectures on human rights at NGK headquarters, the Komaki Site and the Chita Site. Under the theme of “Human Rights Risks for Businesses in Emerging Countries: Responsible Labor Management,” the lecture by Ms. Mizue Unno of So-Tech Consulting Inc., who supports corporate activities in the areas of CSR and sustainability, provided a wide range of insights into business and human rights. The participants learned about specific issues and countermeasures including how to protect the human rights of workers in the supply chain of the NGK Group.



Ms. Mizue Unno of So-Tech Consulting Inc.

Providing Products that Contribute to Better Social Environment

Guided by the Corporate Philosophy, which puts customers first, the NGK Group considers the provision of products and services that contribute to a better social environment to be one of its most important missions in an effort to create quality from the customer's perspective.

Basic Approach

The NGK Group engages in the creation of quality from the customer's perspective by defining Quality Objectives each year in accordance with the Quality Policy based on the NGK Group Guidelines for Corporate Behavior.

Initiatives for fiscal 2017

NGK has focused on clarifying changes and creating systems not to miss the impact of the changes on quality because quality problems are likely to occur with the changes. In fiscal 2017, we will strengthen activities to recognize the importance and expand our knowledge of risk elimination to all NGK members.

Quality Policy

NGK is dedicated to quality and committed to providing valuable products and services that are trusted by our customers and respected by society.

Quality Objective 2017

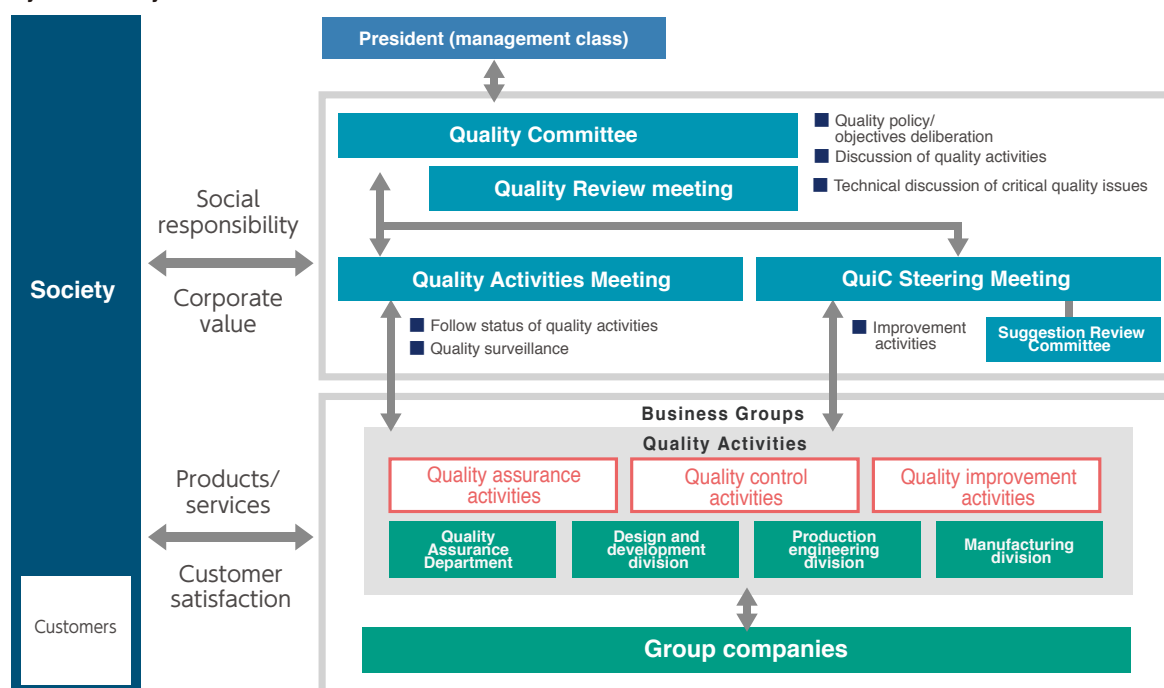
Recognize the importance and expand our knowledge of risk elimination to meet customer's Quality Expectations.

Quality Activity System

The NGK quality activity system consists of a company-wide system, led by the Quality Committee chairman, and business division internal activity system, led by the heads of each business division. In terms of company-wide activities, the Quality Committee was established to function as a deliberative body assisting the Quality Committee chairman, while business division internal activities systems were put in place for each business line, creating appropriate quality systems for each. Quality assurance, quality control, quality improvements and quality education activities are promoted by the acquisition of ISO9001 or TS16949 certification.

In the event of a major customer complaint, the CSR Committee Chairman and the Quality Committee Chairman will discuss and cooperate to take responses. Technical issues are discussed at Quality Review meetings, as necessary, to plan countermeasures, and the Quality Committee Chair supervises execution of the measures at the responsible division. In case of a customer complaint requiring disclosure, the CSR Committee Chairman will direct necessary arrangements to take an appropriate response without delay.

Quality Activities System



Quality Management System Acquisition Status (March 2017)

The NGK Group quality management system has acquired 34 certifications (ISO9001 or TS16949) covering 100% of production bases in Japan and overseas.

NGK Group Quality Activity Rules

The NGK Group promotes restructuring of its quality activities to respond more precisely to increasing and diversifying quality demands from customers in different target markets. In particular, quality activity rules have been formulated to eliminate quality risks in the market; we are promoting the establishment and improved efficacy of the rules.

From the Establishment of Rules to More Effective Operation

In fiscal 2016, each business division vigorously promoted quality activity improvement plans aimed at activities better suited to their operations. In the Power Business Group, procurement, design and manufacturing worked together to minimize customer complaints, and reduced the annual total number of complaints to one-third of the previous year. In fiscal 2017, we will launch the Quality Risk Elimination Process (QRE-P) in addition to the ongoing quality activity rules. QRE-P provides work procedures aimed at simultaneously achieving quality improvement and risk elimination in design processes. QRE-P is also a tool, created based on the findings that NGK acquired from past quality activities and specifically demonstrated risk awareness that had relied on personal experiences and skills. QRE-P will be distributed to the NGK Groups in the next three years.

The NGK Group promotes restructuring of Four rules for quality activities

○ **Quality confirmation rule:**

Establishes milestones, from development to start of production, and confirm conformance with six quality levels when production processes change.

○ **DR function strengthening rule:**

Registers DR plans with quality risks of medium or high level as important DR subjects with participation of DR reviewers. The Quality Management Department head holds company-wide DR for cases with particularly high risk level.

○ **Quality monitoring rule:**

Monitor and share information company-wide with respect to quality status changes or problems concerning products or markets. Manufacturing defects and customer complaints are shared company-wide every month through reports to the Quality Management Department, and the appropriateness of countermeasures is discussed.

○ **Handling major customer complaints rule:**

In the event of a serious customer complaint, including a potential complaint, the situation is promptly reported to the Quality Committee Chair to formulate company-wide countermeasures.

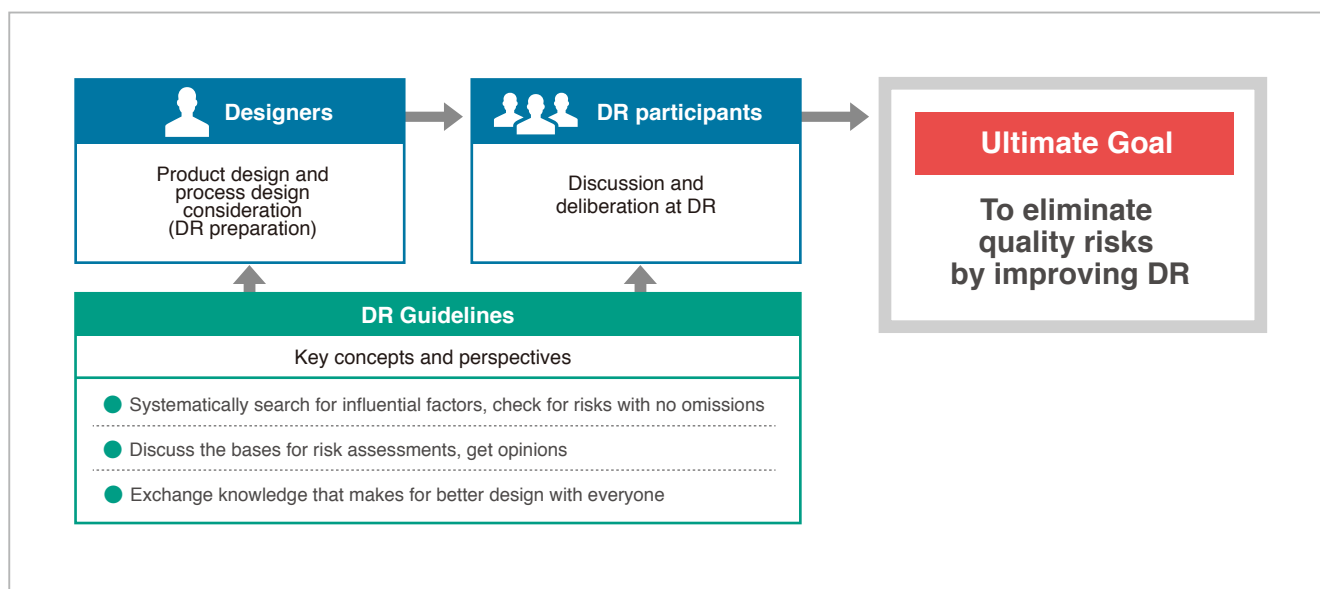
Activities to Enhance DR Functions

The increasing and diversifying quality demands from customers call for the integration of knowledge among various members, not only from the Design division but also from the Manufacturing and Production Engineering divisions, throughout the development process. For this reason, the Group considers the Design Review (DR) to be the most critical activity. DRs are conducted when development milestones are reached or when production processes change. Critical DRs are conducted by reviewers from throughout the company to support the elimination of risks.

The DR Guidelines were created to promote DR discussions and to eliminate quality risks thoroughly. We are constantly enhancing the effectiveness of DRs through efforts to spread this guidelines, including education and reviews of each DR. In addition, we have prepared and are utilizing the DR evaluation indicators to encourage improvements by visualize the progress of each division's level.

Furthermore, NGK organize a company-wide DR (Quality review meeting) for the quality trouble which is difficult to solve by one division, and discuss broad aspects of issues related to the reliability and safety of products by relevant engineers and experts across the company.

In fiscal 2016, the third year since the introduction of DR evaluation indicators, a special meeting was held for heads of NGK's eight DR-hosting business divisions to exchange opinions on DR activities. Participants discussed the divisional situation regarding utilization of the indicators and related issues, and agreed on the view that measures should be taken to raise awareness of the role of DR in identifying risks. Going forward, we will place greater focus on developing solutions to identified risks, with the intention of strengthening DR functions.



Quality Activities at Overseas Production Bases

From their inception, overseas production bases have created quality systems appropriate to their situations and acquired ISO9001 or TS16949 certification. Monthly reports from each base regarding customer complaints and the status of manufacturing quality are discussed at quality activity meetings, enabling the entire NGK Group to evaluate the quality status in a timely manner. Moreover, quality activity rules and annual quality objectives are developed in an attempt to develop and enhance quality activities.

The NGK Group's Quality Activities Meeting Held at Overseas Plants

In fiscal 2016, the meeting was held at five plants overseas. Discussions were held on the important subject of each plant to improve quality. Information was also provided on the situation of the NGK Group's quality activities.

The meeting was held at:

- NGK Stanger Pty Ltd
- Siam NGK Technocera Co., Ltd.
- NGK Ceramics Polska Sp. z o.o.
- NGK Ceramics Europe S.A.
- NGK Electronics Devices (M) Sdn. Bhd.



Quality activity meeting held at Siam NGK Technocera

TOPIC

Quality Improvement Activities at NGK Ceramics Suzhou Co., Ltd. (China)

NGK Ceramics Suzhou honors excellent employees every month for each process. The excellent people are selected by the total number of points that added the contribution to quality and other improvement and the reduction points such as quality defects. This activity is helping to improve quality and motivation of employee.



QuiC Activities to Improve Quality with Full Employee Participation

Since 2003, the NGK Group develops QuiC (Quality up innovation Challenge) quality improvement activities in which all employees participate. These activities consist of quality improvement activities by small groups and suggestions that strive to enhance the quality of products and work; the best practices are shared by the entire NGK Group. Every July, NGK holds a company-wide contest at its headquarters to highlight examples of outstanding improvement activities with the intent of horizontal expansion throughout the company.

In fiscal 2016, 12 best manufacturing practices, including five cases from overseas plants, and 4 non-manufacturing practices including one overseas sales office, were introduced. The presentation attracted some 400 audiences including President and directors.

Fiscal 2016 Suggestion Activity Participation Rate	
Manufacturing divisions	100%
Non-manufacturing divisions	93%
Number of Suggestions	Approx. 39,000



In the manufacturing practices, NGK Ceramics Polska won the Grand Prize for two years in a row for the innovative project that achieved outstanding results.



In the non-manufacturing practices, the President's Special Award was newly introduced, eliciting an eager response from participants.

Offering Award Recipients an Opportunity to Visit Overseas Sites

From the end of October to the beginning of November 2016, four representatives (from Japan) commended for improvement suggestions in fiscal 2015 and two representatives from the 2016 Grand Prize winning team (from Poland) visited NGK-Locke Polymer Insulators and NGK Ceramics USA (both in the U.S.). At the two companies, the visitors and the local employees took training to be aware of risks for improvement and exchanged opinions.

This program is organized to provide participants with a firsthand opportunity to observe plants in other countries and talk with local and expatriate employees, thereby helping them better understand the importance of the mother factory as well as encouraging self-development. It is also expected to inspire workers at host companies to increase their quality awareness and motivation for engaging in improvement activities, thus accelerating the overall efforts of the Group.

In December 2016, another six individuals (from Japan) commended in fiscal 2015 and seven representatives (including one from China) from the 2016 prize winners visited Okinawa to attend a nationwide QC Circle Conference and participate in discussion sessions.



Visitors giving guidance at NGK-Locke Polymer Insulators

Expanding Improvement Activities to Overseas Production Bases

The NGK Group is working to expand improvement activities to overseas production bases. In fiscal 2016, our representative attended the QC contest of NGK Ceramics Suzhou in China in September. Also, they introduced NGK's QuiC activities as well as conducted an activity level survey for improvement activities in the Chinese production Base.

Strengthening Quality Education

Traditionally, quality education at the NGK Group has focused on manufacturing site improvement methods such as the QC approach and QC tools.

In recent years, we face increasingly sophisticated and diversifying customer requirements for quality in many different markets. To meet such quality needs required for each product line and business division, we offer more practical programs where issues that are most relevant to participants are addressed.

Main practical programs Strengthened in Fiscal 2016

Program name	Number of days and participants	Objective
Quality Basic II	63 days; 40 (all technical personal in the third year of joining the company)	Lean and practice problem-solving using quality engineering methods
Preventive action training	Lectures and workshops to examine issues by product line: 6 days; 40 in total	Understand basic approaches to preventive action and recurrence of quality incidents and risk examination procedures
	Sessions to examine risks involving development projects: 8 days; 20 in total	Experience the risk identification and countermeasure planning using a development project.
Method of creation and Learning from Failure	4 days; 70 in total	Improve analysis and development skills to learn from failure and apply for the future

For the Method of creation and Learning from Failure program, an expert was invited to correct and give advice on the work of participants to improve their analytical skills to adequately functional levels. In the class, the expert presented correction results and advice on each performance to be shared among participants, focusing on descriptive and analytical accuracy and occasionally in a very critical manner. The program was well received by many participants, who particularly appreciated practical training styles that helped them better understand methods for analyzing failures. We plan to enhance this training program and make analysis models internally accessible, with a view to forging a positive mindset toward learning from failure to improve our ability to prevent risks.

48 employees passed the Self-Maintenance Expert Test

Fifty-one employees in manufacturing divisions and engineering centers who are engaged in NGK's voluntary maintenance activities passed the Self-Maintenance Expert Test (Japan Institute of Plant Maintenance) conducted in October 2016. This qualification is given to those who possess a broad range of knowledge and skills necessary concerning quality management, safety, and machinery maintenance and are certified to have ability of planning and implementing voluntary maintenance activities and giving instruction. NGK will continue to encourage employees to acquire such qualifications in order to improve quality management capabilities at manufacturing sites.

Strengthening Quality Education at Overseas Production Bases

We work to strengthen quality education at overseas production bases. In fiscal 2016, quality improvement training was offered at NGK-Locke Polymer Insulators and NGK Ceramics USA in the U.S.

Disclosure of Corporate Information

The NGK Group promotes shareholder-oriented management emphasizing capital efficiency across the entire Group and strives to improve corporate value with the goal of realizing sustainable growth.

Basic Approach

NGK is engaged in the maximization of corporate value through two-way communication with shareholders and investors, including efforts to provide accurate and timely explanations regarding management conditions and policies.

NGK makes best effort to promote constructive dialogue through sincere responses to requests for interviews with shareholders and investors, questions raised at general shareholder meetings and inquiries sent through NGK's website, which are facilitated under the guidance of the directors in charge of the Finance and General Affairs departments, which work in close cooperation with the Corporate Strategy Office, the Public Relations Office and Legal Department when necessary.

NGK also places importance on direct dialogue with institutional investors, conducting biannual earnings presentations and overseas IR road shows led by senior managements.

As for dialogue with individual investors, we took part in an IR event organized by a securities company.

The details of these dialogues are regularly reported to the Board of Directors. This management feedback is used to improve management efficiency and transparency.

Shareholder and investor dialogues are conducted with the objective of increasing corporate value and capital efficiency, as well as promoting sustainable growth. The disclosure of material information not already publicly available within the context of these dialogues constitutes damage to the equality between shareholders. In principle, NGK does not disclose unannounced material information.

Disclosure of Corporate Information

We will release, in an accurate and timely manner, any information sought by the public; including information on our management, finance, products and services to improve transparency in management and to gain society's trust in NGK Group companies.

Behavioral Guidelines

- We will promptly disclose any information required by society in accordance with applicable laws, regulations and our internal rules.
- We will establish and adequately operate a mechanism for internal control relating to financial reports to disclose accurate financial information.
- We will make good faith effort to answer any inquiry from customers pertaining to our products and services, providing responses in an appropriate manner.

Reference URL

> NGK Group Guidelines for Corporate Behavior

<http://www.ngk.co.jp/info/governance/index.html>

Open Shareholder Meetings

NGK endeavors to hold open shareholder meetings that its shareholders feel welcome to attend. Every year, we introduce NGK corporate activities at the shareholder meeting with permanent booths near the venue displaying product exhibits explained by NGK staff.

We also make efforts toward expanding shareholder meeting-related information, including the following:

(1) Mailing a convocation notice well in advance	Three weeks before the day prior to the meeting date.
(2) Disclosing information on the website well in advance	Two days before the mailing of the convocation notice (since fiscal 2017).
(3) Taking part in the Tokyo Stock Exchange's (TSE's) Electronic Voting Platform*1	Making an online voting system available.
(4) Posting shareholder meeting documents on the website	Disclosing such documents as convocation notices, results of exercising voting rights, notices of resolution and extraordinary reports on the website.

General Meeting of Shareholders-Related Information
<http://www.ngk.co.jp/IR/meeting/index.html>

*1 TSE Electronic Voting Platform: An electronic voting system operated by TSE. It allows people to vote not only through the conventional printed materials but also via the Internet, making the process more convenient for shareholders in Japan and overseas.

Two-Way Communication

In addition to regular presentations held in Japan and overseas, the NGK Group conducts one-on-one meetings and participates in interviews among other ongoing initiatives to expand dialogues with institutional investors. NGK senior management also visits and conducts one-on-one discussions with institutional investors in Japan and overseas.

Activities in Fiscal 2016

Activities in Fiscal	Details
Japan	Senior management conducts presentations for analysts and institutional investors twice each year. They also conduct one-on-one meetings and participate in interviews.
Overseas	Senior management conducts overseas IR targeting analysts and institutional investors twice each year.
Click here to access online IR Library	Includes reporting information and the timely disclosure of non-reporting information, securities reports, annual reports, General Meeting of Shareholder materials and other information.

 Reference URL

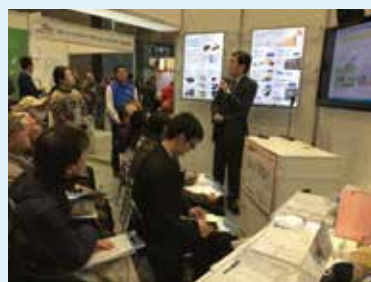
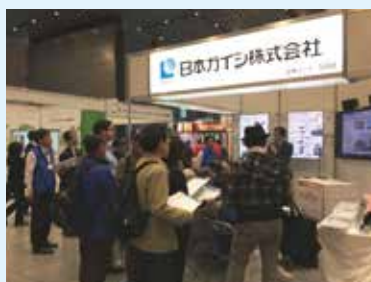
> Investor Relations

<http://www.ngk.co.jp/IR/index.html>

Taking Part in a Forum for Individual Investors for the First Time

In December 2016, we took part in the Nomura IR Asset Management Fair 2016 (hosted by Nomura Investor Relations Co., Ltd. and supported by Nomura Securities Co., Ltd.) held at the Tokyo International Forum. This was the first time we had participated in the event.

The two-day event featured a total of 76 companies as exhibitors, including listed companies and investment trust companies, and attracted 14,400 individual investors. Our booth welcomed about 500 visitors, to whom we explained our business activities so as to provide a deeper understanding of our company through direct dialogue. It was also a great opportunity to draw attention to our company.



Measures for Returning Profits to Shareholders

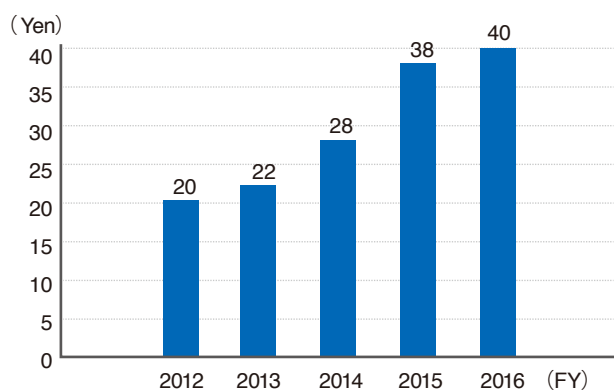
At NGK, returning profits to shareholders is considered one of the highest management priorities.

As basic policies, we aim for management that focuses on shareholders and ROE. Based on these basic policies, we share profits while comprehensively taking account of our business performance, financial structure and future business development. Our mid-term benchmark for the consolidated payout ratio is around 30%.

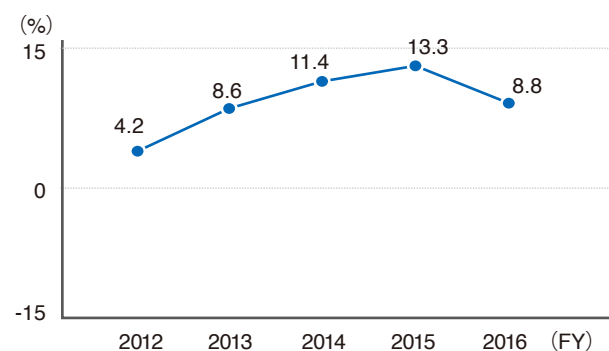
In fiscal 2016, we increased the annual dividend by 2 yen to 40 yen per share. The consolidated payout ratio stood at 35.5%. We also acquired 5 million shares of treasury stock.

We will keep striving to secure profitability above the capital cost and to maintain financial soundness. We opt to proactively return profits to our shareholders from the mid- to long-term perspective.

Dividends per Share



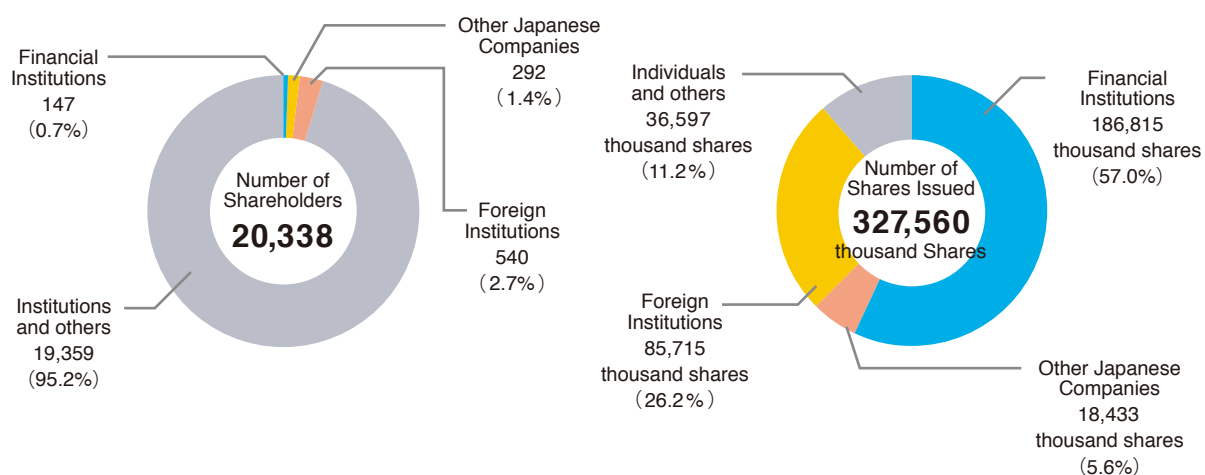
Return on Equity (ROE)



Shareholders Information

Shares Information (as of March 31, 2017)

Total number of Shares authorized	735,030 thousand
Total number of shares issued	327,560 thousand
Number of shareholders	20,338



Major Shareholders (as of March 31, 2017)

Name of shareholder	Number of shares held (1,000 shares)	Shareholding ratio (%)
The Master Trust Bank of Japan, Ltd. (Trust Account)	38,101	11.84
Japan Trustee Services Bank, Ltd. (Trust Account)	27,780	8.63
The Dai-ichi Life Insurance Company, Limited	21,457	6.67
Meiji Yasuda Life Insurance Company	18,695	5.81
State Street Bank and Trust Company	10,292	3.19
Japan Trustee Services Bank, Ltd. (Trust Account 5)	4,857	1.51
The Nomura Trust and Banking Co., Ltd. (Trust Account)	4,650	1.44
Aioi Nissay Dowa Insurance Co., Ltd.	4,387	1.36
Nippon Life Insurance Company	4,313	1.34
National Mutual Insurance Federation of Agricultural Cooperatives	4,309	1.33

Note: The above list of major shareholders does not include NGK, which holds a total of 5,915,570 treasury shares. The shareholding ratios above are calculated based on the number of shares derived by deducting the number of treasury stocks from the number of shares issued, and rounded down to two decimal places.

Thorough Enforcement of Compliance


Viewing compliance as the foundation of CSR, the NGK Group positions enhancing trustworthiness as the most important initiative and strives to create specific systems to inculcate this view among employees, prevent corruption and comply with laws and regulations.

NGK Group Guidelines for Corporate Behavior


To realize and protect the NGK Group corporate philosophy of creating new value by providing products and technologies that contribute to a better social environment, we established the NGK Group Guidelines for Corporate Behavior and thoroughly promote awareness.
In the spirit of the NGK Group Guidelines for Corporate Behavior, overseas Group companies establish policies according to the characteristics of a company, nation, and region.

Guidelines for Corporate Behavior and Thorough Dissemination of Behavioral Guidelines

We, the NGK Group, thoroughly ensure that every employee knows the NGK Group Guidelines for Corporate Behavior and Behavioral Guidelines, which individual is expected to follow. We have created awareness handbooks and distributed them to all employees, including contract manufacturing employees and temporary employees, at NGK and all Group companies in Japan. In addition, we hand out a paper on awareness in April every year. Efforts are also made to ensure a thorough understanding among NGK employees through training for new graduates and experienced recruits upon joining the company. We further explain the Guidelines repeatedly at promotion-related training. Top managements also explain themselves the significance and purpose of the Guidelines for Corporate Behavior and Behavioral Guidelines at CSR Talk Live events, which the NGK Group holds.
In light of the Guidelines for Corporate Behavior, overseas Group companies establish policies according to the characteristics of a company, nation and region.

 Reference URL

> Corporate Philosophy and Guidelines for Corporate Behavior
<http://www.ngk.co.jp/info/governance/index.html>

 Reference Page

> CSR Talk Live
P126

Compliance Promotion Structure

We established the Compliance Subcommittee under the CSR Committee to ensure strict observance of laws, regulations and corporate ethics within the Group. Furthermore, we established the Security Subcommittee to respond to incidents and accidents with the potential to significantly impact the Company.



Establishment of the Global Compliance System

In June 2015, we established the Global Compliance Office (currently, Group Compliance Department) with the aim of building a group-wide foundation for an effective compliance scheme at a global level.

Mission of the Group Compliance Department

- Works to establish and develop compliance as a corporate culture of the entire NGK Group
- Supports Group companies inside and outside Japan in strengthening and operating their compliance systems, and provides compliance training actively
- As for overseas Group companies in particular, ensures effective compliance for our globalized operation by obtaining the most up-to-date situation regarding applicable laws and social demands in each region.

Compliance Training for Employees

Compliance training and awareness among corporate officers and employees is driven primarily by the Group Compliance Department and the Legal Department. In addition to career training and training for employees to be posted overseas, we provide Laws and Compliance Seminars to explain laws and regulations and introduce case studies. In fiscal 2016, we strengthened compliance training in Asia in particular. All Asian Group companies held seminars for competition laws and anti-bribery regulations given by lawyers. We have also increased the number of educational opportunities for expanding experienced recruits and employees scheduled for postings abroad.



Compliance training conducted at NGK Technologies India

Compliance Education Conducted in Fiscal 2016 (Overall)

Title	Target	Content	Number of Conducted
Career Education	New hires	Compliance basics, competition laws, anti-bribery regulations	3
	Promoted or career changed employees	Compliance basics, competition laws, anti-bribery regulations	2
	Experienced recruits	Compliance basics, competition laws, anti-bribery regulations	6
	Newly appointed supervisors	Compliance, competition laws, anti-bribery regulations, security export control	1
	Newly appointed managers	Compliance, competition laws, anti-bribery regulations, security export control	1
	Managers promoted second grade	Compliance	1
Training for employees scheduled for postings abroad. (global training)	Employees scheduled for postings abroad	Competition laws, anti-bribery regulations, security export control	5
Laws and Compliance Seminars	Managers and other targets depending on content	<p>How to Protect Ourselves from Everyday Crimes Lecturer: Internal lecturer / 320 participants in total</p> <p>Strict Adherence to the Subcontract Act Lecturer: Internal lecturer / 522 participants in total</p> <p>Ensuring Adequate Usage of Software Lecturer: Internal lecturer / 554 participants in total</p> <p>Latest Trend of Insider Trading Regulation Lecturer: Internal lecturer / 395 participants in total</p> <p>Anti-harassment Workplace and Risk Management Lecturer: Daigoro Shiraki, Corporate Risk Research Institute / 430 participants in total</p> <p>Business and Human Rights Lecturer: Mizue Unno, Representative Director, So-Tech Consulting Inc. / 460 participants in total</p>	6 (Total of 2681 participants at 3 domestic sites attended)
Other training	Purchasing persons in charge	Subcontract Act explanatory meeting	4

Competition Laws Education Conducted in Fiscal 2016

Title	Target	Content	Number of Conducted
Competition laws training for newly appointed directors	Newly appointed executive officers	Companies Act, Competition laws	1
Competition laws compliance lectures	All corporate officers, all managers and salespeople, etc. of NGK and its Group companies in Japan	Antitrust seminar with a focus on cartels	13 (4 live seminars and 9 DVD seminars in respective areas)
Training on competition laws for Japanese Group companies	Directors and employees of Japanese Group companies	Training on competition laws and anti-bribery at NGK Electronics Devices, Inc. for directors and employees Training using original DVDs, distributed by NGK, for targets in all Group companies in Japan	3 As needed
On-demand training on competition laws by internal lecturer	Targets depending on content	On-demand training upon divisions' request Explanation of outline of competition laws, internal regulations and actions to comply with competition laws	3
Competition laws training for overseas Group companies	Salespeople and managers of overseas Group companies; and NGK temporarily assigned staff, etc.	Lectures by lawyers: 9 companies in the U.S.; 3 companies in the EU; and 9 companies in Asia (Presentation of lectures via original DVDs: 1 company) Training via TV conference, etc.: 1 company; Training using original paper-based materials: 5 companies (28 companies in total)	28 companies (including 7 companies which used DVDs, TV conference and paper materials for training)

Anti-bribery Training Conducted in Fiscal 2016

Title	Target	Content	Conducted
Training on anti-bribery regulations for overseas Group companies	Directors, managers and salespeople of overseas Group companies; NGK temporarily assigned staff, etc.	Lectures by lawyers: 9 companies in the U.S.; 2 companies in the EU; and 9 companies in Asia Presentation of lectures via original DVDs: 1 company Training via TV conference: 1 company (22 companies in total)	23 companies (including 2 companies which used DVDs and TV conference for training)

23 companies (including 2 companies which used DVDs and TV conference for training)

Other Dissemination Programs



A list of themes covered in the Compliance Newsletter in fiscal 2016

June	Whistle-blowing system	November	Overtime work
July	Traffic safety during commutation	December	Human rights
August	Intellectual property	January	Subcontract Act
September	Workplace bullying	February	Anti-bribery regulations
October	Cartels	March	Quality

Starting in fiscal 2016, the Compliance Newsletter has been posted on the company's intranet once a month. The Newsletter features a four-frame cartoon that explores familiar themes followed by detailed explanations.

* Provided by "Compro Custom"

Corruption Prevention Structure

The NGK Group has been taking anti-bribery measures in order to ensure fair and transparent transactions. We enacted the internal anti-bribery rules for dealing with foreign public officials in fiscal 2015 by stipulating the observance of anti-bribery laws and regulations as well as ethical standards to be observed for business transaction, which became effective in fiscal 2016. Moreover, 19 Group companies in the U.S., Asia and Australia as well established the internal anti-bribery rules in fiscal 2016, and we are planning to push forward for establishing the rules in other regions further.

Conducting Anti-Bribery Training

In fiscal 2016, we continued to offer anti-bribery seminars featuring lectures by lawyers. In Asia, we expanded the scope to include India, Thailand and Indonesia in addition to China and South Korea, offering seminars at all Group companies in Asia. In the U.S., continuing on from fiscal 2015, we offered the seminars at all Group companies. In Europe, we conducted the seminars in Poland in addition to those conducted in Germany in the previous fiscal year.

The NGK Group strictly compliance with competition laws (Antimonopoly Act), the Subcontract Act and other laws and regulations pertaining to business transactions. The thorough observance of internal rules as well as laws and regulations, including the NGK Group Guidelines for Corporate Behavior and Behavioral Guidelines that mandate the observance of the Antimonopoly Act, and initiatives in Japan and overseas aimed at strengthening employee awareness of the Competition Laws Compliance Rules revised to meet global standards enable us to refrain from improper conducts or transactions and engage in the creation and maintenance of fair and equal business relationships with suppliers. To promote the use and thorough dissemination of the Competition Laws Compliance Rules and Competition Laws Compliance Handbook, we held meetings to explain the Rules and the Handbook. At overseas Group companies, training sessions were led by lawyers well versed in competition laws or conducted by using original DVDs.

In addition, continuing from the previous year, we retained PwC Advisory LLC (renamed from Pricewaterhouse Coopers Co., Ltd. in March 2016), an unbiased compliance specialist, to provide an independent assessment of the implementation status of the Competition Laws compliance rules and the Competition Laws compliance program as well as of the centralized supervision and reporting structures across the NGK Group including group companies in Japan and overseas.

Reference URL

> Plea Agreement with U.S. Department of Justice concerning ceramic substrates for catalytic converters
<http://www.ngk.co.jp/english/news/2015/0904.html>

Strengthening Our Compliance System Related to Competition Laws

Year conducted	Regulation Development	Creation of Internal Systems	Training
FY1997	<ul style="list-style-type: none"> Formulated guidebook and briefing document for the Anti-Monopoly Act 	<ul style="list-style-type: none"> Required each business group to submit a Compliance Status Report on the Anti-Monopoly Act 	<ul style="list-style-type: none"> Lectures on the Anti-Monopoly Act by outside instructors (attorneys) (subsequently held annually)
FY2011	<ul style="list-style-type: none"> Formulated Competition Laws Compliance Rules 		
FY2012	<ul style="list-style-type: none"> Created and distributed the Competition Laws Compliance Handbook Created and distributed an Appendix to the Competition Laws Compliance Handbook 	<ul style="list-style-type: none"> Established an independent committee 	<ul style="list-style-type: none"> In-house training led by legal department staff Lectures by local attorneys held at overseas subsidiaries
FY2013			<ul style="list-style-type: none"> Conducted briefing on the Competition Laws Compliance Handbook Invited U.S. attorneys to lecture on
FY2014	<ul style="list-style-type: none"> Revised Competition Laws Compliance Rules Launched operation of a database for advanced notifications and participation reports pertaining to meetings Launched operation of an e-mail monitoring system Revised Competition Laws Compliance Rules at North American sales subsidiaries 	<ul style="list-style-type: none"> Introduced company-wide centralized supervision and reporting structures led by the Board of Directors (independent of the President) Appointed company-wide Competition Laws supervisory managers Enhanced the helpline 	<ul style="list-style-type: none"> Conducted study meetings for newly appointed directors on Competition Laws and the Companies Act by Japanese and U.S. attorneys (subsequently held annually) Conducted study meetings on Competition Laws at overseas Group companies (corresponding to laws and regulations in each country)
FY2015	<ul style="list-style-type: none"> Competition Law Compliance Rules of all NGK Group companies in and outside Japan were revised to ensure that the NGK Group's compliance system meets global standards. The Compliance Laws Compliance Handbook was revised. Review of compliance status by third parties 	<ul style="list-style-type: none"> The Competition Laws Compliance Program was resolved by the Board of Directors Established the Global Compliance Office 	<ul style="list-style-type: none"> Conducted study meetings on Competition Laws for new employees Distributed a Competition Laws related DVD to domestic group companies Upgraded training on compliance with competition laws provided inside and outside Japan
FY2016	<ul style="list-style-type: none"> The U.S. version and Chinese version of the Competition Laws Compliance Handbook were created and distributed to Group companies in the U.S. and China, respectively. 	<ul style="list-style-type: none"> Progress status of the Competition Laws Compliance Program was quarterly reported to the Business Ethics Committee, which is composed mainly of external directors. The Program was promoted based on suggestions received from the Committee. Retained PwC to assess the status of competition law compliance 	<ul style="list-style-type: none"> Expanded seminars led by lawyers in Asia Seminars on the Companies Act and competition laws were held for newly appointed executive officers Promoted preparation of online based training aimed at realizing broader training programs (to be implemented in Japan in fiscal 2017)

TOPIC

Holding Companies Act and Competition Laws Seminars for Newly Appointed Executive Officers

Holding the Companies Act and Competition Laws Seminars for Newly Appointed Executive Officers On August 19, 2016, we held a seminar on the companies act and competition laws for NGK's newly appointed executive officers.

The seminar was led by lawyers, and the purpose was enhancement of governance and developing a global compliance system. The participants learned about the authorities of executive officers, key points of the companies act that management should know, current conditions of cartel regulations which have been tightened in recent years, and risk countermeasures.



Strict Adherence to Laws and Regulations Relating to Export Management

As part of its thorough compliance efforts, NGK is engaged in the strict adherence to laws and regulations relating to export management. Behavioral Guidelines within the NGK Group Guidelines for Corporate Behavior establish the observance of security export control-related regulations, while management and training is conducted based on internal rules and the Export/Import Handbook.

Using Databases to Conduct Comprehensive Inspections and Customs Management

In response to the Foreign Exchange and Foreign Trade Act and other export control-related laws and regulations, NGK screens exports scrutinizes whether export licenses are required, and records screening results in a security export control database. Furthermore, export management with respect to the export of certain products is conducted using Authorized Exporter's Program.

NGK commenced use of an export cargo management ledger in May 2015 in addition to the import cargo management ledger. Each department conducts voluntary inspections based on the export-import cargo management ledgers by verifying the consistency and status of retention of import-related documents. In fiscal 2016, 58 departments carried out voluntary inspections on imports. Voluntary inspections of authorized exports take place at the beginning of each year.

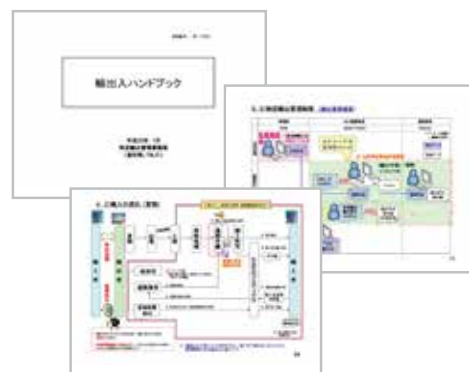
In addition, we use NACCS data (Automated Cargo And Port Consolidated System) to verify the completeness of export-import cargo management ledgers. We have achieved nearly 100% completeness for imports and 90 to 95% for exports. We will strive to enhance the completeness by continuing to provide education and awareness-raising activities in each department.

We also conduct surveys of domestic Group companies to verify the status of customs clearance management.

Familiarization with the Export/Import Handbook

NGK also made efforts toward thorough compliance with the Export/Import Handbook, which was published in fiscal 2012 and summarizes items for the observance of export/import customs clearance regulations. In addition to publishing this handbook on the company intranet where it can be viewed throughout the entire company, we provide training to spread awareness of the spirit of handbook through study meetings related to export/import management conducted internally in each business division.

Export/import management study meetings are held one or more times per year targeting relevant staff in divisions responsible for export and import activities. In fiscal 2016, these meetings were held 9 times, with about 199 employees in attendance.



The Export/Import Handbook

Privacy Policy and Structure

The NGK Group has established internal rules for privacy policy management in an effort to handle, manage and protect personal information provided by customers.

In fiscal 2015, NGK formulated and made public our Basic Policy on Specific Personal Information in response to the enforcement of the Act on the Use of Numbers to Identify a Specific Individual in Administrative Procedures.

Moreover, our policies are fully compliance with the revised act on the Protection of Personal Information, which came into effect on May 30, 2017.

Reference URL

- > **Protection of personal information**
<http://www.ngk.co.jp/english/utpolicy/index.html>
- > **Basic Policy on Specific Personal Information**
<http://www.ngk.co.jp/mynumber/>

Information Security Training

The NGK Group CSR Committee's Security Subcommittee takes responsibility for supervising overall information security, and supports the General Affairs and Information Systems divisions based on the Basic NGK Group Information Security Policy, in an attempt to properly manage and operate information assets.

Every year, personnel of NGK's Information Technology Department visit several Group companies to conduct on-site checks and provide guidance on their implementation of IT security measures. In fiscal 2016, seven overseas Group companies received such inspections.

Reference URL

> Basic NGK Group Information Security Policy

<http://www.ngk.co.jp/english/about/governance/policy.html>

Formulation of Basic NGK Group IT Security Standards

The rapid advance in information communication technologies and devices has made the quest for consistent IT security on a Group-wide level an urgent concern, thus in 2010 we formulated the NGK Group IT Security Standards with the goal of developing an IT security structure based on commonly shared Group standards and enhancing IT security.

Every year, each Group company drafts action plans for the enactment of countermeasures in an attempt to systematically strengthen security. Through these countermeasure action plans, NGK confirms initiatives at each Group company and provides guidance as necessary.

Information Security Training

Training sessions listed on the right are conducted throughout the year to ensure strict adherence to information security among all employees.

Training for newly hired employees and newly promoted supervisors and managers are offered to NGK employees while e-Learnings are offered to NGK employees and employees of some Group companies in Japan.

Training for newly hired employees	Number of participants: 157 (participation rate: 99%)
Training for newly promoted supervisors	Number of participants: 116 (participation rate: 100%)
Training for newly promoted key personnel	Number of participants: 48 (participation rate: 100%)
e-Learnings	Number of participants: 4,292 (participation rate: 100%)

Excluding employees who were away on maternity leave, childcare leave, long-term business trip, etc.

Status of Law and Regulations Violations

There were no violations of laws or regulations in fiscal 2016.

Risk Management

In line with business expansion, the NGK group is also engaged in minimizing risks related to globalization and diversification while augmenting our risk management structure. The CSR Committee periodically confirms and follows up on the status of Company-wide risk countermeasures to ensure every effort is being made to manage business risks.

Basic Approach

The NGK Group Guidelines for Corporate Behavior were announced within and outside the company as our basic stance toward the realization of the NGK Group corporate philosophy of creating new value by providing products and technologies that contribute to a better social environment. This includes initiatives that strictly observe the protection of third party rights and corporate assets and trust through the practice of risk management.

Reference URL

> Corporate Philosophy and Guidelines for Corporate Behavior
<http://www.ngk.co.jp/info/governance/index.html>

Risk Analysis and Response

The NGK Group assumes six categories of company-wide risks pertaining to compliance, information, employment and labor, making an effort to avoid and prevent these risks through deliberation of budgets and plans and overall examination and analysis in the course of execution and settlement processes at Strategy Committee and Executive Committee meetings.

Business continuity planning (BCP) was formulated to ensure the continuation of critical business functions in the event of large-scale natural disasters including wind and flood damage and earthquake, massive transportation accidents or other emergency situations, which will be addressed by the Central Disaster Prevention and Control Headquarters and BCP Countermeasures Headquarters.

Company-wide Shared Risks

Category	Risk
1.Compliance	Legal / Regulatory infractions / improper accounting
	Misappropriation by individuals
	Bribery
	Violation of intellectual property rights
	Human rights violations/harassment
	Trouble with local communities
	Support for antisocial forces
2.Information	Information systems breakdown
	Leak of proprietary or personal information
	Inappropriate use of SNS

Category	Risk
3.Employment/Labor	Labor troubles
	Labor accidents
	Traffic accidents
	Long-working hours/health management
	Support for unskilled labor
	Labor issues at suppliers and subcontractors
4.Incidents /Accidents /Disasters	Incidents and accidents
	Natural disasters
5.Environment	Environmental management trouble
	EMS insufficiency
6.Product safety	Defective products

Business Risks

Production Bases

The NGK Group's main production bases are located in Aichi Prefecture and Ishikawa Prefecture in Japan, and overseas in the Americas, Europe, Asia, and other regions. The Group operates a global production system for its core products, such as ceramic honeycomb substrates for automotive catalytic converters, from the perspective of manufacturing close to demand centers and achieving optimal production. This ensures that risk is dispersed among manufacturing sites. However, irrespective of whether a production base is in Japan or overseas, if facilities at a major production base are seriously damaged by a natural disaster such as an earthquake or fire, production may stop for a considerable period of time, thereby adversely affecting the NGK Group's business performance and financial condition. Overseas operations, in particular, carry such potential risks as i) compliance with the host country's laws, regulations or taxes, ii) adverse changes in the economic environment such as fluctuations in exchange rates, iii) difficulty in securing, educating and training personnel, iv) inadequate infrastructure, and v) societal problems such as terrorism and war.

The unforeseen occurrence of any of these events could adversely impact the NGK Group's business performance and financial condition.

Exchange Rates, Interest Rates, and Material Prices

The NGK Group produces and sells products worldwide. Consequently, the Group hedges the risk of short-term changes in the exchange rates of major currencies, particularly the U.S. dollar, euro and yen, with forward foreign exchange contracts and other financial instruments. However, appreciation of the yen could cause a decline in net sales and earnings, which could adversely impact the NGK Group's business performance.

The NGK Group plans to continue making the necessary capital investments to expand its businesses and improve productivity. The Group's funding needs include these capital expenditures and the redemption of corporate bonds. In the event of interest rate rises, future fund procurement costs may increase, which could adversely impact the NGK Group's business performance and financial condition.

Rises in raw materials prices have led to higher manufacturing costs at NGK Group businesses. To minimize this factor, the Group raises sales prices, cuts costs, improves productivity, and reduces business expenses. The NGK Group endeavors to absorb rises in purchasing prices, but excessive rises in the prices for raw materials may adversely impact the Group's business performance and financial condition.

New Products

The NGK Group works to create new products to secure its growth prospects. The Group makes focused investments in new products that should become pillars of growth in the future. At the same time, NGK is making capital expenditures in stages for products for which demand is expected to expand. However, in the event that these capital expenditures are not made on schedule, this may adversely impact the NGK Group's medium-term growth prospects.

Changes in the Business Environment

Demand for the products that the NGK Group manufactures and sells is strongly influenced by changes in the economic climate in and outside of Japan. Such changes may adversely impact the Group's business performance and financial condition.

Product Quality

Guided by its Corporate Quality Policy, the NGK Group conducts quality-related activities in a committed drive to ensure consistent high quality. These efforts notwithstanding, the Group cannot completely eliminate the possibility of quality-related issues from every product that it sells or manufactures. The occurrence of such problems could therefore have a substantial and adverse impact on the Group's business performance.

International Investigation related to Competitive Conditions

The NGK Group is currently the subject of an international investigation related to competitive conditions and is giving its full cooperation. The investigation is being conducted by authorities concerned with competition, and depending on the outcome, there may be an adverse impact on the Group's business performance and financial position.

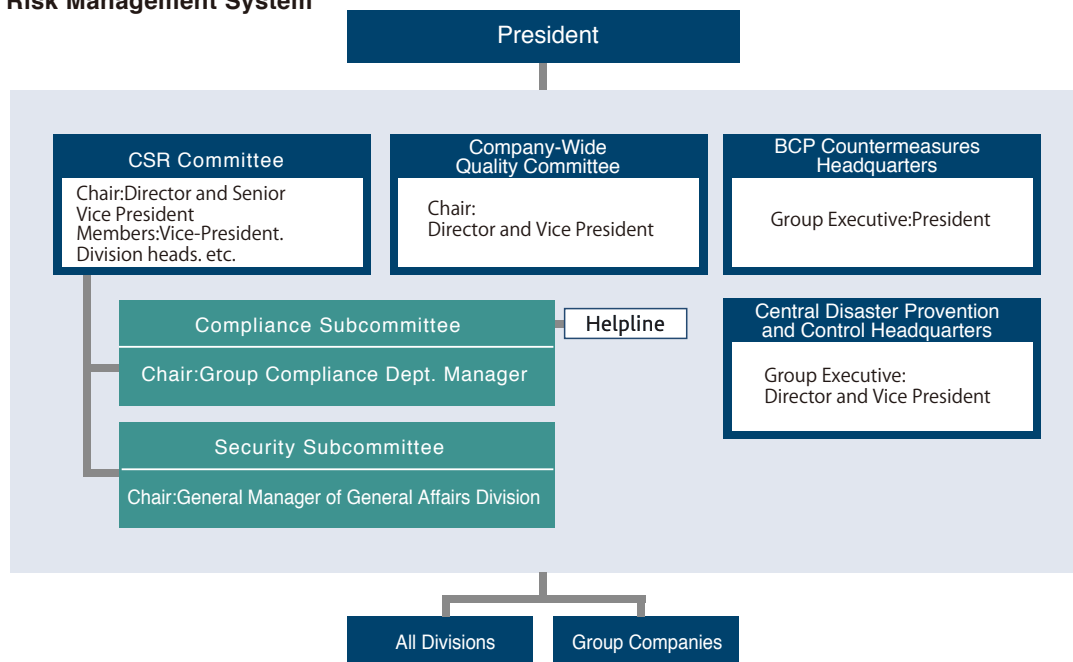
Reference URL

> FY2017 results
presentation materials
<http://www.ngk.co.jp/IR/library/presentation/pdf/201704.pdf#page=3>

Risk Management System

NGK operates a risk management promotion structure led mainly by the CSR Committee. A person of responsibility and response structure is established for each risk category in an effort to improve risk response capabilities and risk prevention activities.

Risk Management System

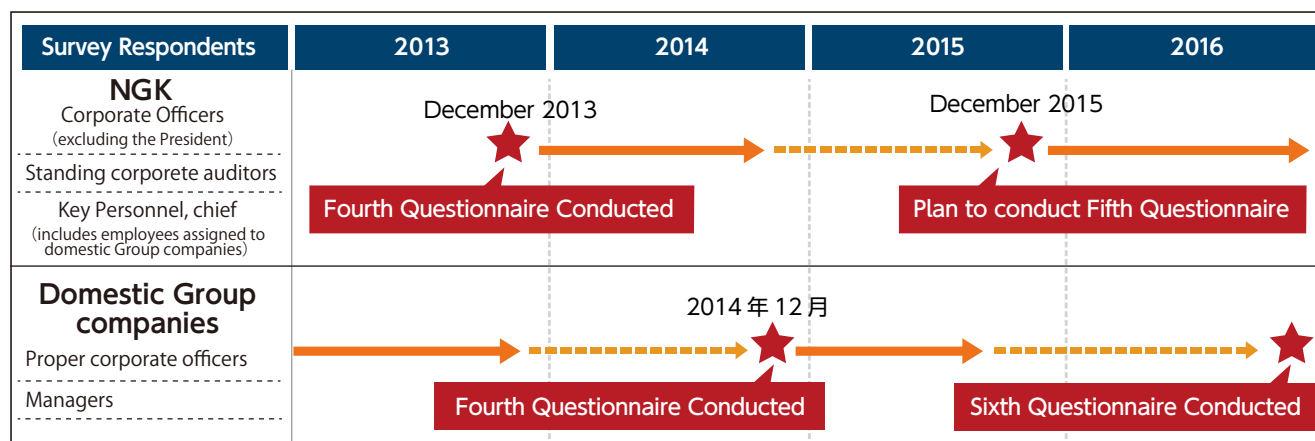


Risk response

Normal operations	Follow up by CSR Committee and other committees	
Emergency situation	Legal/Ethical or incident/accident response	CSR Committee is in charge. Initial response by five people chosen ahead of time to handle emergencies + relevant corporate officers.
	Quality-related accidents	Company-Wide Quality Committee is in charge
	Disaster-related incidents	Central Disaster Prevention and Control Headquarters and BCP Countermeasures Headquarters are in charge

Identifying and Preventing Risks Based on the CSA Questionnaire

As part of an effort to enhance risk management practice, NGK and its domestic Group companies conduct the Control Self Assessment (CSA) questionnaire with the aim of grasping and preventing various potential risks arising from daily business operations, and of checking the understanding of respondents regarding potential risks and their impact. Based on the results of the questionnaire, risk management measures are planned by the relevant divisions, departments. This tool is also beneficial for employees as it provides them with a follow-up opportunity to understand the appropriate risk response procedures. We will continue this project going forward.



Number of applicable employees and response rate for the questionnaire conducted in December 2015: Number of applicable employees: 1703/
Number of respondents: 1640 (Response rate: 96.3%)

Risk Management Measures Based on the CSA Questionnaire

Company-wide risks

Note: Human Resources, Legal, General Affairs, Purchasing, Information Systems, Environmental Management, Company-wide Quality Management and Construction and Maintenance departments

Category	Measures conducted in 2ndH FY 2016
Group/General	<ul style="list-style-type: none"> Conducted monitoring surveys on understanding of responses to incidents specified in the internal Basic Rules of Crisis Management
Compliance	<ul style="list-style-type: none"> Enhanced anti-bribery compliance training Continued to enhance competition law compliance systems Continued the ongoing compliance-related training and seminars Continued the ongoing practical support to individual divisions and Group companies Confirmed the software management status of all overseas Group companies
Information	<ul style="list-style-type: none"> Introduced anti-targeted attack programs in four Group companies Took inventory of portable recording media Introduced security measures for using wireless LAN networks outside the company and for web conferences Held regular training programs for desktop and LAN administrators Introduced highly-confidential document management systems
Employment/Labor	<ul style="list-style-type: none"> Promoted work time management ; Promoted for satisfying health support toward long-hours workers Indicated division and individuals with long overtime work Promoted blanket risk assessment and conducted risk training Introduced disaster control in case of occurrence at several sites
Incidents/Accidents/Disasters	<ul style="list-style-type: none"> Established guidelines on leaving work for home for each region; Established disaster preparedness plans Created risk response plans for each overseas site Held safety seminars for intended expatriate employees and their accompanying families Created basic guidelines on business trips Developed overseas safety management systems for Group companies in Japan
Environment	<ul style="list-style-type: none"> Conducted patrols and drills according to EMS plans
Product Safety	<ul style="list-style-type: none"> Held follow-up discussions at the Quality Committee and Quality Review meetings

Legal Risk Management at Overseas Group Companies

The NGK Group is engaged in strengthening its ascertainment of legal risk management status in overseas business to minimize the globalizing and diversifying risks associated with business expansion.

We ask all overseas group companies to report information pertaining to the status of lawsuits, legal affairs and consultation with lawyers twice a year, and helpline usage, export controls and access to legal-related information once a year. Major issues found in such reports are reported to the Compliance Subcommittee and CSR Committee to share information. Consultations from overseas locations were handled by lawyers and legal departments to avoid risks.

BCP Initiatives

The NGK Group is developing Company-Group-wide Business Continuity Planning (BCP) through the establishment of the BCP Headquarters, an organization for leading business continuity and quick recovery in the event of a large-scale natural disaster, led by the President. Countermeasure initiatives include the establishment of multiple manufacturing bases and procurement sources, the damage mitigation measures related to building and equipment and employee safety assurance.

We conduct emergency drills assuming a natural disaster as a field exercise of the BCP. In the drill, participants are instructed to take real actions faithfully according to the plan, through which we identify in detail issues related to each process and procedure and use the findings to improve the BCP.



Fiscal 2016 Initiatives

- Reviewed major BCP initiatives according to the launch of new business/products
- Expanded the scope of the disaster scenario to cover more broad area from the previous one centering on Nagoya, Chita and Komaki

Future Plans

- Review the assumed damage and counterplans based on the expanded disaster scenario, and study the reaction plans against the subsequent earthquake after the first huge earthquake's strike
- Enhance the effectiveness of the BCP through the more practical drills using a sophisticated scenario and expanding the target scope and object persons

Intellectual property management

The NGK Group encourages the creation of intellectual property (IP) rights through providing relevant education and works to ensure proper acquisition, protection and use of IP rights based on the policy of respect for the rights of others and ourselves alike.

Accordingly, the Intellectual Property Department is building a strategic patent database in close cooperation with business, research and development, and technology divisions. Specifically, it features a patent mapping function to present the internal and external patent landscape of specific technology areas using charts and graphs, which can be easily shared within the Group. To prevent patent infringement risks, we regularly conduct external patent monitoring by product line and development theme to update our database. As of March 31, 2017, NGK holds 3,038 Japanese patents and 4,134 patents from other countries.

Number of patents held as of March 31, 2017

National patents of Japan **3,038**

Foreign patents **4,134**

Responsibilities of the Intellectual Property Department

<ul style="list-style-type: none"> Application for/acquisition of IP rights (patent, utility model, design) To establish IP rights for NGK's development achievements to safeguard the corporate assets on a legal basis
<ul style="list-style-type: none"> Patent search To confirm the latest external patent landscape, mainly to prevent patent infringement risks
<ul style="list-style-type: none"> Administration and operation of patent management systems
<ul style="list-style-type: none"> Administrative work relating to acquired patent rights, including: maintenance of rights; payment of patent incentives; and cooperation with patent offices
<ul style="list-style-type: none"> Application for/acquisition and maintenance of trademark rights for corporate logos and product trade names and marks
<ul style="list-style-type: none"> Internal IP training

Awareness Programs for Managers

NGK conducted manager-class awareness programs to enhance intellectual property strategy in the research and development and business divisions, making use of issues identified in these programs in NGK's intellectual property strategy.

In fiscal 2016, we held the 8th session of the lecture series "Considering Intellectual Property" in March. As guest speaker, we invited Mikiya Ishihara, a former intellectual property department head of Sekisui Chemical Co., Ltd. He talked about "intellectual property activities at Sekisui Chemical," focusing on enhanced strategic initiatives for examining and analyzing competitive technology trends using collected patent information, and reflecting the results in business and development strategy planning. The session was attended by a total of 116 employees.

Promoting Intellectual Property Training

Young Engineer Training

Patent search training programs are provided on an ongoing basis, mainly targeting young engineers from research and development departments. The programs offer individual computer-based practical curricula.

In fiscal 2016, we provided basic training for young engineers and also offered e-learning programs and seminars to improve skills necessary for patent application.

IP training provided in FY 2016

	Intended participants	No. of actual participants
e-learning	Young engineers	58
Seminars on patent law (Patent I, II, III)	Young engineers	130
Seminars on license agreement and IP strategy	Responsible employees	14
Seminars to acquire skills for using the IP search program	Responsible employees, engineers	89
Small-group workshop	Young engineers at R&D and business divisions	103 (total for 8 sessions)

Employee Invention Reward System to Provide Incentives for Employee Inventions

NGK has established an employee invention compensation system comprised of application incentives, registration incentives and performance incentives and fairly compensated employees in order to encourage inventions, and from a legal viewpoint, based on the Patent Act. Performance incentives are paid to the relevant inventors from profits derived from products associated with patents acquired by NGK. Group companies in Japan have established a similar employee invention reward system, thereby seeking to spur the invention promotion initiative across the Group. To further expand this effort globally, we are working to introduce a reward system to overseas Group companies in consideration of local legal systems and labor practices, in order to facilitate employee inventions and protect individual inventors' rights.

Provision against Intellectual Property Risks Overseas

To support NGK's automotive exhaust purification ceramic products business, which is engaged in global production activities, we have built a mechanism for appropriately managing inventions overseas. NGK promotes the practice of intellectual property management overseas at the same level as in Japan.

At NGK Ceramics Suzhou (China), we continually carry out activities for "prior use defense" as part of efforts to protect our intellectual property. Prior use defense refers to a legal system in which a company can claim the right of prior use in case its competitors file a patent application for technologies that the company has kept confidential as secret know-how, by proving its precedence to the day of application filing in terms of technological implementation, thereby seeking to ensure continued business.

TOPIC

Overseas IP training

NGK offers overseas training programs to develop international IP experts, sending young employees to the U.S. and Europe. From 2016, **Masashi Yasui** from the Intellectual Property Department attended appropriate courses at the Munich Intellectual Property Law Center (MIPLC) in Munich, Germany. Following this, he will receive practical training at local patent firms from since October.



Yasui (sixth from left in the back row) and other students at MIPLC

Respect of Humanity and Assurance of Comfortable Working Environment

The NGK Group makes an effort to respect the humanity of its employees and provide a safe and comfortable working environment. In the interest of fair treatment, NGK employs a human resources system that enables employees to maximize their potential.

Basic Approach

In the NGK Group Guidelines for Corporate Behavior, our relationship with employees is based on Respect of Humanity and Assurance of Comfortable Working Environment and defined as follows.

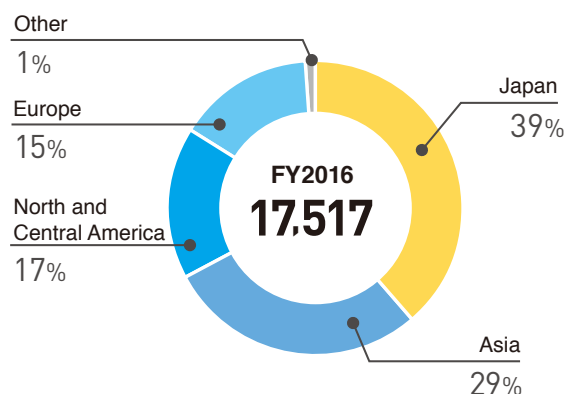
- We will hire and treat our people in a proper and fair manner and will provide a safe and pleasant working environment in which our people can work comfortably without sacrificing their family life.
- We will make available the place and opportunities that can be challenged by people with versatile talent and will support the development of human resources through acquisition of knowledge and expertise.
- We will prevent any bullying, discrimination, harassment or other acts that violate human rights and, if there is any violation, we will take appropriate actions in an expeditious manner.

Basic Information on Employees

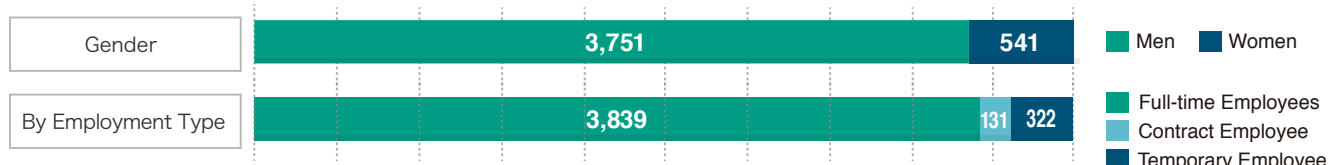
NGK Group Number of Employees

	Number of Employees
FY2012	13,159
FY2013	13,210
FY2014	16,217
FY2015	16,657
FY2016	17,517

NGK Group Employee Composition by Region



NGK Employee Status in Fiscal 2016



Average age	39.0 years old (Men: 39.1/ Women: 38.9)
Average number of years worked	14.6 years (Men: 14.0 years / Women: 15.1 years)
Turnover ratio within 3 years among new hires	2.2%
Average salary	7,861,726 yen

Turnover ratio

	FY2016
Turnover ratio	1.1% (46)
Men	0.9% (35)
Women	2.0% (11)

Voluntary Turnover Ratio

	FY2016
Voluntary Turnover Ratio	0.8% (34)
Men	0.7% (25)
Women	1.7% (9)

Number of New Hires Remaining at the Company (3 years)

	New graduate hires in 2014	Retention in 2017
Total	36	33
Men	28	25
Women	8	8

Revision of the Human Resource Management System for General Employees

In April 2017, NGK revised its human resource management system for general employees to enable all employees, from the young to the experienced, to work with enjoyment and fulfillment. As NGK develops its businesses globally and promotes the creation of new products and businesses, it is essential to motivate young and mid-level employees who will enroll the future key roles and encourage them to realize their full potential. The revised system aims to build the environment that makes these possible.

Key Points of the Revised System

Qualifications	<ul style="list-style-type: none">• Developing a mechanism whereby all employees can challenge to qualify for a higher job grade.• Clarifying the definition of each qualification.
Evaluation	<ul style="list-style-type: none">• Shifting from age-based evaluation to evaluation based on effort and result.
Retirement at age 65	<ul style="list-style-type: none">• Maintaining the level of salary after age 60.

Developing an Environment that Allows Employees to Demonstrate Their Full Potential

Human Resources Department Manager

Yuka Sugiura

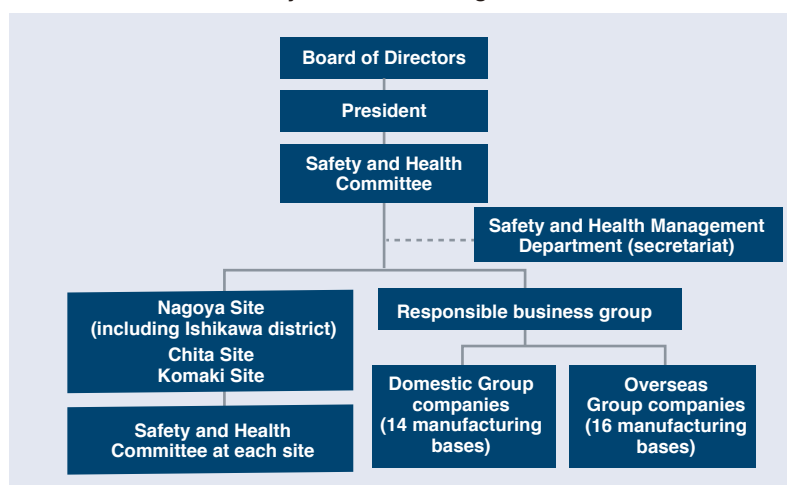
In the new human resources system revised in April 2017, we have clarified what kind of human resources the company is looking for and developed a system that allows young and mid-level employees to demonstrate their full potential; I hope they can actively take on challenges to move to higher stages. This system also allows mature workers to keep working in the same way until their retirement age at 65. I hope this revised human resources system can also increase motivation among women and drive the initiatives by the NGK Group to promote women's active participation.



Aiming for zero industrial accidents, NGK has introduced an Occupational Safety and Health Management System (OSHMS) in fiscal 2007 as a mechanism for the ongoing systematic implementation of safety and health initiatives based on company-wide safety and health policies. Since then, we have made efforts to thoroughly embed and operate this system and strengthen risk assessment.

Also, we are proactively engaged in improving the health of our employees. In recent years, we have focused on reducing long work hours and health management for employees who work long hours.

Structure of Promote Safety and Health Management



Safety and Health Policy

'Maintaining the safety and health of each employee constitutes a basis for a company's operation and existence'

1. Comply with Occupational Safety and Health Law and Company Regulations.
2. Engage in activities in line with the OSHMS* to continuously raise the safety and health standards.
3. Promote safety and health activities under enough education & training and good communication with employees.
4. Reduce the risks of hazards and toxicity and prevent accidents to provide a comfortable work environment.
5. Prevent employees' health hazards and enhance health promoting activities.

*OSHMS : Occupational Safety and Health Management System

Activities to Promote Safety and Health Management in Fiscal 2016

	Main points	Priority Activities
NGK (alone)	Development of ability to foresee risks	<ul style="list-style-type: none"> • Providing Experience-based Safety Education to all employees at the Manufacturing Division • Conducting self-evaluation on safety levels and sharing the results with managers • Continuing Risk Assessment activities and providing residual risk education
	Enhancement of rules and education	<ul style="list-style-type: none"> • Enhancing safety work rules and providing organized education to inexperienced employees • Providing training for Safety Assessors
	Clarification of issues that need improvement in the work environment	<ul style="list-style-type: none"> • Auditing compliance with laws/rules • Identifying workplaces that need improvement • Identifying challenges and developing improvement plans
Domestic and overseas Group companies	Audit at Group companies and follow-up on the progress toward improvement	<ul style="list-style-type: none"> • Site patrol, identifying issues, sharing awareness of issues that need improvement • Following up on the items identified in the audit • Following up on improvement plans and their progress
	Reinforcement of mechanisms	<ul style="list-style-type: none"> • Improving the management system • Starting acquisition of international certification

Activities to Promote Safety and Health Management in Fiscal 2017

	Main points	Priority Activities
NGK (alone)	Enhancement of education, focusing on programs for managers	<ul style="list-style-type: none"> • Providing education to managers on relevant laws and regulations • Providing practical Risk Assessment education to improve risk management skills
	Improvement of the self-management system	<ul style="list-style-type: none"> • Conducting comprehensive Risk Assessment activities
	Development of ability to foresee risks	<ul style="list-style-type: none"> • Enhancing Experience-based Safety Education.
Domestic and overseas Group companies	Strengthening the mechanism to identify and disseminate risks	<ul style="list-style-type: none"> • Promoting Risk Assessment activities • Enhancing the risk management system and the education system

Enhancing Safety and Health Activities

NGK views the enhancement of safety and health activities as one of its highest priorities.

Until fiscal 2015, Group companies worked on this issue on their own or promoted safety and health activities through their responsible groups. Since fiscal 2016, the entire Group, including both domestic and overseas companies, has been working together on the enhancement of safety and health activities. As part of the efforts to enhance our global compliance and governance, we disseminate information to each site and keep track of individual situations. Through auditing and provision of support, we strive to solidly improve the level of our safety and health activities.

In September 2016, we developed a medium-term action plan with compliance, risk reduction and enhancement of governance as the generic concepts. In order to further strengthen these efforts, we are also promoting the acquisition of international management system certification at domestic and overseas Group companies.

Promotion of Experience-based Safety Education

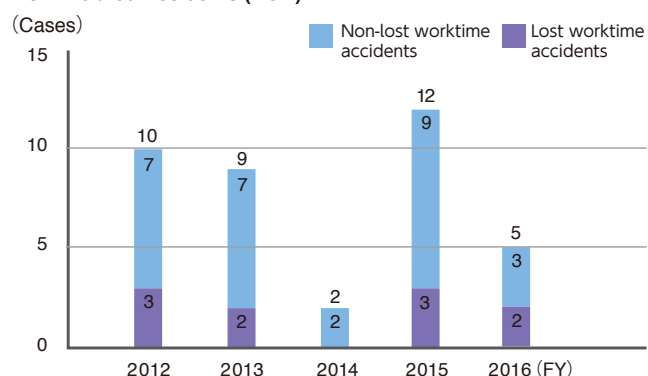
We are seeing a growing number of accidents among inexperienced workers. In response, we have established training centers at three sites in Nagoya, Chita and Komaki, as well as at Ishikawa Plant, where trainees can actually experience risks. Establishing these centers in-house means that more workers can now take enhanced training. At each training center, we teach them the importance of compliance with safety rules while using simple devices that let trainees safely experience three kinds of risks: electric shock, being pulled into machinery and getting caught. We are also planning to set up a "Safety Dojo" (meaning Safety School), aiming to further enhance the Experience-based Safety Education and develop trainees' ability to foresee risks.



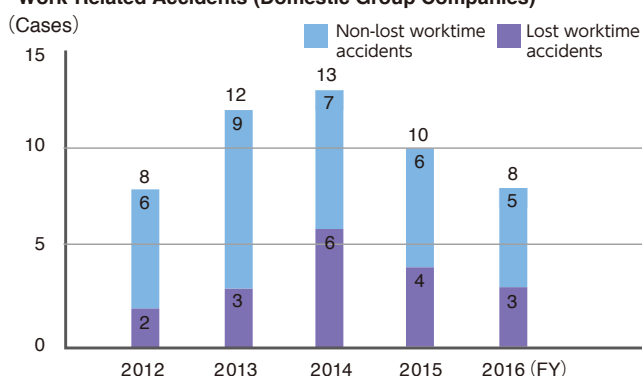
Training for Safety Assessors at the Manufacturing Division

Since fiscal 2016, we have been encouraging employees at the Manufacturing Division to acquire Safety Assessor certification. This qualification is granted by Japan Certification Corporation to recognize people who have a wide range of knowledge and skills necessary for the safe operation of machinery based on international safety standards. There are four levels of certification in the system, awarded according to applicants' knowledge and skills. In fiscal 2016, we started by encouraging worksite leaders and above at the Manufacturing Division as well as those in charge of safety and health to acquire the entry-level Safety Basic Assessor certification. As a result, 317 employees have passed the examination as of the end of fiscal 2016.

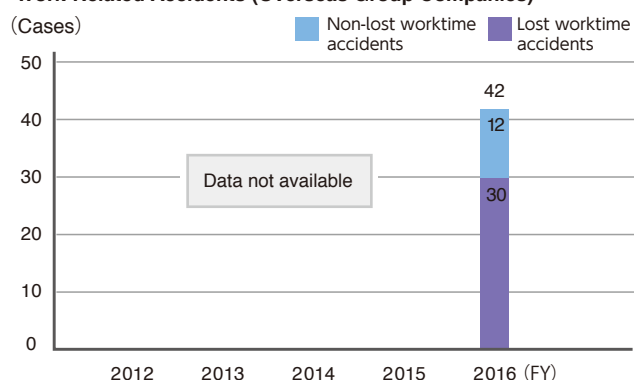
Work-Related Accidents (NGK)



Work-Related Accidents (Domestic Group Companies)



Work-Related Accidents (Overseas Group Companies)



Severity Rate (the number of lost workdays per 1,000 hours worked)

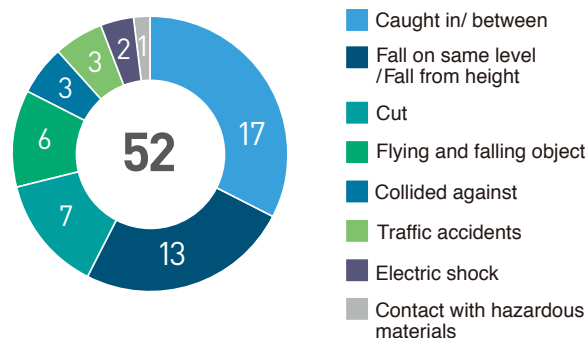
	FY2012	FY2013	FY2014	FY2015	FY2016
NGK	1.049	0.026	0	0.007	0.003
Domestic Group companies	—	—	—	—	0.009
Overseas Group companies	—	—	—	—	0.040

Rate of Lost-Worktime Injuries (NGK)

(the number of lost-worktime accidents per a million hours worked)

	FY2012	FY2013	FY2014	FY2015	FY2016
All industry total	1.59	1.58	1.66	1.61	1.63
Manufacturing industry total	1.00	0.94	1.06	1.06	1.15
NGK Company-wide total	0.41	0.28	0.00	0.41	0.27
Domestic Group companies	—	—	—	—	0.50
Overseas Group companies	—	—	—	—	1.40

Work-Related Accidents by Type (past 7 years)



Rate of Occupational Disease (NGK)

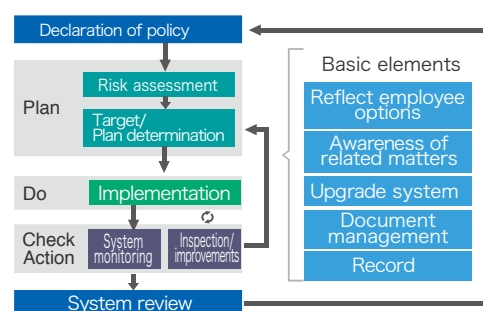
FY2012	FY2013	FY2014	FY2015	FY2016
0.41	0.14	0	0	0.13

Number of Deaths from Work-Related Accidents (NGK and Domestic Group Companies)

	FY2012	FY2013	FY2014	FY2015	FY2016
(Person)	0	0	0	0	0

Enhanced Safety and Health Management

Aiming for zero accidents, NGK is promoting the creation of an Occupational Safety and Health Management System (OSHMS). Under the company-wide Safety and Health Committee, we have established Safety and Health Committees at each site, department, factory and workplace, applying a PDCA cycle, with the aim of systematic and organizational improvement of occupational safety and health activities.



External Certification on Safety and Health Management System

We have been promoting the acquisition of safety and health management system certification, which is gaining importance globally, and incorporation of the system into operations in order to supplement the medium-term goals on safety and health.

Acquisition of Management System Certification (as of the end of fiscal 2016)

NGK	Nagoya, Chita and Komaki Sites as well as Ishikawa Plant have acquired JISHA's OSHMS certification*.
Domestic Group companies	NGK Adrec and Akechi Insulators have started taking action to acquire OHSAS 18001 certification.
Overseas Group companies	NGK Ceramics Suzhou, NGK Ceramics Indonesia, NGK Ceramics Polska and NGK Ceramics South Africa have already acquired OHSAS 18001 certification. NGK Ceramics Europe, NGK Ceramics USA and NGK Insulators Tangshan have started taking action to acquire the certification.



* When requested by a workplace, the Japan Industrial Safety and Health Association (JISHA) and other certifying bodies evaluate the workplace's Occupational Safety and Health Management System (OSHMS) based on JISHA's OSHMS criteria, including whether it is properly introduced based on the guideline released by the Ministry of Health, Labour and Welfare, and whether it is operated properly to produce step-by-step improvement in safety and health performance. Those who meet the criteria can acquire the certification.

Restricting Long Work Hours

In fiscal 2016, NGK started lowering the maximum amount of overtime work to 70 hours per month in July. We also clarified work priorities at each division and revised the cross-sectional division of roles within a department. As a result, in the first half of the fiscal year, the number of employees recording over 80 hours of overtime work decreased by 60% compared with the last term, and no employee has exceeded the maximum amount of overtime since September.

Overtime Work Hour Trends: General Employees

Hours worked (per person)	FY2012	FY2013	FY2014	FY2015	FY2016
Annual fixed working hours	1,919	1,919	1,919	1,919	1,919
Annual actual working hours	2,089	2,087	2,077	2,087	2,069
Average overtime work per month	24.1	24.4	24.5	24.9	23.7

Following Up with Employees Working Long Hours

NGK provides employees working long hours, including non-regular and part-time employees, with ongoing opportunities to meet with industrial physicians for health consultations and exams. The results are reported to and followed up on by Safety and Health Committees at each worksite. Also, the medical status of employees working long hours and the condition of those who need medical treatment are reported at monthly Safety and Health Committee meetings in an effort to thoroughly promote the reduction of overtime work.

Consultations by Employees Working Long Hours

(People)

	FY2012	FY2013	FY2014	FY2015	FY2016
General employees	125	118	63	154	68
Managers	107	46	46	72	40

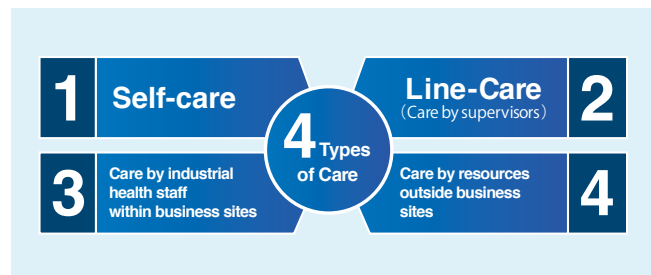
The figures represent the annual total number of individuals working 80 or more hours/month and 300 or more hours/6 months

Promotion of Activities Supporting Mental and Physical Health

Four Types of Care for Mental Health

NGK emphasizes the importance of promoting the health, both physical and mental, of its employees. The medical status of employees working long hours and the condition of those who need medical treatment are reported at monthly Safety and Health Committee meetings held at each site in an effort to thoroughly promote the reduction of work performed outside normal working hours. In fiscal 2016, we conducted a survey on physical and mental health. Employees found to be at risk of developing mental health problems were interviewed and offered guidance by industrial physicians and counselors. In November, we conducted stress checks, which are required by law to help employees become aware of their own stress levels.

Four Types of Care



Position-Based Mental Care Education is conducted

We also conduct ongoing stratified mental care education. In fiscal 2016, we provided mental health education to managers in order to further enhance our recent key initiatives on line care (care by supervisors). We will also incorporate it into the group education for new managers to deepen their understanding of mental health.

Position-Based Mental Care Education is conducted at NGK. (People)

	FY2012	FY2013	FY2014	FY2015	FY2016
New hires	103	88	56	199	234
General employees	227	293	291	272	325
Managers	63	95	95	87	450

Hosting a Safety Process Expert Meeting

The Ceramic Products Business Group of NGK invites global safety and health managers to its Safety Process Expert Meeting (PEM) held every year to review safety measures across the NGK Group. In fiscal 2016, 17 employees from HONEYCERAM production bases in Japan and overseas gathered to discuss themes such as, "Why do people commit unsafe behavior?"

We also hosted a lecture given by a safety consultant to remind ourselves of the importance of leaders' attitudes toward safety.

TOPIC

Hosting "Clearing Competition" at NGK Ceramics Indonesia

NGK Ceramics Indonesia (ACIn) hosted a "Clearing Competition" with the aim of making more room for equipment and products in line with the increase in production volume. The winner was selected based not only on how the space had been transformed but also on enhanced traffic lines and safety through 5S activities. The selection was also based on how the new condition was maintained two months after the competition. As a result of the comprehensive evaluation, the P4 (Peripheral Processing of LSH) Group won the first prize. We will continue our corporate-wide activities to improve work efficiency and safety.



Diversity

It is NGK Group basic policy to recruit human resources and offer stable employment and equal opportunities regardless of race, nationality, creed, gender, or physical abilities. Also, in an aim to promote autonomy and independence, NGK maintains the human resource systems necessary to provide employees with fair compensation commensurate with their degree of contribution to the company.

NGK New Graduate Hires

Note: Excluding new graduates planned to transfer from temporary to regular positions (People)

Joined company	University graduate			Junior college/ Vocational School	High school graduates
	Total	Men	Women		
April 2013	62	53	9	0	25
April 2014	36	28	8	0	20
April 2015	38	29	9	0	30
April 2016	94	67	27	0	60
April 2017	65	50	15	0	46

NGK Mid-Career Hires

(People)

Joined company	Total	Total			
		Men university graduates	Women university graduates	Other men	Other women
April 2012 - March 2013	53	17	15	21	0
April 2013 - March 2014	7	3	1	3	0
April 2014 - March 2015	49	15	4	30	0
April 2015 - March 2016	200	69	12	116	3
April 2016 - March 2017	158	66	15	73	4

System to Promote Diversity

At NGK, the Human Resources Department plays a central role in promoting diversity, including through nursing care support and promotion of women's active participation. Regarding human rights issues, NGK strives to educate employees by distributing booklets on human rights on such occasions as training for the recently promoted. A helpline is also available for consultation on these issues.

Promoting the Success of Women

Appointment of Female Key Personnel (Management Staff)

The NGK Group strives to increase opportunities for motivated and skilled people to enhance their skills regardless of gender. We are also engaged in the creation of an environment that makes working comfortable for women. The number of female key personnel (management staff) of NGK in fiscal 2016 was 16.

Promoting Women's Active Participation through the Revised Human Resources System

NGK has revised its human resources management system, aiming to enable employees in general employment positions with routine tasks to engage in a broader range and a higher level of work.

The new human resources management system supports career advancement of individual employees; they can take the initiative to challenge to move up to a higher job grade.

Establishment of a Career Consultation Helpdesk

In March 2016 we established a career consultation helpdesk for employees to discuss career-related concerns for women. At the helpdesk, certified career counselors provide support and consultation services to employees, while strictly observing confidentiality. Since May 2017, we have expanded the service to make it available not only to women but to all employees.

Introduction of System to Support Early Return from Parental Leave

We have introduced system to encourage and support employees so that they can return from maternity and childcare leave and resume their careers at an early stage.

 Reference Page

> Systems to Support Early Return from Parental Leave

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Certified as an “L-Boshi” Company for Its Excellence in Promoting Women's Active Participation

In March 2017, NGK was certified as an “L-Boshi” company by the Minister of Health, Labour and Welfare. This certification is granted to companies that have done excellent jobs in accordance with the Act on Promotion of Women's Participation and Advancement in the Workplace.

Each applicant for the certification is evaluated on five criteria: recruitment, employment continuity, working hours, percentage of female managers, and diverse career paths. By meeting four of these five criteria, NGK has received the second highest certification of the three levels.



Certified as a Company Promoting Women's Activities by the City of Nagoya*

In recognition of our efforts to create a workplace environment that encourages women's activities such as revising our System for Transferring to General Employment Jobs, we were certified as a Company Promoting Women's Activities by the city of Nagoya in January 2012 and recertified in 2014.

* Note: System for certifying companies that conduct outstanding initiatives enabling women to actively participate in the workplace in the areas of (1) awareness improvement, (2) work-life balance and (3) promotion of women's active participation.



January 2012 Company Promoting Women's Activities (City of Nagoya)

Submitting our Action Plan for Promoting Women's Active Participation in their Working Life to MHLW

In January 2016, in accordance with the Act to Advance Women's Active Participation in their Working Life, NGK submitted a general employer action plan to the Aichi Labor Bureau, which is overseen by the Ministry of Health, Labour and Welfare.

In this plan, NGK sets the goal of hiring more female employees. Accordingly, the proportion of women among new hires increased from 16% in fiscal 2012 to 29% in fiscal 2016.

We will keep working on the initiatives according to the action plan to accomplish our goals.

Action Plan

Topics

- Although gender is not a consideration in terms of issues, criteria for promotion, and service years, the number of women in management positions and its candidates is small.
- Occupational range (job types, job locations and titles) for successful women is limited.

Goals

- Fostering a corporate culture that promotes women's active participation
- Increasing the number of candidates for managers (section chief level) by 1.5 times and preparing them for appointment to

Initiative 1 Raising career awareness of female employees, and utilizing their inherent potential.

Initiative 2 Increasing the ratio of women among new graduate hires and diversifying career opportunities.

Ratio of women employees

	FY2012	FY2013	FY2014	FY2015	FY2016
Ratio of women employee *1	13.4%	13.3%	12.9%	12.6%	12.7%
Ratio of women key personnel *2	1.0%	1.5%	1.8%	1.8%	2.0%
Ratio of women general *3 employees	16.9%	16.6%	16.1%	15.6%	15.5%

*1 Ratio among all employees *2 Ratio to all key personnel *3 Ratio among all general employees

Ratio of Women in Managerial Positions at Overseas Group Companies

(as of August 2016)

	Europe	North and Central America	Asia	Other
Ratio of women in managerial positions *2	9%	14%	28%	25%

Career Planning Roundtable

NGK hosted a career planning roundtable for female employees with less than three years' experience. The goal was to help them develop their career paths through input from more experienced employees.

Participants offered many comments about the event, including: “It was a valuable experience to speak with women from various workplaces.”



Supervisor Training to Promote Women's Active Participation

Since March 2017, NGK has hosted training programs for supervisors of female staff. The goal is to help these supervisors recognize the importance of women's active participation and to learn about the supervisors' roles in promoting career advancement of their staff.



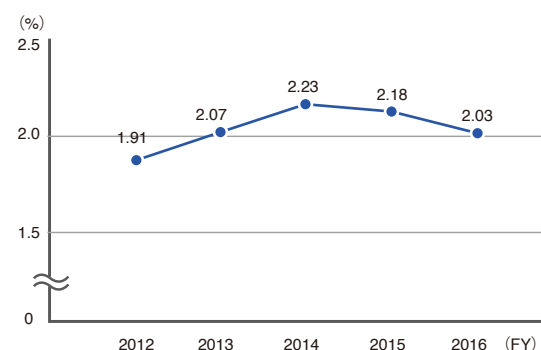
Expanding Employment of the People with disabilities beyond the Legally Stipulated Rate

The NGK Group promotes employment of people with disabilities by accepting students from special needs schools as trainees and hiring participants from employment seminars for people with disabilities. As a result, the percentage of employees with disabilities at the end of fiscal 2016 was 2.03%, which exceeded the legally mandated ratio of 2.0%, for the fourth straight year.

In fiscal 2016, we continued to accept students from special needs schools as trainees then hired them as new employees in fiscal 2017.

We have also expanded the divisions that hire people with disabilities in order to broaden the scope of jobs available.

Percentage of Employees with disabilities (NGK)



Various Systems Attempting to Make Use of Diverse Human Resources

The NGK Group employs systems promoting the use of human resources based on the idea that human resource diversity is linked to changes in organizational culture.

Human Resources Utilization Systems Aligned with Employee Individuality and Skills

To open the way for employees to take full advantage of their individuality and skills, NGK operates an internal job application system. Open positions are announced internally and eligible applicants are appointed, a system for career track registration enabling applicants to register their work history, qualifications and desired position to provide an opportunity for individuals to carry out their work duties with a sense of satisfaction, and a system designated as "FA (free agent)" for employees to register their personal desires and preference of jobs to appeal themselves internally.

Internal Job Application System Results

Fiscal year	FY2012	FY2013	FY2014	FY2015	FY2016
Applications (Cases)	3	2	19	28	17
Recruits (People)	4	3	23	36	28
Applicants (People)	8	3	12	23	11
Successful applications (People)	4	1	8	9	4

Career Follow-Up System

Fiscal year	FY2012	FY2013	FY2014	FY2015	FY2016
Registered (People)	8	5	2	2	0
Transferred (People)	3	0	1	0	0

FA System

Fiscal year	FY2014	FY2015	FY2016
Registered (People)	0	1	0
Transferred (People)	0	0	0

Promoting the Regular Employment of Manufacturing Contract Employees

NGK established a system for appointing manufacturing contract employees to become regular employees, and 15 employees were appointed in fiscal 2016. Excellent employees are identified through biannual human resource assessments and recommended by division heads to sit for the regular employee promotion exam. Those who pass the exam become regular employees.

Excellent workers out of the ones who transfer to regular employment positions also have a chance for promotion to two higher ranks of company qualification. In fiscal 2016, 11 employees were promoted under this system.

Transfers from Contract Manufacturing Worker to Regular Employee

Fiscal year	FY2012	FY2013	FY2014	FY2015	FY2016
Converted employees	17	4	27	25	15

Double Promotions

Fiscal year	FY2012	FY2013	FY2014	FY2015	FY2016
Promoted employees	11	7	4	11	11

Management of Follow-up System to Fit Young Employees in the Workplace

To prevent career mismatches, there is a follow-up system for younger employees in NGK. We conduct surveys and interviews about their jobs and the work environment to career-track employees in their second year and manufacturing technology staff in their third or fourth year of employment. If they desire, feedback is provided to their superior managers, leading to younger employees' job stability. A job rotation system is also provided mainly to young career-track employees: After working with us for four years, they are transferred to a different job including overseas and outside of the departments to which they currently belong.

Come-back System

In fiscal 2016, NGK launched “Come-back System” to rehire people who had left the company for various reasons (e.g., job change, studying abroad, job transfer of a spouse, etc.) as mid-career employees.



Reference URL

> Come-back System

<http://www.ngk.co.jp/recruit/comeback/>

Work-life balance

To promote a work-life balance and reduce long working hours, in fiscal 2011 NGK formulated specific rules based on initiatives that had been conducted by labor-management over the previous three fiscal periods.

We keep track of social changes, such as changing attitudes toward work as well as legislative amendments, and strive to respond to these changes flexibly and properly by improving systems and revising operations.

Seven Rules for Promoting a Work-Life Balance

- No more than 70 hours of overtime work per month.
- Overtime work exceeding 45 hours per month limited to six months each year.
- At least six days of paid leave must be taken each year.
- No more than 300 hours of overtime work per six months.
- In principle, there will be no overtime work on refresh days (Wednesdays and Fridays). If overtime is necessary, a prior permit application must be submitted.
- In principle, work must not be performed for more than seven days straight. If work in excess of seven days straight is necessary, a prior permit application must be submitted.
- Written applications must be submitted when requesting employees work on holidays or late at night.

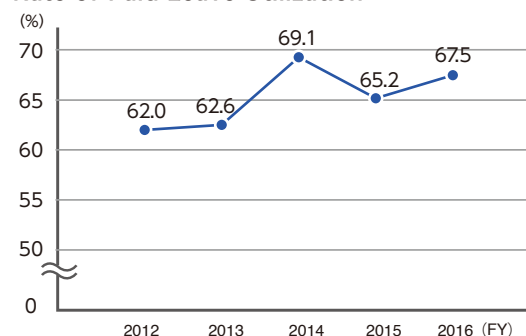
Initiatives to Limit Overtime Work

If, for any reason, overtime work in excess of 45 hour per month appears likely, the reason for the increase in overtime work must be confirmed through prior labor-management consultations to distribute time periods and workloads or increase the number of employees.

Countermeasures for Mitigating Increased Overtime Working Hours

Each year, NGK discloses statistics on hours worked and paid leave utilization to its Labor Union for discussion and countermeasure deliberation purposes. When cases of long working hours are found, Labor Union meets with each workplace to devise countermeasures. When long working hours are found for employees who have been temporarily assigned overseas, they must submit in writing the reason for the long working hours and undergo a health check. These measures are taken to maintain their health, and the written report is used to identify the reasons for long working hours and to develop countermeasures.

Rate of Paid Leave Utilization



For the third consecutive year, more than 99% of employees use six or more granted days of paid leave

For the fifth or more consecutive year, average number of used days of granted paid leave exceeds 10.0

For the fifth or more consecutive year, use rate of granted paid leave exceeded 60%

Enhancing Systems Supporting Work-Life Balance

NGK offers flexible systems to help employees maintain a balance between work and lifestyle, especially family care. To support childcare and nursing care, we are enhancing financial support by providing a babysitter expense subsidy system, and a lump-sum payment system for nursing care support. Considering the working environment, we support by providing shortened working hour system.

Enhancement of Work-Life Balance System

In 2010, NGK made a major revision to its human resources management system, and we have since been continuously enhancing our support measures by identifying employees' needs. One recent example is the establishment of a system in 2013 to allow employees to take a leave of absence for accompanying a spouse posted overseas for work.

In fiscal 2016, we responded to the needs of employees who would like to gradually increase their working hours linking with children's growth. The accommodation was made possible by relaxing restrictions setup for children's age for which the exemption from unscheduled work and limitation on overtime work apply. We have also introduced Childcare Concierge* services for employees working in the Tokyo metropolitan area, where it is difficult to find childcare.

In May 2017, we also launched a system for flexible work arrangements that enables balance between work and care not only for those who provide care to children and family members but also for those who need to attend to a health condition of their own that requires repeated and ongoing treatment.

* Services to help facilitate the process of starting to use childcare and returning to work, including tailored support for individual employees during childcare leave to help them start using childcare services and advice in preparation for their return to work.

System to support employees to balance work and childcare at each stage

		Interview(employee, supervisor and HR)		Interview(employee, supervisor and HR)	
		During pregnancy	Before/after birth	During childcare leave	Balancing work and care
Work systems		Measures on health management Overtime work exemption Late-night working hours exemption Flex time system	Time off before/after birth Special paid leave when a spouse gives birth Childcare leave (using accumulated vacation days)	Childcare leave Continuing the childcare leave	Shortened working hours Flex time system Unscheduled work exemption Limitation on overtime work Late-night working hours exemption Half-day paid leave Caring for a family member (using accumulated vacation days) Caring for a child
Other systems			Childcare Concierge (For those living in the Tokyo metropolitan area)		Priority use of a commuter parking lot(In Nagoya) Unlicensed childcare expense subsidy
Financial support systems	Family Fund		Maternity gift		Babysitter expense subsidy Elementary school enrollment gift
	Insurance benefits	Health insurance	Lump sum birth allowance		
		Employment insurance		Lump sum childcare leave allowance	
Salary			During the time off before/after birth Paid 2/3 of the standard daily wage	Unpaid	Lump sum payment six months after returning to work (330,000 yen)
Bonus			During the time off before/after birth Paid the bonus calculated with the 2/3 attendance rate	Unpaid	

Systems to Support Early Return from Parental Leave

NGK has systems to encourage and support employees who have taken maternity and childcare leave so that they can return to their careers at an early stage. These systems are aimed at developing workplaces that support female employees in particular, with the expectation of promoting their active participation.

Systems to Support Early Return from Parental Leave

- A lump - sum payment for early return (from April 2017)
- Licensed childcare center expense subsidy (from April 2017)
- Childcare Concierge (to be introduced in 2017)

Overview of Childrearing Support Measures and Users

Systems that Exceed Legal Requirements

System name	Details	Fiscal Year	Number of users				
			2012	2013	2014	2015	2016
Childcare leave of absence	Last day of the month in which the child turns 18 months old or the end of March after the child turns one, whichever longer (Legal requirement: until child is 18 months old)	Female	35	40	52	49	44
		Of which returned to work (Ratio of returned)	100%	94.1%	100%	100%	100%
		Ratio of employees still working a year after returning to work	100%	100%	100%	100%	- (Taking a leave of absence)
		Male	9	8	12	11	7
		Of which returned to work (Ratio of returned)	9 (100%)	8 (100%)	12 (100%)	11 (100%)	7 (Taking a leave of absence)
		Ratio of employees still working a year after returning to work	100%	100%	100%	100%	- (Taking a leave of absence)
Shortened working hours during childrearing	Six hours or seven hours per day for employees until the fiscal year when their children start fourth grade in elementary school (Legal requirement: Only for children not yet three years old)	Users	33	38	43	53	57

Systems Operated Independently by NGK

System name	Details	FY2012	FY2013	FY2014	FY2015	FY2016
Lump sum payment six months after returning to work	Lump-sum payment received six months after returning to work	11	13	20	16	26
System for taking annual paid leave in hourly increments for employees working shortened hours	Paid leave can be taken in hourly increments by employees working shortened hours (one day).	Unintroduced	Unintroduced	18	35	36
Childcare leave system for fathers	Unused annual paid holidays can be used for childcare leave of absence	9	8	12	11	7
Pre-maternity leave interview	Interview attended by employee, HR and supervisor to provide the employee with peace of mind while on maternity leave and ensure both sides have proper understanding of procedures related to systems supporting childcare and work.	15	23	25	22	20
Interview before returning to work	Supports smooth transition back to work focused on work details and work style.	13	14	14	27	18
System for accompanying family on overseas assignment	Enables employees to take a leave of absence of up to two years and six months while accompanying a spouse (including a non-NGK employee) posted overseas for work, and allows employees to continue their career path, which was difficult to do prior to the establishment of this system.	Unintroduced	1	2	3	6
Maternity gift (family fund)	¥50,000 gift when a child is born	156	165	183	175	208
Elementary school enrollment gift (family fund)	¥50,000 gift when a child enrolls in elementary school 106 cases	106	134	137	124	142
Babysitter expense subsidy (family fund)	Provides up to ¥100,000 per year for employees who must pay for a babysitter or daycare due to working hours.	25	33	13	16	19
Childcare Concierge (For those living in the Tokyo metropolitan area)	Support to facilitate the process of starting to use childcare and returning to work	N/A	N/A	N/A	N/A	2
Priority parking spaces to support childcare (For those working at the headquarters)	Priority parking spaces available at a commuter parking lot	N/A	No data	12	17	19

A user of the childcare leave system for fathers

Production Technologies Department, Manufacturing Division,
Ceramic Products Business Group

Daniel Kitaguchi

I decided to take childcare leave with my first child, as I didn't want to miss the special moments during my child's growth and I wanted to support my wife. I'm glad I used the system because I was able to stay close to watch my child grow day by day.

In order to use this system, it was essential to have the understanding and support of the people around me. For this reason, I consulted my supervisor in advance to arrange the work. Since I believe men should also play an active role in childrearing, I hope to see further understanding and cooperation both within the company and across the entire society so that more men can use this system.



List of Systems for Nursing Care Support

Working hours	Time off	Financial support
<ol style="list-style-type: none"> Shortened working hours Working 3 days a week Flex time system (for employees at departments to which the regular flex time system does not apply) Limitation on overtime work Unscheduled work exemption Late-night working hours exemption 	<ol style="list-style-type: none"> Caring for a family member using accumulated vacation days Unpaid days off to provide care 	<ol style="list-style-type: none"> Care leave benefits Care leave support fund Lump sum care allowance
	Leave of absence	
	<ol style="list-style-type: none"> Care leave 	

Revision of the care leave system

In January 2017, we revised our system to respond to the amendments of the Child Care and Family Care Leave Act. Under the new system, for example, employees can take the one-year leave in three separate blocks.

Moreover, we have signed a corporate contract with SeaCare, an NPO that supports caregiving, to introduce services helpful to caregivers.

Company Intranet

We have launched a support site for diverse work styles on the company intranet to widely announce our measures to support balance between work and family life. The new site is a redesigned and more user-friendly version of the Work and Life style, Especially Family Life Support Site. Its new features include, for example, a handbook on childcare and nursing care.



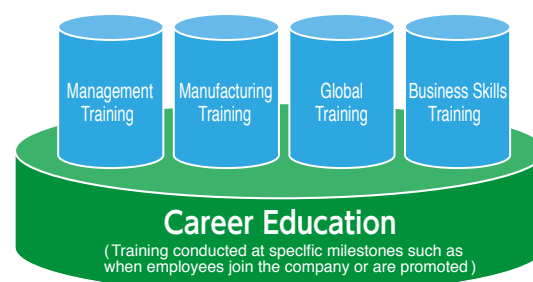
Human Resource Development

At NGK, people are our most precious management resource. With respect for employee motivation and ambition, we engage in the cultivation of human resources who will lead the next generation. In recent years, NGK has concentrated efforts on the enhancement of training to develop future leaders to take management positions as well as global talented staff to support our overseas business expansion.

In fiscal 2016, we held training programs to develop future executives and future managers.

NGK's global business development has been accelerating every year. For the first time, we had over 100 participants in our global seminar, which aims to develop global talented staff.

Promoting Human Resource Cultivation through the Establishment of Systems in Four Areas



Promoting Systematic Education through Nearly 120 Programs

NGK is engaged in systematic human resources training covering the four areas based on training conducted at each juncture of an employee's career, such as when joining the company or receiving a promotion. Other than compulsory position-based training, we conduct functional training, offering approximately 120 types of programs throughout the year. NGK conducts management training, including management foundational training targeting newly appointed Group managers, which we are expanding to include younger key personal. Manufacturing training covers categories including worksite capability enhancement and supervisor training, while training for younger employees continued to focus on materials, forming, processing, drying, firing and other ceramics manufacturing fundamentals. Global training includes mindset such as cross-cultural communication, presentation skills, business skills such as international law and labor management, health and safety management, and compliance related education. Foreign language training for various languages is also provided.

Business skills training is provided as a program aimed at enhancing the skills of all our employees. We are engaged in planning optimized training in consideration of not only company needs but also employees' business needs.

Training Participant Summary (total participants)

	FY2013	FY2014	FY2015	FY2016
Key personal Men	927	960	876	903
Key personal Women	37	30	16	30
General employees Men	2,779	2,752	2,775	2,697
General employees Women	308	302	321	372
Men (total)	3,706	3,712	3,651	3,600
Women (total)	345	332	337	402

Average time spent in training annually per employee

	FY2013	FY2014	FY2015	FY2016
Men	28	22	21.8	25.5
Women	15	14	15.4	20.3
key personal	18	15	15.3	13.1
General employees	28	23	22.5	28.8

Average annual cost of training per full-time employee (¥10 thousand)

	FY2012	FY2013	FY2014	FY2015	FY2016
Average expenses	11	11	11	7.8	7

* With the salary one month after the end of the sixth month

[illegible]

×: P : Young career-track Q : Technical jobs R : General employment jobs

Selecting trainees by picking out or needs

Quality Improvement Training for manufacturing

In line with a younger workforce and an increase in mid-career hires coming from a variety of backgrounds, it is necessary to create training programs that cover a variety of needs. Given these conditions, we provide quality improvement training for employees in manufacturing divisions in four classes based on the skills and experience of the participants. The trainees learn and try practical exercise based on their level of understanding and type of job.

Business skills training is provided as a program aimed at enhancing the skills of all our employees. We are engaged in planning optimized training in consideration of not only company needs but also employees' business needs.

Number of Participants in Quality Improvement Related Training in FY2016

Leader training for worksite capability enhancement	13
Leader training for worksite capability enhancement at Ishikawa Plant	8
Follow-up training for worksite capability enhancement	61
Instructor development training for worksite capability enhancement	0
Instructor brush-up training for worksite capability enhancement	12
Worksite IE basic	13
Quality control I	20
Quality control II	86

Measuring Human Resource Development Achievements Using Quantitative Indices

We introduced quantitative indices to objectively evaluate the results of human resource development. We aim to accelerate employee skills development by making use of these objective evaluations.

Quantitative Indicators to Measure the Outcomes of Human Resources Development

- Implementing assessments of understanding and satisfaction level after training using post-training surveys
- Checking the achievement level by the TOEIC test and instructors (native speakers of the target language)
- Tests during and after the training
- Calculated cost of loss
- Evaluation scores by judges etc.

Onsite Leader Human Resource Development

As veteran employees retire in large numbers, the ratio of employees with limited experience is increasing at manufacturing sites. The NGK Group is systematically promoting training aimed at strengthening worksite capabilities.

Progress of Training Aimed at Strengthening Worksite Capabilities

Fiscal 2011 NGK began training to develop in-house instructors with the aim of educating human resources able to lead the manufacturing divisions. Three courses, the longest of which was 18 days in duration, were held on low-cost management and set-up improvement guidance.

Fiscal 2013 12 employees who completed leader training attended. In addition to the 13 employees already trained, bringing the total number of instructors to 25.

Fiscal 2014 We held training to brush up skills of trained instructors. As of fiscal 2013, a total of 21 employees had participated in instructor development training. To further enhance skills, improvement activity examples were shared and examples from all plants were collected to create in-house case studies.

Fiscal 2015 Employees who had completed in-house instructor development training served as lecturers and taught methods for reducing and improving manufacturing cost using case studies. The contents of training programs were formulated by the instructors in charge of each program, and they incorporated their worksite experiences as instructors.

Fiscal 2016 The content of leader training for worksite capabilities was revised by the in-house instructors to enhance individual guidance. The revised textbooks are also shared with Group companies.

Furthermore, in fiscal 2011, NGK began training for all manufacturing site worksite leaders aimed at improving the leadership qualities and communication skills of on-site leaders that guide and cultivate younger employees. In fiscal 2016, 29 newly appointed worksite leaders underwent training on labor management and recognition of the role of the worksite leader. We evaluate effects of the improvements made through the training in financial terms by converting them into specific monetary values.

FY 2016 Training Results

Leader training for worksite capabilities: 18 days	13 completed
Brush-up training: 2 days	12 completed
Worksite leader training: 2.5 days	29 completed
Financial effects of the improvements through the training (Total amount)	10.47 million yen
Financial effects of the improvements per person	0.81 million yen

Encouraging and Developing Young Employees

Manufacturing Section, Insulator Division, Power Business Group
In-House Instructor

Masato Sujino

As global competition intensifies, we urgently need to develop human resources at overseas factories. Accordingly, in-house instructors are taking innovative measures by introducing various mechanisms to develop talented young workers within the context of the daily work environment.

During training and education, I focus on encouraging each employee to take the initiative and on introducing trainees to the joy of work and collaboration with their colleagues. I strive to give trainees a sense of joy and accomplishment at the end of the program.



English Instruction for New Employees

With the aim of rapidly cultivating global human resources, we began English language instruction in fiscal 2011 targeting all new hires in general positions.

The training is provided for one year, consisting of foundation development training led by Japanese instructors and training to develop practical business skills led by native speakers according to the individual achievement levels. In addition, teams are formed with trainees of different levels of ability in an attempt to enhance capabilities through mutual encouragement.

Moreover, in order to reinforce employees' awareness of globalization and to raise their motivation, we also provide global mindset training and personal counseling. Through these measures, we encourage employees' self-driven initiatives. In fiscal 2016, we also provided guidance on effective learning methods at the beginning of training to increase trainees' motivation to learn.

Time spent Learning English
per employment new hire
(fiscal 2016 results)

128 hours per year

Practical Overseas Training

NGK conducts overseas practical training over a period of six months at global Group companies with the aim of developing global human resources. The training focuses on developing practical business and communication skills in a cross-cultural environment targeting young employees who are future candidates for overseas postings.

Labor Union

NGK respects workers' rights, including the right to collective bargaining, and strives to build healthy labor-management relations. As of the end of March 2017, 3,295 employees belonged to the Labor Union.

Protecting the Right to Collective Bargaining

NGK and the Labor Union have signed a labor agreement as equal partners. The agreement specifies that both parties shall respect each other's rights and take responsibility for the exercising of their own rights.

The two sides regularly hold Labor-Management Advisory Board meetings to exchange information and promote mutual understanding. They also maintain healthy labor-management relations by exchanging opinions on such issues as management policies, financial conditions and activities of the Labor Union.

Collective bargaining sessions are held in an orderly manner, with both parties striving in good faith to resolve issues peacefully and promptly.

Labor-Management Consultations in Fiscal 2016

- Regular Labor-Management Council: held twice
- Labor-Management Advisory Board: held once
- Other bargaining and consultations
 - Consultation on overtime work and work on days off
 - Consultation on revision of the agreement
 - Consultation on measures to rectify long working hours

Guaranteeing the Minimum Wage

NGK and the Labor Union have signed an agreement that sets out the original "in-house minimum wages," which are fixed at a rate above the minimum wages by region and industry stipulated by the Minimum Wage Act. Through this agreement, we strive to improve employees' working conditions and avoid violation of relevant laws.

Communication between Labor and Management

NGK makes an effort to build labor-management relations founded on mutual trust through communication with various consultative bodies, such as the Labor-Management Advisory Board, the Worksite Advisory Board and the Regular Labor-Management Council.

NGK and Labor Union hold Labor-Management Advisory Board meetings to talk about business conditions and performance, and Worksite Advisory Board meetings to share issues pertaining to manufacturing, work systems and workplace environments from each worksite. In addition, at Regular Labor-Management Council meetings, labor and management also proactively exchange opinions.

In fiscal 2016, labor and management worked together on a drastic revision of the human resources system. They engaged in broad discussion, with the aims of developing quality young and mid-level employees and enabling mature employees to keep working with security and fulfillment. Implementation of the revised human resources management system started in fiscal 2017. Under the new system, employees are provided with opportunities to broaden their job scope, the evaluation and wage systems have become more transparent, and the retirement age has been raised from 60 to 65.

Survey on Workplace Vitality

NGK conducts a survey to measure workplace vitality every two years, collecting responses from the entire workforce. The survey aims to identify organizational issues associated with the workplace by analyzing responses to questions to evaluate employee satisfaction, and carry out measures to increase their satisfaction with jobs and work systems. Overall survey results are reported in the internal newsletter, while the results of individual organizations are provided to each related manager for use in day-to-day activities to improve workplace environment.

Implementation of Fair, Free and Transparent Transactions

With a basic policy centered on the three principles of openness and fairness, partnership and relationship with society, the NGK Group is engaged in fair and equitable business transactions with the procurement partners in our supply chain.

Basic Approach

The NGK Group has established the Basic Purchasing Policy in an attempt to conduct fair and honest business transactions and to prosper together with all our procurement partners.

Supply Chain Management System

At NGK, the Purchasing Department is responsible for managing suppliers based on the Supplier Management Regulations. Management targets cover all the tier 1 suppliers and selected suppliers among tier 2 and beyond, including raw materials manufacturers.

Reference Page

> Communication Activities with Procurement Partners

P127

Basic Purchasing Policy

Open and Fair

- Open, fair, and equitable procurement
- Pursuit of the competition principles and profitability

Partnership

- Mutual prosperity based on mutual trust with suppliers

Relationship with Society

- Compliance with laws
- Preservation of the global environment

Familiarization of the Purchasing Handbook

Purchasing operations are directly related to various important aspects of corporate management, such as assets, production, development and business performance, and also involve external and financial activities, major areas prone to compliance issues. In light of this, we created the Purchasing Handbook to summarize internal rules for purchasing engagement and issued the first edition of it in fiscal 2007. The Handbook has since been reviewed every year. Efforts have also been made to better familiarize personnel with the tool: it has been made available on the intranet throughout the company and its significant objectives are discussed in company training programs, particularly for new managers.

We will continue with these efforts, confirming partners' activities and keeping up with social trends, in order to maintain and enhance our CSR procurement.



Promotion of CSR Procurement

In response to the rising social expectation for CSR-oriented supply chain management, the NGK Group promotes CSR procurement. We preferentially select CSR-aware companies and purchase CSR-based raw-materials and services.

CSR Procurement Guidelines

The NGK Group created the CSR Procurement Guidelines in fiscal 2010 as a guide to promote CSR procurement across the Group including overseas Group companies. The Guidelines specifically describe our obligations as a socially responsible buyer as well as our requirements for socially responsible suppliers. In fiscal 2013, the Guidelines were expanded by being integrated with the previous Green Procurement Guidelines, which set forth rules for preferential purchase of environmentally friendly products and services, and adding provisions of conflict minerals, anti-corruption and human rights and labor issues. The expanded CSR Procurement Guidelines are publicly available on our website in multiple languages (Japanese, English, and Chinese).



For more details:

> **CSR Procurement Guidelines and Supplemental Materials**
<http://www.ngk.co.jp/english/about/procure/>

Procuring Resources and Raw Materials Responsibly

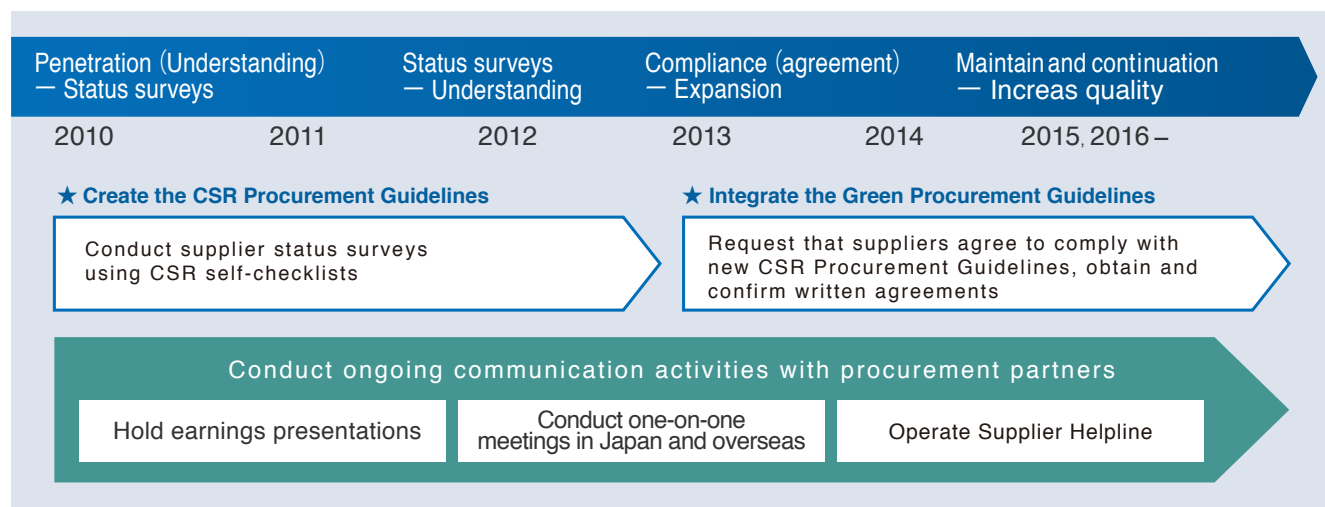
The NGK Group conducts procurement activities that consider impacts on regional communities stemming from the use of raw materials (e.g. "conflict minerals" including tin, tantalum, tungsten and gold from the Democratic Republic of the Congo and neighboring countries, as well as minerals that are the source of funds for armed insurgencies in that region) with the potential to cause social issues such as human rights violations and poverty, and takes steps to avoid using such materials when there is risk of adverse impact.

Improving CSR Procurement

At the NGK Group, we develop activities to promote CSR procurement, such as visiting individual suppliers and conducting on-site inspections. We also request our suppliers, particularly new companies, to sign an agreement to comply with the Guidelines. From fiscal 2016, we ask for annual renewal of the agreement in an effort to facilitate suppliers' awareness and understanding of CSR procurement while striving to increase the number of signers.

We will continue with these efforts, confirming partners' activities and keeping up with social trends, in order to maintain and enhance our CSR procurement.

Ongoing Promotion of CSR Procurement



Enhancement of Procurement Capabilities of Overseas Group Companies

Providing Buyer Training at Overseas Group Companies

NGK provides buyer training for employees in charge of procurement at overseas Group companies in order to improve their skills and organizational functionality in this area. In fiscal 2016, the Purchasing Department sent members to NGK Ceramics Indonesia as an instructor at a seminar, offering advice for efficient procurement activities and know-how on purchasing operations and supplier management.

Organizing Purchasing Liaison Meetings for Overseas Group Companies

In 2016, NGK held a purchasing liaison meeting at between NGK Ceramics USA and NGK Ceramics Mexico in May and October, respectively. In the meetings, buyers from each company reported on their issues associated with purchasing and logistics and conducted cost cutting measures. The meetings helped enhance the relevant expertise of participants and further develop purchasing functions of the two companies.

Fair and Honest Procurement Partner Evaluations and Extensive Resource Diversification

In accordance with the Basic Purchasing Policy, the NGK Group selects procurement partners based on fair and honest evaluations. We also attempt to ensure procurement when disasters occur through the extensive diversification of procurement resources.

Selection of Suppliers Based on Fair and Honest Evaluations

NGK opens its doors to a wide range of procurement sources, including companies with which it has had no previous transactions. In terms of selecting new suppliers, we choose from multiple companies through fair and honest evaluation of their CSR initiatives, environmental conservation efforts and financial condition as well as quality, cost and delivery (QCD). In addition to the procurement department being involved in the selection of suppliers, multiple departments are also involved in this process, which requires multi-stage approval before selection occurs in an effort to ensure fair and honest evaluation and decision-making.

Promoting Business Continuity Planning (BCP) through the Diversification of Procurement Resources

In the event of unforeseen circumstances such as a major natural disaster, NGK promotes the sourcing of raw materials, equipment, secondary materials and other critical purchased parts from multiple suppliers as part of its BCP efforts to ensure procurement is uninterrupted. For items which are available from only one supplier, we are in the process of ensuring sufficient inventory and that the storage facilities for these items are located in a safe place that cannot be damaged by tsunami. In addition, when selecting a new procurement partner, we take into consideration the existence or absence of multiple locations and efforts to ensure inventory.

Preservation of Global Environment

The NGK Group is engaged in ongoing environmental conservation efforts by means of improving manufacturing processes through the development and introduction of innovative manufacturing technologies and the development of products and services that contribute to reducing environmental impacts.

Activities covered

- NGK Headquarters/Nagoya Site/Chita Site/Komaki Site/Ishikawa Plant (does not include Tokyo Main Office, Osaka Branch and six othersales offices)
- Group companies: 42 manufacturing-related consolidated subsidiaries (19 in Japan; 23 overseas)

NGK's Core Policy on the Environment

Recognizing that protecting the environment is a vital issue that all of humanity must face, the NGK Group formulated its Core Policy on the Environment in April 1996 based on Environmental Philosophy and Environmental Action Guidelines in order to bring its corporate activities into harmony with the environment. On the basis of this policy, the NGK Group works to reduce the environmental impact of business activities, and actively strive to help protect the environment by developing products and technologies to that end.

NGK's Core Policy on the Environment

Environmental Philosophy

Given its corporate philosophy—"NGK products and technologies must create new value and contribute to the quality of life"—NGK will contribute to tackling environmental issues through its "Triple-E" business segments of ecology, electronics, and energy to create a comfortable environment for future generations.

Guidelines for Environmental Action

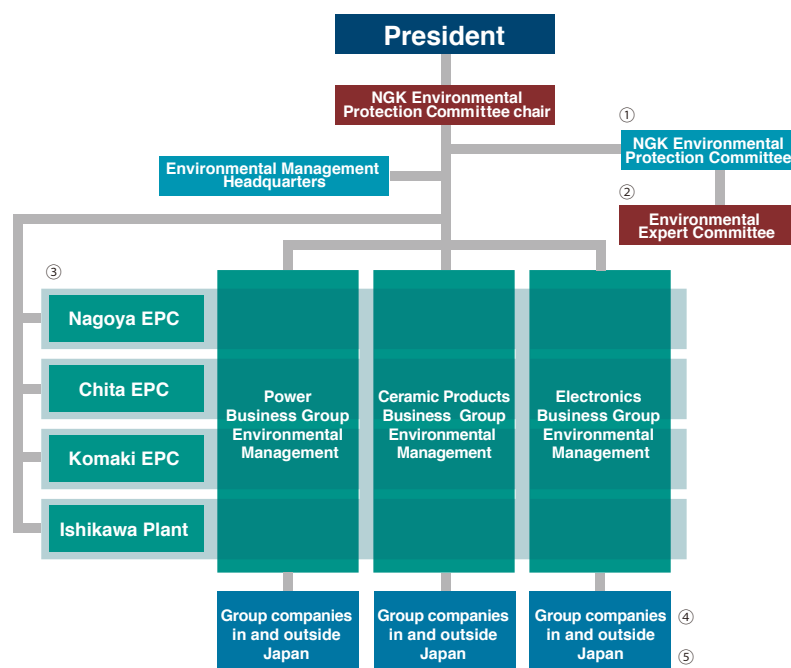
1. Strive to develop, design, and manufacture products that contribute to the environment and products with low environmental impact.
2. Work to reduce the environmental impact arising from business activities.
Conduct design reviews to scientifically study and evaluate the environmental impact of business activities.
 - Promote energy conservation measures for all processes and facilities, and make efforts to control CO₂ emissions
 - Promote resource saving and recycling, and make efforts to control the generation of by-products.
 - Through the appropriate use and control of chemical agents, work to reduce the risks inherent in toxic substances.
 - Give precedence to environmentally friendly materials, parts, products, and facilities in procurement and purchasing, strengthening cooperative alliances with our business partners.
3. Enhance environmental management systems from a global perspective while continuously reducing our environmental impact.
4. Not only abide by environmental laws, regulations, and other requirements, but also institute voluntary standards and work to improve our own environmental conservation.
5. Provide environmental information to the public at the appropriate time and pursue dialogue with all stakeholders. Proactively develop social action programs. Also, engage in education and publicity in order to improve employees' environmental consciousness.

Environmental Management Frameworks and Environmental Management System

The NGK Group promotes environmental conservation activities in accordance with our Core Policy on the Environment through initiatives pertaining to environmental management frameworks and the Environmental Management System (EMS) implemented by global Group companies working in conjunction with one another.

Consolidated Environmental Management Promotion System

In addition to environmental management systems built independently at each site of NGK (Nagoya, Chita, Komaki, Ishikawa), we have established a consolidated management system to control environmental activities at all domestic and overseas Group companies under the leadership of each Business Group. The Five-Year Environmental Action Plan and the related annual plan are shared across the entire Group via the Business Groups to be incorporated into activity plans of each Group company. To promote unified environmental management for the entire Group, annual liaison meetings are held for Group companies in Japan, while head office personnel visit Group companies overseas on a regular basis. Thus, we create interactive discussion and support opportunities to address issues facing each company.



① NGK Environmental Protection Committee

In principle, meets twice each year. Other meetings are held at the discretion of the chairman.

◆ Governing Structure

Chairman	President makes decision in light of Executive Committee deliberations (As of June 2017, Director and Vice President)
Vice Chairman	Appointed by NGK Environmental Protection Committee Chair (As of June 2017, General Manager of Environmental Management Dept.)
Members	Executive Vice President, Vice Presidents responsible for Head Office Departments, Group Executives, General Managers, General Manager of Pollution Control at each site, General Manager of Environmental Management Dept., General Manager of Safety and Health Management, General Manager of Corporate Strategy Office, General Manager of Corporate Communications, General Manager of Human Resource Department, General Manager of Group Compliance, General Manager of Finance & Accounting Dept., General Manager of Legal Dept., General Manager of General Affairs Dept., General Manager of Purchasing Dept., General Manager of Public Relations, General Manager of Construction & Maintenance Dept., others designated by the Committee Chairman

② Environmental Expert Committee

In principle, meets twice each year. Meets before the NGK Environmental Protection Committee to review and discuss items to be reported to the committee.

◆ Governing Structure

Expert Committee Chair	General Manager of Environmental Management Dept.
Vice Chairman	General Manager of Construction & Maintenance Dept.
Members	General Manager of Business Planning Dept., Persons in charge of promoting environmental activities in each division, Group Manager of Environmental Management Dept., others designated by the Expert Committee Chair

③ Environmental committees in each site of NGK (Nagoya Site, Chita Site, Komaki Site, Ishikawa Plant)

In principle, meets twice each year in each area. Thoroughly conveys matters determined by the NGK Environmental Protection Committee, communicates and discusses issues and topics in each area (all four areas meet twice each year for a total of eight meetings)

④ Domestic Group company liaison meetings

Meets once each year. Conveys the Group-wide policy on environmental initiatives to manufacturing Group companies and attempts to share each company's environmental management status and information on effective initiatives to promote the unification of domestic Group company environmental conservation activities.

⑤ Sharing information with overseas Group Companies

The Environmental Performance questionnaire is used to conduct an annual survey into the status of compliance with environmental laws at each company. Main Group companies are visited every 2-3 years to ascertain management conditions through hearings.

History of NGK's Environmental Activities

April	1972	Environmental Protection Committee and Environmental Preservation Office (currently, Environmental Management Dep.) established
June	1992	Waste Countermeasures Commission established
March	1993	NGK's Voluntary Plan for Environmental Conservation established
December	1994	Chlorofluorocarbons (CFCs) and 1,1,1-trichloroethane abolished
February	1995	Internal environmental audit conducted
April	1996	NGK's Core Policy on the Environment established
December	1996	CO ₂ Countermeasures Commission established
March	1998	NGK's three production bases (Nagoya, Chita and Komaki) simultaneously received ISO 14001 certification
March	1999	Environmental Report published
April	1999	Environmental accounting introduced
October	1999	Green Purchasing Commission established
November	1999	Environmental audits of domestic Group companies started
February	2000	Environmental Partnership Organizing Club (EPOC) established and active participation therein begun
October	2000	Chemical Substances Safety Committee established; Chemical Substances Management System introduced
March	2001	First Five-Year Environmental Action Plan established
April	2001	Compilation of environmental performance data for domestic Group companies started
October	2001	Operating of Recycling Yard begun
January	2002	Compilation of environmental performance data for overseas Group companies started
April	2002	New "Green Management" three-year management plan instituted
April	2003	Moves made toward a full business group environmental management system; "Waste Countermeasures Commission" renamed "Recycling promotion Commission" and "wastes" renamed "by-products."

March	2004	Three-year and long-term plans for reduction of CO ₂ emissions instituted
March	2005	Company-wide medium-term plan for the reduction in by-products established
April	2005	Environmental Action Guidelines revised; Green Procurement Guidelines revised
October	2005	Third-party review of environmental performance begun
April	2006	Second Five-Year Environmental Action Plan established
September	2006	Initiated environmental surveys of overseas Group companies
May	2007	Introduction of a consolidated goal for CO ₂ and by-products for domestic Group companies
April	2008	Establishment of the Environmental Management Department
January	2009	Introduction of goals to reduce CO ₂ by-products, and chemical substances for overseas Group companies
January	2010	Expanded scope of goals to reduce CO ₂ by-products, and chemical substances for overseas Group companies
April	2011	Formulated the third Five-Year Environmental Action Plan, "by-products" renamed "discarded materials."
March	2012	Three NGK sites (Nagoya, Chita and Komaki) received integrated ISO 14001 certification
March	2013	The Ishikawa plant received ISO 14001 certification (joint certification with three NGK sites)
April	2013	NGK established the Environmental Expert Committee as the authority handling matters related to CO ₂ discarded materials and other important environmental management items (created through the combination of the former CO ₂ Countermeasures and Recycling Promotion Commission)
August	2013	Conducted environmental liaison meeting at overseas Group companies as part of attempts to strengthen global environmental management
October	2013	Green Purchasing Commission established
February	2015	NAS Battery wins the Gold Prize at the 2015 Aichi Environmental Awards
April	2016	Formulated the Fourth Five-Year Environmental Action Plan

Environmental Management System (ISO14001, etc.) Initiatives

The NGK Group encourages the acquisition of ISO 14001 or third-party certifications meeting this standard to systematically and continuously develop its environmental conservation activities in line with NGK's Core Policy on the Environment. Under this initiative, a total of 39 manufacturing sites, including those in Nagoya, Chita, Komaki and Ishikawa, have been certified appropriately. We will work to expand the certification initiative within the Group, particularly targeting new plants. The Group will make effective use of these environmental management systems going forward with the intention of reinforcing its environmental management.

Certification of Environmental Management System

Categories		No. of manufacturing bases	No. of bases certified
NGK		4	4
Domestic Group	Power Business	7	4
	Ceramic Products Business	5	5
	Electronics Business	11	11
Overseas Group	Power Business	5	4
	Ceramic Products Business	9	8
	Electronics Business	8	8

The counting method of manufacturing bases was changed in fiscal 2016.

Environmental Audits

NGK conducts internal environmental management system audits and is inspected by third parties at the Nagoya, Chita, and Komaki sites, as well as the Ishikawa plant. Group companies also conduct these same internal audits and external reviews of the environmental management systems are conducted by external auditors at all Group companies. In fiscal 2016, no significant findings were made. In the event of a significant finding, the relevant division and Environmental Management Department work together to review and implement countermeasures as well as inform environmental committees in each area in an attempt to horizontally deploy these measures.

Environmental Risk Management

At the NGK Group, each manufacturing site has individually established environmental management systems to prevent environmental pollution. Each site periodically performs self-evaluation of its environmental risk management activities and reports evaluation results to NGK headquarters. Headquarters confirms the results and gives advice and support for improvement, as necessary. Thus, we are working to improve the management level for the entire Group.

Regulatory Compliance

NGK conducts monitoring and assessments as well as vigorous control of exhaust and wastewater produced from its sites, observing relevant regulations and environmental preservation-related and other agreements with control authorities. Additionally, we organize environmental management specialist seminars on a regular basis for all Group companies in and outside of Japan to keep responsible persons updated on related topics, thereby enhancing our capabilities to prevent environmental pollution.

Environmental Patrols and Emergency Response Drills

NGK implements environmental patrols in line with annual plans to prevent environmental pollution and conducts response drills based on emergency scenarios to minimize damage. In fiscal 2016, environmental patrols were conducted at the Nagoya, Chita and Komaki sites and the Ishikawa plant to prevent atmosphere and water pollution, ensure the appropriate management of chemical substances and suppress noise and vibrations. Response drills based on emergency scenarios were also conducted at these four areas. Going forward, NGK will continue to proactively engage in patrols and drills in an attempt to improve operational methods and mitigate environmental risks.

FY2016 Activities Conducted

		Atmosphere	Water	Noise and vibrations	Chemical substances
Nagoya	Environmental patrols	2	2	2	1
	Emergency response drills	3	2	—	2
Chita	Environmental patrols	1	2	1	2
	Emergency response drills	3	5	—	—
Komaki	Environmental patrols	1	3	1	1
	Emergency response drills	12	7	—	—
Ishikawa	Environmental patrols	2	2	2	—
	Emergency response drills	4	2	—	—

* - Indicate emergency response drills were considered of low importance and not conducted

Strengthening of Global Environmental Management

In accordance with the Guidelines for Environmental Action, the NGK Group horizontally deploys domestic environmental impact reduction initiatives in overseas Group companies while creating mechanisms to strictly comply with amendments to environmental laws and regulations to propel our global environmental management to the next level.

Mitigating Environmental Risks throughout the Group

All NGK Group companies in Japan and overseas have completed acquisition of ISO14001 or third-party certifications meeting this standard and implement environmental management in line with environmental management systems. NGK shares information regarding changes in domestic environmental laws and regulations with Group companies and has created a structure to ascertain the status of responses to these changes. Overseas, NGK Headquarters is enhancing its ability to regularly ascertain the status of responses and management in terms of important legal and regulatory system revision information in the countries and regions where Group companies are located.

Additionally, in fiscal 2016, we developed trend-based risk prevention systems using historical monitoring data for atmospheric, water and other types of environmental pollution, and introduced the systems to all Group companies in and outside of Japan. Also, NGK headquarters sent environmental management personnel to Group companies overseas to perform on-site environmental risk assessments and, for identified risks, countermeasures have been completed at relevant sites. We will continue with these efforts to mitigate environmental risks throughout the Group.

Strengthening Environmental Management Linked to Business Planning

The NGK Group promotes environmental management responsive to continuously evolving business plans. Initiatives aimed at reducing impacts on the environment in accordance with business plans include conducting forecast estimates and achievement evaluations in each business group, product line and global manufacturing base every six months to determine which initiatives to pursue next.

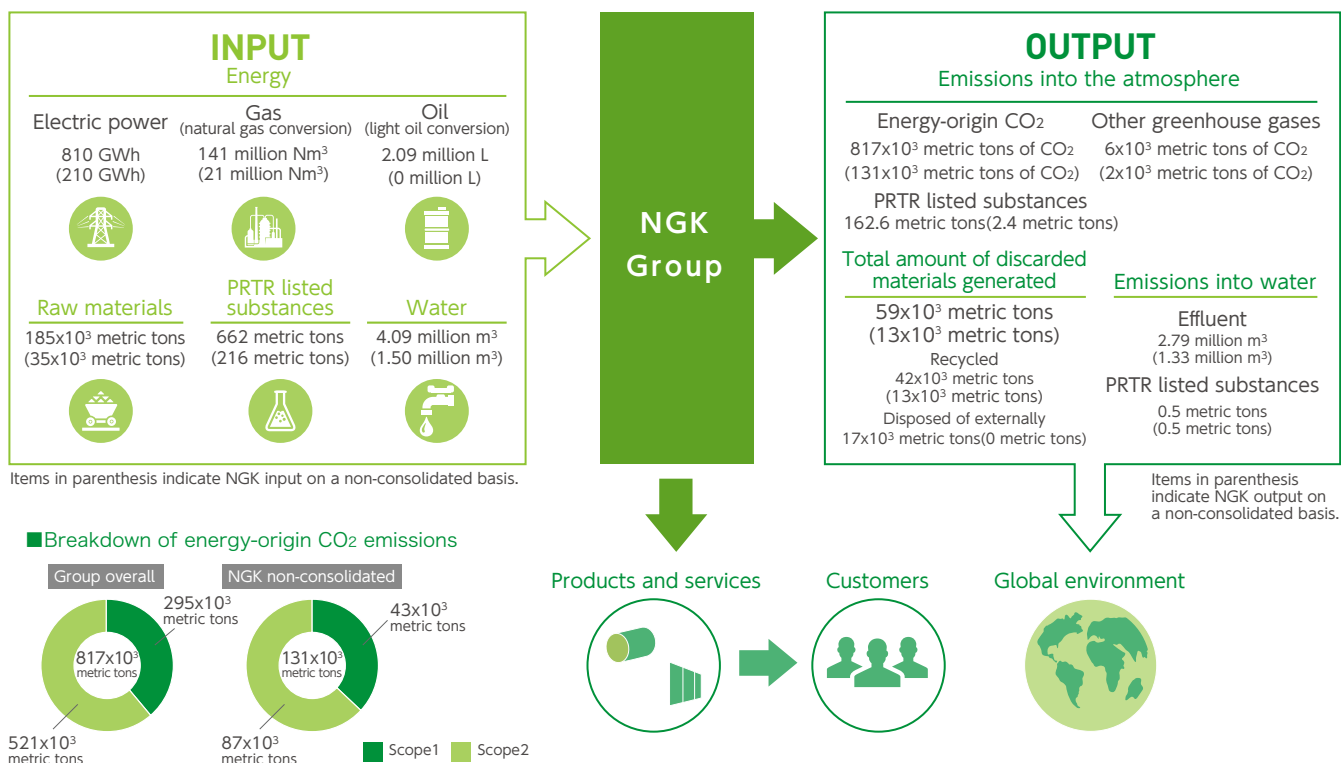
These efforts include the establishment of the Environmental Expert Committee under NGK Environmental Protection Committee, as a company-wide decision-making body. The Environmental Expert Committee facilitates discussions among managers from planning and production divisions who formulate and promote actual business planning in each business division, strengthening the company-wide environmental management system. Going forward, we will continue to strengthen management integration with the aim of promoting environmental management that combines global environmental protection and corporate growth.

Overall Perspective of Environmental Impact

The diagram below shows aggregate inputs to and outputs from manufacturing operations of the entire NGK Group engaged in at all domestic and overseas sites.

Inputs represent data for raw materials and energy etc. and outputs for manufactured products and services as well as substances that are discharged into the atmosphere and into water.

NGK Group Material Balance (Input and Output)



Notes:

- Environmental performance values in this report have been rounded up for convenience; therefore the sum of individual values may not match the totals.
- "Discarded materials" indicates the total amount of industrial waste and valuables.
- CO₂ conversion factors (kg-CO₂/unit) used in calculating NGK's CO₂ emissions on a non-consolidated basis are as follows (units are indicated in parentheses): Purchased electric power (kWh): 0.42, Fuel oil A (liters): 2.677, Diesel fuel (liters): 2.64, Kerosene (liters): 2.49, City gas (Nm³): 2.29, LPG (kg): 3.007, LNG (kg): 2.70, Gasoline (liters): 2.322 Sources: The Federation of Electric Power Companies of Japan (actual figures for fiscal 1990), Ministry of the Environment. Some factors calculated independently by NGK have been used. Incidentally, the fiscal 2016 energy-origin actual CO₂ emissions volume for NGK on a non-consolidated basis is 146x10³ metric tons when using the CO₂ conversion factor provided by the Order for Enforcement of the Act on Promotion of Global Warming Countermeasures (revised in May 2016).

INPUT

1. Energy

Electric power: Consumption amount of electric power

Gas: Consumption volume of each type of fuel gas converted into natural gas volume = $\Sigma(\text{Consumption volume of each fuel gas} \times \text{Unit heating value of each fuel gas} / \text{Unit heating value of natural gas})$

<Unit heating value of fuel gas>

Natural gas: 40.9 MJ/Nm³ City gas: 45.0 MJ/Nm³

LPG: 50.2 MJ/kg LNG: 54.5 MJ/kg

Oil: Consumption volume of each type of fuel converted into light oil volume = $\Sigma(\text{Consumption volume of each fuel} \times \text{Unit heating value of each fuel} / \text{Unit heating value of light oil})$

<Unit heating value of fuel gas>

Light oil: 38.2 MJ/L Fuel oil: 39.1 MJ/L Kerosene: 36.7 MJ/L

2. Water

Total consumption volume of city water, industrial water, well water and rainwater

3. PRTR Substances

Total amount handled of Japan's PRTR Type 1 listed substances

4. Raw materials

Total weight of raw materials used in product manufacturing

OUTPUT

5. Energy-origin CO₂ emission volume

Energy-origin CO₂ emission volume = $\Sigma(\text{Consumption of each energy} \times \text{CO}_2 \text{ conversion factor of each energy})$

<CO₂ conversion factor of energy>

(Unit of electric power factor: kgCO₂/kWh Unit of fuel factor: kgCO₂/fuel unit)

Electric power Japan: 0.42; United States: 0.709; Belgium: 0.292; France: 0.061; Poland: 0.986; South Africa: 1.096; China: 0.983; Thailand: 0.687; Indonesia: 0.790; Australia: 1.390; Mexico: 0.741

Fuel Natural gas (Nm³): 2.02; City gas (Nm³): 2.29; LPG (kg): 3.007; LNG (kg): 2.70; Light oil (L): 2.64; Fuel oil (L): 2.677; Kerosene (L): 2.49; Industrial steam (MJ): 0.06

6. Emission volume of other greenhouse gases

Emission volume of other greenhouse gases = active mass × emission factor × global warming potential

<Global warming potential>

CO₂: 1, CH₄: 25, N₂O: 298, HFC: Differs by type, PFC: Differs by type, SF₆: 22800, NF₃: 17200

7. Effluent

Total amount of effluent excluding rainwater

8. PRTR Type1 listed substances

Emissions into water: Total emission amount of Japan's PRTR Type 1 listed substances into public waters

Emissions into atmosphere: Total emission amount of Japan's PRTR Type1 listed substances into atmosphere

9. Total amount of discarded materials generated

Total amount of discarded materials generated = Externally disposed amount*1 + externally recycled amount

Recycled amount: Externally recycled amount = Paid disposal*2 + Valuable amount (selling off)

*1 Externally disposed amount: Direct disposal by landfill, or simple incineration

*2 Paid disposal: Outsourcing disposal and paying for recycling

Five-Year Environmental Action Plan

The NGK Group has established the Fourth Five-Year Environmental Action Plan (2016-2020). To achieve the goals of the Plan, we are promoting environmental activities, setting annual targets.

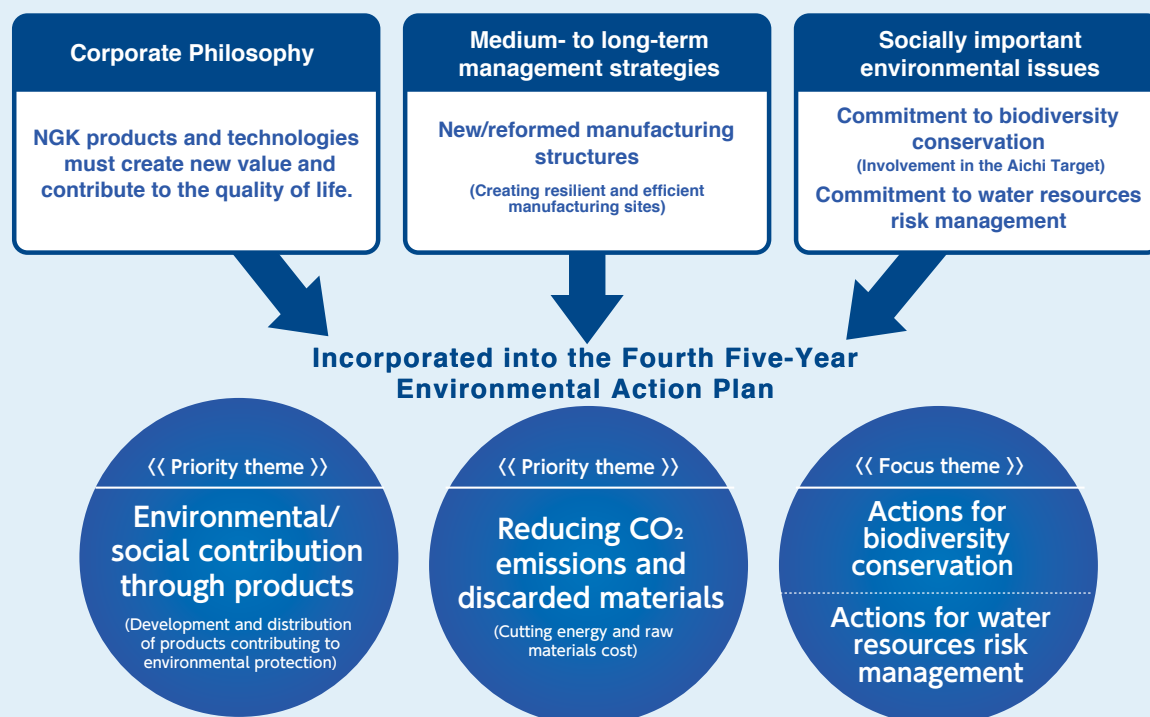
Results of the Fourth Five-Year Environmental Action Plan (2016-2020)

The NGK Group organizes environmental initiatives by creating five-year action plans. The Fourth Five-Year Environmental Action Plan, initiated in fiscal 2016, has been formulated to broadly encompass major global environmental challenges that businesses are expected to take responsible actions to address, and to select two key issues each for two groups of themes, namely, priority themes and focus themes. The two priority themes are: environmental/social contribution through products; and reducing CO₂ emissions and discarded materials. The first priority theme directly reflects the core concept of the corporate philosophy, while the other theme closely relates to NGK's medium- to long-term initiative of new/reformed manufacturing structures for increasing competitiveness. For focus themes, we have also set two issues: biodiversity conservation and water resources risk management/response, both being major challenges for which socially responsible corporate action is required with greater urgency.

[Base year, target year, control scope]

Base year: fiscal 2013; target year: fiscal 2020






The new Five-Year Environmental Action Plan has been designed to correspond with the business initiative of New/Reformed Manufacturing Structures. Accordingly, the base year and target year of the Plan have been set to coincide with the initiative. In principle, activities will be managed on a consolidated basis, embracing those based in and outside of Japan, in place of the previous method of managing domestic and overseas activities separately. The consolidation method has been adopted to improve management efficiency and effectiveness in response to the recent changes in our global production output structure, particularly increased amounts from overseas manufacturing sites as well as from production chains through multiple global locations.



FY2016 Progress of Initiatives within the Fourth Five-Year Environmental Action Plan

The initiatives planned under the Fourth Action Plan and their progress (targets and results for fiscal 2016; targets for fiscal 2017 and 2020, the final year) are summarized in the table below.

For the fiscal 2016 initiatives, almost all yearly numerical targets have been achieved, and for non-numerical targets steady progress was made as initially planned, indicating that we have made a successful start to the Five-Year Plan. In particular, a distinctive achievement was recorded in the area of reduction in discarded materials, where we considerably exceeded the initial target, as a result of persistent efforts of business divisions. We will continue promoting environmental activities across the Group to achieve the targets for fiscal 2017 and onward.

Category		Item	KPI	Fiscal 2016			Fiscal 2017	Fiscal 2020
				Target	Result	Self-evaluation*1	Target	Target
Environmental/social contribution	 Environmental/social contribution through products	Develop and distribute products contributing to environmental protection	Sales growth (%)	Increase by 25% from fiscal 2013 (consolidated)	Increased by 26% from fiscal 2013 (consolidated)	○	Increase by 30% from fiscal 2013 (consolidated)	Reduce by at least 60% from fiscal 2013 (consolidated)
		Promote green procurement	Plan progress (%)	At least 99% of NGK's suppliers in Japan agree to comply with the CSR Procurement Guidelines	99.4% agreed (100% including suppliers who partially agreed)	○	Maintain the level for Japanese suppliers, conduct research on approaches for overseas suppliers (study other companies, etc.)	Maintain in Japan, expand overseas
	 Promotion of environmental communication	Contribute to local community	Plan progress (%)	Send instructors to guest lecture programs	Sent instructors to local children's centers	○	Send instructors to guest lecture programs	Continually enhance actions partnering with communities
		Raise environmental awareness	Plan progress (%)	Provide environmental education for employees, establish employee communication on environmental themes, encourage participation in environmental events	Provided training programs by job grade, organized CSR Talk Live, installed "green curtains"	○	Provide environmental education for employees, establish employee communication on environmental themes, encourage participation in environmental events	Continually enhance environmental training and information disclosure
	 Conservation of biodiversity	Promote actions based on biodiversity conservation guidelines	Plan progress (%)	Explore and implement new approaches/ initiatives	Conducted biodiversity surveys at company-owned sites, requested partner companies to conduct similar surveys	○	Continue biodiversity survey at company-owned sites, promote an action commitment declaration project for employees	Expand and enhance the content of Aichi Target actions
Environmental impact reduction	 Prevention of global warming	Reduce CO2 emitted from manufacturing	Basic unit per net sales	Reduce by 9% from fiscal 2013 (consolidated)	Reduced by 10% from fiscal 2013 (consolidated)	○	Reduce by 11% from fiscal 2013 (consolidated)	Reduce by 20% from fiscal 2013 (consolidated)
			Reduction rate against BAU (%)*2	Reduce by at least 12.3% from fiscal 2013 (consolidated)	Reduced by 15% from fiscal 2013 (consolidated)	○	Reduce by 15% from fiscal 2013 (consolidated)	Reduce by 15% from fiscal 2013 (consolidated)
		Reduce CO2 emitted from supply chains	Basic unit per transport volume*3	Reduce by 1% per year on five-year average (unconsolidated)*4	Increased 2% on average per year (unconsolidated)*4	×	Reduce by 1% per year on five-year average (unconsolidated)*4	Reduce by 1% per year on five-year average (unconsolidated)*4
	 Effective use of resources	Reduce discarded materials emitted from manufacturing	Basic unit per net sales	Reduce by 13% from fiscal 2013 (consolidated)	Reduced by 19% from fiscal 2013 (consolidated)	○	Reduce by 17% from fiscal 2013 (consolidated)	Reduce by 30% from fiscal 2013 (consolidated)
			Reduction rate against BAU (%)*2	Reduce by at least 11.6% from fiscal 2013 (consolidated)	Reduced by 18% from fiscal 2013 (consolidated)	○	Reduce by 19% from fiscal 2013 (consolidated)	Reduce by 20% from fiscal 2013 (consolidated)
		Promote resource recycling	Recycling rate	Maintain at over 99% (in Japan)	Maintained at 99.2% (in Japan)	○	Maintain at over 99% (in Japan)	Maintain at over 99% in Japan
		Manage and respond to water resources risks	Plan progress (%)	Conduct a third-party water risk survey	Conducted surveys at five sites	○	Continue water risk surveys	Strengthen actions by production base for evaluating risks and streamlining water use

Notes:

1. Self-evaluation standards for achievement level: ○: Target achieved ×: Target not achieved

2. Reduction rate against BAU (business as usual) indicates the percentage rate of emissions reduction resulting from implemented actions against a computed value for the hypothetical absence of the actions. By not incorporating the influence of foreign exchange movements and other factors, this indicator allows a direct grasp of the efforts by each site.

3. NGK basic unit per transport volume expresses in metric ton-kilometers the amount of crude oil equivalent fuel used.

4. Based on the computation criteria stipulated in the Act on the Rational Use of Energy

Creating Products that Contribute to the Environment

The NGK Group considers the provision of products and services that contribute to a better social environment to be one of its most important missions. For nearly a century since its founding, NGK has made use of accumulated technologies to develop and provide products and technologies that reduce burdens on the global environment.

Development and distribution of products contributing to environmental protection

Under the Fourth Five-Year Environmental Action Plan, initiated in fiscal 2016, NGK is committed to the development and distribution of products contributing to environmental protection as a top priority theme. We aim to achieve a growth in sales for products contributing to environmental protection of 60% compared to fiscal 2013 (and maintain the sales percentage for products contributing to environmental protection at over 50% of all products) by fiscal 2020, the final year of the Five-Year Plan. Currently, we market five products contributing to environmental protection, as detailed below, which meet internal criteria. Going forward, newly qualified products will be added to the list.

In fiscal 2016, we achieved sales growth of 26% from fiscal 2013, exceeding the annual target of 25%. In fiscal 2017, we will continue with these new development and distribution efforts to achieve the targets.

Sales growth for products contributing to environmental protection



* Figures are indexed with fiscal 2013 set at 100.

Development and distribution of products contributing to environmental protection

HONEYCERAM®

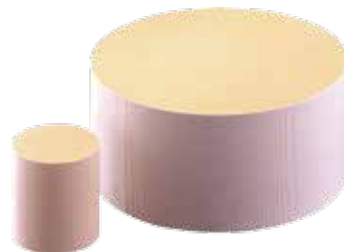
HONEYCERAM is a ceramic substrate for catalytic converters to purify harmful contents in the exhaust gases of automobiles. The products' honeycomb structure is effective for carrying the catalyst to detoxify harmful substances by chemical reaction. Since the launch of its commercial production in 1976, the product has been supplied all over the world for many years as an essential component for meeting automobile exhaust gas regulations, which have become increasingly more stringent and wider in scope. Production has grown to record cumulative shipment exceeding 1.4 billion units, while manufacturing bases have expanded to a current total of eight countries in Europe, North America, Asia and Africa. HONEYCERAM is an indispensable component of clean vehicles.

NGK's HONEYCERAM production eliminates a total of four million tons of NOx per annum*1, equivalent to double the annual NOx emissions in Japan*2.

NOx elimination: **4 million tons annually**

*1 Assumption based on installation of exhaust gas system in new cars that are not equipped with such systems

*2 Source: OECD Environmental Statistics (2012)

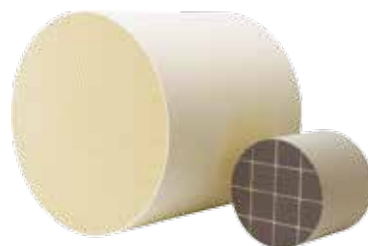


Diesel particulate filter (DPF)

The DPF is a porous ceramics filter used worldwide in the exhaust systems of diesel vehicles. With a pore structure, the filter ensures particulate matter (PM) is captured to purify the exhaust gas emitted from diesel vehicles. NGK is the only company to produce two types of DPFs based on both cordierite and silicon carbide. NGK's ceramics technologies support further developments for diesel vehicles.

The honeycomb structure, where the inlet and outlet of the through-holes are alternately sealed, enables the thin ceramic walls to efficiently capture PM while exhaust gas passes through.

Eliminates up to **99%** of PM



NOx sensors

NGK has developed the world's first in-vehicle sensor to measure concentrations of nitrogen oxides (NOx) in exhaust gas in real time with high precision. Specifically, the sensor is capable of measuring NOx concentration at the parts per million (ppm) level and can thus detect even very small amounts of the gases. The sensor supports precise control of the exhaust purification device used in diesel vehicles, which leads to a reduction in NOx emissions and helps to promote the use of clean diesel vehicles.



NAS[®] Battery

One of the most frequent uses of the NAS battery is for stabilizing the supply of renewable energy. While electricity from renewable sources, such as wind and solar power, is clean and, in principle, unlimited, its major limitation is that its output is affected by weather conditions, resulting in supply instability. The NAS battery resolves this limitation by storing excess renewable energy when generation exceeds demand, and supplying the stored energy to the grid when renewable output is low or demand is high. NAS systems enable the global growth of stable renewable energy.



NGK was the world's first manufacturer to commercialize the NAS battery megawatt-class storage system. Featuring a large capacity, high energy density, and long life, the battery can support the reliable, long-term stable supply of electricity. Also, the NAS system allows for a more compact housing compared with conventional lead-acid batteries.

NAS systems are the world's most popular
grid-scale battery storage

Installed at over **200** locations
worldwide with a **530,000** kW capacity

(as of June 2017)

Low-level radwaste treatment system

NGK has developed a wide range of systems to safely treat low-level radioactive waste generated from nuclear facilities and has supplied these systems to nuclear power stations and related facilities across Japan. The systems are developed utilizing NGK's proprietary treatment technology and high-performance filter-based dust collection technology.

We undertake a variety of engineering projects including design, manufacturing and site construction, and also provide a long-term maintenance service to deliver stable and high-level radioactive decontamination. NGK thereby provides essential support for the safe and stable operation of nuclear facilities. In addition, we focus on the development of new systems for treating various types of radwaste expected to be generated from the decommissioning and dismantling of aging nuclear reactors.



Importance of treating radioactive waste

When treating and disposing of waste generated in radiation controlled areas, including nuclear power stations, it is critically important to prevent the spread of radioactivity via the release of radioactive matter. This requires special treatment and disposal methods that differ from those for general waste.

Preventing Global Warming

The NGK Group strives to reduce CO₂ emissions, a major cause of global warming, setting reduction targets for the entire Group, including its manufacturing sites in and outside of Japan.

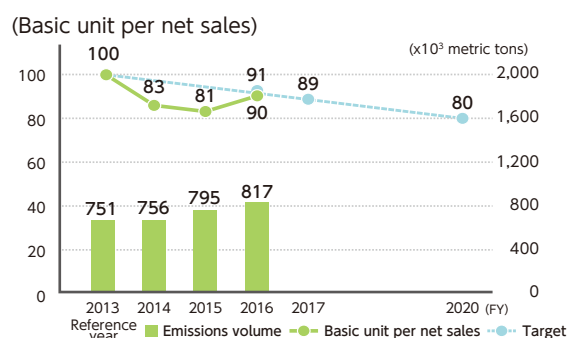
Reducing CO₂ Emissions from Manufacturing Activities

Toward the achievement of CO₂ emissions reduction targets set under the Five-Year Action Plan, we have achieved steady results by creating and implementing annual improvement plans in line with the business plan at each manufacturing site in and outside of Japan.

We achieved the fiscal 2016 targets to make steady progress under the Five-Year Action Plan. This accomplishment resulted from our successful efforts to carry out reduction measures as initially planned, despite the basic unit per net sales decreasing from the previous year due to a number of negative factors, such as the stronger yen, change in the product mix, and a new production line launched overseas. The reduction rate against BAU, an indicator newly introduced under the Fourth Action Plan to present more directly the effect of measures to reduce emissions from the manufacturing division, reached the 2020 target of 15%, backed by a significant improvement in the basic unit per production volume.

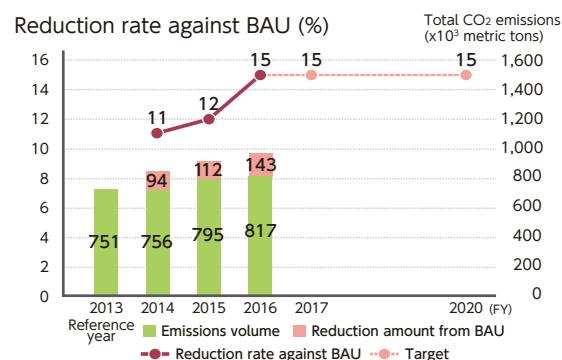
For fiscal 2017, we will exert additional efforts to achieve annual targets in order to overcome the temporary rise in CO₂ emissions expected owing to two extraordinary events, namely, the completion of a new large factory overseas and starting the mass production of new products. To address this challenge, we will strive to carry out reduction measures even more effectively across the entire manufacturing division while focusing on cost cutting efforts.

CO₂ emissions/basic unit per net sales (NGK Group)



* Basic unit per net sales calculated with the value in fiscal 2013 set at 100.

CO₂ emissions/reduction rate against BAU* (NGK Group)



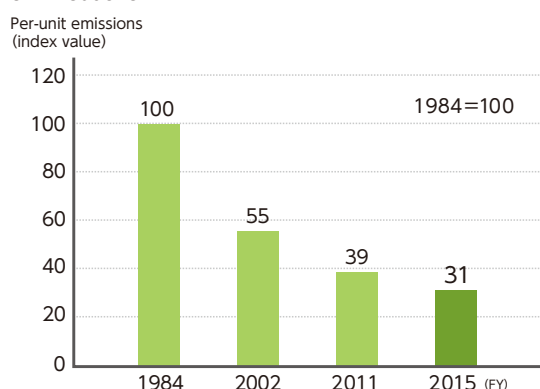
* Reduction rate against BAU: The percentage rate of emissions reduction resulting from implemented actions against a computed value for the hypothetical absence of the actions.

Adoption of Environmentally Friendly Production Processes

Through the introduction of highly-efficient equipment and the promotion of the collection and use of exhaust heat and improved production efficiency, the NGK Group makes efforts to reduce environmental impacts resulting from production. Also, our "Reformed Manufacturing Structures" aimed at enhancing competitiveness significantly contribute to the realization of eco-processes. We will create further advanced eco-processes through our "New/Reformed Manufacturing Structures".

(See the lower right graph for change in CO₂ emissions from continuous kilns, which constitute major production equipment at NGK.)

Change in CO₂ emissions from continuous kilns by the year of introduction



Measures to Reduce CO₂ Emissions and Effects

As it continues to expand overseas manufacturing, the NGK Group is particularly striving to raise manufacturing efficiency at its overseas sites in order to reduce the amount of CO₂ and discarded materials released from the Group. We have made steady progress through applying innovative processes and improvements to facilities and operations practiced in Japan to our overseas sites as well as promoting energy-saving activities for general-purpose equipment.

In fiscal 2016, these overseas initiatives achieved significant results, including an annual CO₂ reduction effect of 9,500 metric tons (a reduction rate of 1.2%).

Examples of initiatives aimed at reducing CO₂ emissions

Categories	Measures	Effects
Highly efficient manufacturing processes	Main production efficiency initiatives at overseas locations <ul style="list-style-type: none"> ▪ Introduction of innovative production processes ▪ Equipment improvements ▪ Management improvements 	CO ₂ reduction effect Domestic: 5,200 metric tons Overseas: 9,500 metric tons Of which
Group company energy-saving diagnostics	<ul style="list-style-type: none"> ▪ An English version of the voluntary energy-saving guidelines and a best practice catalog created and distributed to overseas sites ▪ Conducted in conjunction with local employees 	<ul style="list-style-type: none"> ▪ Production process improvements Domestic: 1,900 metric tons Overseas: 7,300 metric tons
General-purpose equipment energy-saving activities	Horizontally deployed main improvements <ul style="list-style-type: none"> ▪ Replacing boilers with more efficient models ▪ Eradicated air and steam leaks from plumbing ▪ LED lighting ▪ Eliminated wasteful air conditioning 	<ul style="list-style-type: none"> ▪ General purpose equipment energy savings Domestic: 3,300 metric tons Overseas: 2,200 metric tons

Energy-Saving Activities for General-Purpose Equipment through Cooperation between the Manufacturing Division and the Head Office

The NGK Group promotes energy-saving activities for its general-purpose equipment, such as lighting, air conditioners, boilers and compressors. In this, the head office plays a central function in terms of sharing know-how among different manufacturing locations, thereby achieving more efficient activities. In fiscal 2016, an energy center was established under the head office Engineering Department to direct energy-saving activities at the Group's manufacturing sites.

(1) Head office supporting energy-saving activities at overseas manufacturing sites

The head office Engineering Department has, over the years, sent personnel to overseas manufacturing sites to perform energy audits and, as necessary, help local staff develop and carry out effective energy-saving measures using the know-how gained from practices in Japan. These efforts have produced solid results at overseas companies, including NGK Insulators Tangshan. (See “Energy-Saving Activities at Group Companies.”)

(2) Creating and distributing a printed version of the energy-saving catalogue and guidelines

We have created a printed version (Japanese, English) of our energy-saving guidelines and catalog of best practices, both of which were previously available only in digital formats. Copies have been distributed to each manufacturing site in and outside of Japan to be kept handy at worksites for easy reference. This is expected to help enhance activities to reduce CO₂ emissions.



Promoting energy-saving activities globally using 100 best practices

Environmental Management Department
Toru Oka

We have issued the Energy-Saving Best Practices catalog. This catalog is a compilation of around 100 successful measures taken to address various issues, categorized under compressors, boilers, lighting, air-conditioning and other functions, specifically describing improvement methods and cost-effectiveness. In addition, the Energy-Saving Guidelines for General-Purpose Equipment have been created to provide instructions and advice for effective activities. Containing plenty of photos and illustrations, these easy-to-understand manuals have been well received by Group companies overseas as well as in Japan. They are also utilized by the Energy Center to give instructions and advice to Group companies. The two tools will be expanded by adding new practices, thereby facilitating energy-saving activities across the Group.



Energy-Saving Activities at Group Companies

NGK Insulators Tangshan Co., Ltd.

NGK Insulators Tangshan has introduced measures conducted at Japanese sites to reduce CO₂ emissions. Our efforts started with encouraging the daily practice of switching off lighting and other equipment when not in use, with the primary intention of raising employee awareness. We are continually working to improve activities with the help of the Komaki Site, which sends personnel to Tangshan every six months to perform an on-site inspection and suggest improvement plans.



NGK Ceramics Polska Sp. z o.o.

Since 2011, NGK Ceramics Polska has been focusing on improving processes for manufacturing SiC-based DPFs, its main product. Target areas include particularly energy-intensive calcination and drying processes, for which we have carried out various measures to reduce our CO₂ emissions. To further improve our performance, we will introduce new measures, including technologies provided by the Nagoya Site.



NGK Metals Corporation

NGK Metals is reducing CO₂ emissions by updating control systems and improving the operation of production equipment. Among various efforts, a particularly distinctive effect resulted from automating the control units of the oil circulation system for rolling mills. The automation eliminated unnecessary around-the-clock operation, a measure taken to address inefficient activation/deactivation processes, as well as simplifying complex manual processing. This change helped reduce electric power consumption as well as CO₂ emissions.

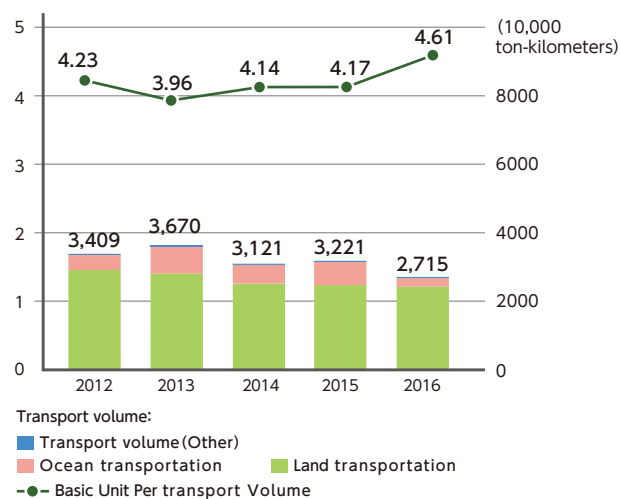


Reduction of CO₂ from Logistics

NGK works to reduce CO₂ emissions from logistics, setting a target of reducing the basic unit per transport volume by 1% year on year on a five-year average, as required by the Energy Saving Act. To achieve this target, we have implemented a number of measures, including raising loading efficiency and promoting a modal shift. For fiscal 2016, we recorded a 2.1% increase on a five-year average, reflecting the considerable lowering of the rate of marine transport, a mode emitting less CO₂, to address a change in the product mix.

Transport Volume / Basic Unit Per Transport Volume (NGK)

Basic Unit Per Transport Volume
(KL/100,000 ton-kilometer)



Starting to Report SCOPE 3 CO₂ Emissions

The NGK Group reports Scope 1 and 2 CO₂ emissions data for the Group overall and for NGK independently in relation to logistics (for shipment). In addition to this, NGK has begun to prepare Scope 3 data on a non-consolidated basis in response to emerging expectations for businesses to expand the relevant data reporting scope to include the supply chain.

Introduction of Green Power

As part of our corporate activities aimed at harmony with the environment, NGK began introducing Green Power (energy sources such as wind and solar power and biomass fuels) in 2002, earlier than any other company. The Green Power Certification System contract we signed with Japan Natural Energy Company Limited calls for them to generate two million kilowatt hours of wind power for us each year.

This accounts for about 60% of the power consumed annually at the NGK headquarters building, attaining a reduction effect of approximately 1,000 metric tons of CO₂ emissions per year (based on the fiscal 2016 results; CO₂ conversion factor: 0.532), or the annual amount of CO₂ absorbed by approximately 71,000 cedar trees.



Promoting Effective Use of Resources

To boost yield from manufacturing process improvements, NGK Group reuses in-process materials in an effort to curb discarded materials while also focusing efforts on recycling to reduce final disposal volumes to promote resource recycling.

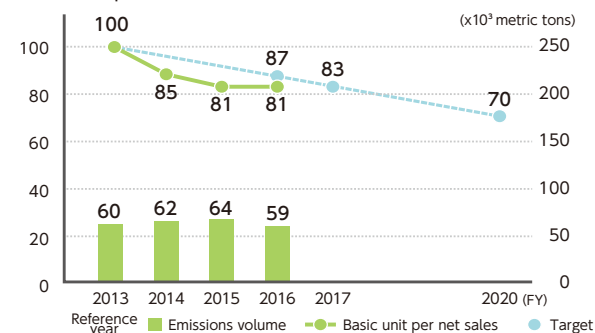
Reducing Discarded Materials from Manufacturing Activities

Similar to its efforts to reduce CO₂ emissions, the NGK Group works to suppress its generation of discarded materials by formulating and managing annual improvement plans to achieve the Five-Year Plan targets for the reduction of discarded materials.

In fiscal 2016, we exceeded the annual targets, securing the basic unit per net sales at the level of the previous year despite negative factors such as the unfavorable exchange rate affecting net sales and the launch of a new manufacturing line. This achievement resulted from the manufacturing division's outperforming efforts directed at an increased material utilization rate and production yield for each process and a higher recycling rate within processes, attaining a significant improvement from the previous year in the basic unit per production volume for many mainstay products. The reduction rate against BAU, which indicates improvement from the fiscal 2013 level, grew substantially from the previous year to 18%. In fiscal 2017, we will continue with these ongoing efforts, aiming to accomplish the Five-Year Plan targets.

Amount of discarded materials generated/basic unit per net sales (NGK Group)

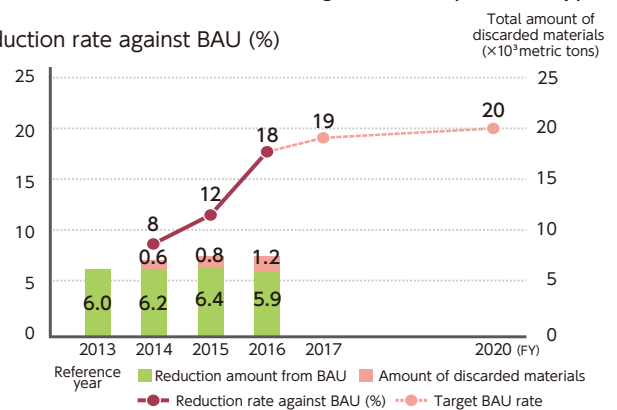
(Basic unit per net sales)



* Basic unit per net sales calculated with the value in fiscal 2013 set at 100.

Discarded Materials/Reduction Rate against BAU* (NGK Group)

Reduction rate against BAU (%)



* Reduction rate against BAU: The rate of reduction compared to the value if no efforts were made

Promoting of Resource Recycling

At the NGK Group, we promote resource recycling initiatives, pursuing rigorous sorting and separating practices and seeking out new methods of recycling.

In fiscal 2016, we focused particular efforts on NGK Electronics Devices, a consolidated subsidiary from fiscal 2014 that was included in the reporting scope from fiscal 2016, and Akechi Insulators, which was looking for new service providers. With assistance from NGK headquarters, both companies successfully carried out recycling programs while keeping treatment costs at a reasonable level, significantly decreasing the amount of landfill disposal. As a result, we have maintained a domestic recycling rate of 99% or higher since fiscal 2013, a target set under the Five-Year Plan. NGK, by itself, achieved zero landfill disposal, or a recycling rate of 100%. At overseas Group companies, where situations vary by country and region, suitable targets are set taking into account circumstances specific to each location. The overseas recycling rate has remained at around 90% based on calculations that exclude three companies that generate non-recyclable discarded materials, out of a total of 16 overseas manufacturing Group companies.

Overseas Group Company Implementation Examples

At overseas Group companies, waste material separation management is strictly enforced. Waste separation rules are posted where waste materials are stocked and color-coordinated containers are provided for each category of waste to avoid confusion.



NGK Ceramics Europe



NGK Ceramics USA

Risk management of water resources and Response

The NGK Group recognizes the management of water resources as an important issue for the company in achieving a sustainable society, and promotes relevant initiatives as described below.

Water Risk Evaluation

At the NGK Group, to ascertain water supply risks for each manufacturing site in and outside of Japan, we perform a simplified internal survey to assess water shortage risks based on the water supply capacity of rivers in the respective regions. In fiscal 2016, we newly introduced a third-party survey to provide advanced analyses for sites where concerns are identified from the internal screening. For water supply/demand risks, the external assessment employs a range of indicators, from the river's water supply capacity and seasonal fluctuations in groundwater flow to the reservoir capacity of dams and other systems, and produces a supply/demand forecast. The assessment also analyzes risks of flooding and water quality deterioration.

The external survey reported that no serious water risks have been identified at any surveyed site. We plan to expand the advanced assessment to all overseas bases. We will also work to keep up with related regulatory trends to ensure stable operations in the future.

Water Usage Guidelines

NGK created guidelines (an implementation status checklist) aimed at appropriate water usage and, in fiscal 2015, launched inspections to ascertain the efficiency of water usage at all manufacturing sites in and outside of Japan. Going forward, we will enhance these guidelines through internal and external case studies while encouraging efforts at each location to strengthen the operational structure against a future tight water supply.

Promoting efficient water use at Group companies

NGK Ceramics Mexico, S. de R.L. de C.V.

We strive to use precious water resources as appropriately and efficiently as possible, including the recycling of water used inside plants, at Group companies located in highly water-stressed regions. For example, at NGK Ceramics Mexico, manufacturing process waste water is filtered using reverse osmosis membranes and the recycled water is reused as coolant and boiler water or sprinkled on vegetation.



Filtration device using reverse osmosis membranes

Cooperation with Suppliers

Believing that it is important to address issues related to water resources throughout the supply chain, the NGK Group asks its suppliers to practice water resources-related risk management and efficient water usage via the CSR Procurement Guidelines, which includes relevant items. In fiscal 2016, a total of 723 companies, accounting for 99.4% of NGK's domestic supply chain, agreed to our request

Biodiversity Initiatives

The NGK Group recognizes the conservation of biodiversity as an important issue for the company in achieving a sustainable society, and promotes relevant initiatives as described below.

Activities Aimed at Achieving the "Aichi Target"

The NGK Group has been pushing forward with activities pursuant to "Aichi Target" international goals for biodiversity agreed upon at the 10th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10). In fiscal 2016, we prioritized relevant activity areas and set two new ones: biodiversity survey of company-owned sites and cooperation with suppliers.

Aichi Target		NGK Activities
Target 1 Spread awareness	People are aware of the value of biodiversity and actions to be taken to conserve it.	Employee environmental education, next-generation education, cooperation with suppliers
Target 4 Sustainable production and consumption	Stakeholders at all levels have taken steps to achieve sustainable production and consumption.	Expanding sales of products contributing to environmental protection, CO ₂ reduction, effective use of resources, cooperation with suppliers
Target 5 Inhibit loss of all natural habitats	The rate of loss of all natural habitats, including forests, is at least halved, and degradation and fragmentation is significantly reduced.	Voluntary employee participation in forestation and other environmental conservation activities, biodiversity survey/appropriate control of company-owned sites
Target 8 Control pollution by chemical substances, etc.	Pollution from use of chemicals, including fertilizers and agrichemicals, has been brought to levels that are not detrimental to the ecosystem.	Chemical substance management, management of exhaust and wastewater, expanding sales of products that prevent air pollution, cooperation with suppliers
Target 9 Alien species	Invasive alien species are controlled or eradicated.	Biodiversity survey/appropriate control of company-owned sites
Target 11 Conserve protected areas	At least 17% of terrestrial and inland water areas and 10% of coastal and marine areas are placed under appropriate conservation management.	Voluntary employee participation in forestation and other environmental conservation activities
Target 14 Ecosystem services	Ecosystems that provide essential natural services are restored and safeguarded.	Voluntary employee participation in forestation and other environmental conservation activities, biodiversity survey/appropriate control of company-owned sites

Notes:

1. Source: "Guidelines for Action by the E&E Industries concerning Biodiversity Conservation" (The Biodiversity Working Group, The 4 Electrical and Electronic Industry Associations)

2. NGK activities commenced in fiscal 2016 are marked in red.

Cooperation with Suppliers

We have added to the CSR Procurement Guidelines items pertaining to water resources-related initiatives and biodiversity conservation initiatives. We have won the almost full agreement of our suppliers in Japan to comply with the expanded Guidelines.

Biodiversity Survey of Company-owned Sites

NGK performed a biodiversity survey of a site owned for welfare purposes in Midori-ku, Nagoya City. Major findings include the identification of 23 avian species and 80 botanical species, with no rare or non-native species requiring urgent protective or removal actions detected. This indicates that the site is appropriately managed.



Environmental Education and Communication

In accordance with NGK's Core Policy on the Environment, we conduct ongoing environmental education and awareness activities through the establishment of action guidelines for educational and publicity activities aimed at increasing employee environmental awareness. Our aim is to deepen the understanding of environmental problems among each employee to inculcate an awareness of environmental conservation activities.

We also provide on-site classes at elementary schools and conduct environmental events and provide information to a wide range of stakeholders including the next generation to increase environmental awareness.

Participating in Local Environmental Education

Offering Guest Lectures at Elementary Schools and Children's Centers

NGK sends instructors to participate in the guest lecture program for youth hosted by the Environmental Partnership Organizing Club (EPOC) every year. In fiscal 2016, the program was held at Yatomi City Tobu Children's Center (Aichi Prefecture), where our instructors offered a laboratory to teach how soil can purify water under the theme of water resources and usage. NGK provides ongoing environmental education programs, including its participation in the guest lecture program, which have been attended by a cumulative total of 2,100 participants.



Employee Volunteers Teaching Parent-Child Insect Classes

At Tsuruma Park in Nagoya's Showa Ward, NGK employees teach Summer Break Insect Observation classes for children and their parents (sponsored by the Nagoya City Greenery Association), introducing the various names and the ecosystem of insects living in the park. In August 2016, volunteer employee instructors were commended by the Nagoya Green Society for contribution to the local environmental education project, receiving a certificate of appreciation.



Raising Environmental Awareness

Environmental Education inside the Company

To familiarize employees with the aims and content of NGK's environmental policies, we conduct position-based training related to environmental management systems. We also provide two different levels of environmental training: specialized programs targeting personnel in charge of environmental management and general programs for the entire workforce.

Promoting the Acquisition of Qualifications

To continue conducting environmental conservation activities in compliance with laws and regulations, we make an effort to develop and increase the skills of legally qualified personnel through support in each department for the acquisition of environment-related legal qualifications targeting managers engaged in pollution prevention required for the management of each area.

We systematically educate Qualified Energy Managers in the Engineering Department, Special Controlled Industrial Waste Managers and others involved in waste-related activities in the Environmental Management Department and other business divisions.

Qualifications Acquired as of March 31, 2017 (NGK)

Pollution Control Managers			Qualified Energy Managers	Special Controlled Industrial Waste Managers	Waste Disposal Facility Technical Managers
Air	Water	Noise/Vibration			
71	84	27	21	14	4

Support for Acquisition of Eco Test Certification

NGK supports employees sitting for the Eco Test* in an aim to ensure each employee acquires a strong environmental awareness and a wide range of knowledge with respect to the environment. Our Board of Directors are also actively acquiring certification.

Support provided by NGK includes lending reference materials to those who require them and providing test-related expenses. To date, a total of 590 people, more than 10% of NGK (alone) employees, have passed the test. In fiscal 2016, 116 passed the test.

* The Eco test is an environmental and social certification test administered by the Tokyo Chamber of Commerce and Industry focused on a wide-range of environmental issues.

NGK Eco Point System

NGK promotes its Eco Point System in an effort to contribute to regional environmental improvement. Employees earn points for environmental behavior conducted at work and in the home, a portion of which is converted into cash and donated to local government-managed funds (environmental funds). In addition to the company's three sites in Nagoya, Komaki and Chita and the Ishikawa Plant, the System was newly introduced to the Tokyo Main Office and Osaka Branch and sales offices in fiscal 2016.

The First Recognition of Top-Ranked NGK Eco Point Collectors

The NGK Eco Points earned by individual employees through their engagement in environmental activities are aggregated on an annual basis for each site (Nagoya, Chita, Komaki, Ishikawa), and top scorers are commended every year. For earned points, employers select from two options: exchange for Eco goods or donate to local funds. The number of employees choosing donation is growing every year, indicating increasing environmental awareness.



Voice of one of the top NGK point earners

Electrical Insulator Division,
Power Business Group

Koichi Kato

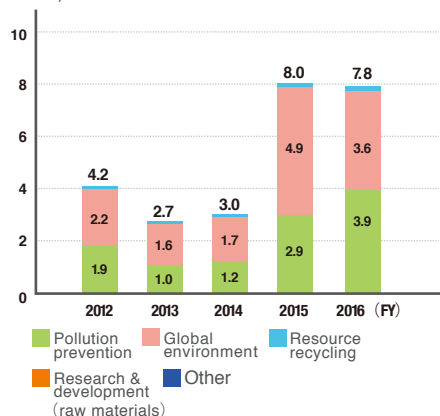
I am happy to have been selected as a fiscal 2016 award recipient. My points earned for this year largely relate to privately undertaken home building, specifically, selecting energy-efficient structures and materials, employing what basically amounts to a solar-powered all-electric home system and purchasing energy-saving home appliances. In fiscal 2017, I will aim to be an award recipient again, but for less costly efforts.

Environmental Accounting

As an important index of environmental management, NGK has begun conducting environmental accounting and announcing the results. In addition to announcing the costs of environmental conservation (capital investment, expenses), the economic benefits of environmental accounting, and the cost effectiveness of environmental accounting, information on the environmental efficiency of CO₂ and discarded materials has been added since FY2007.

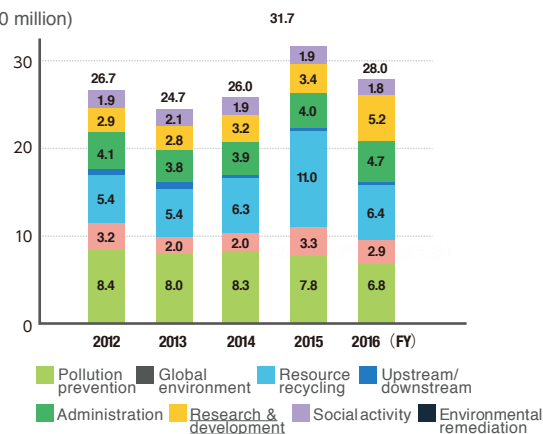
Capital Investment (NGK and Domestic Group Companies)

(¥100 million)



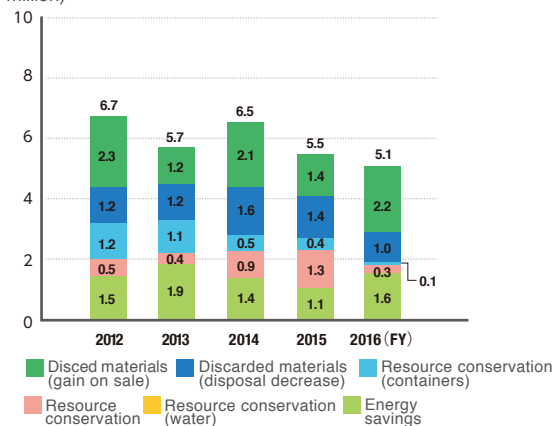
Expenditures (NGK and Domestic Group Companies)

(¥100 million)

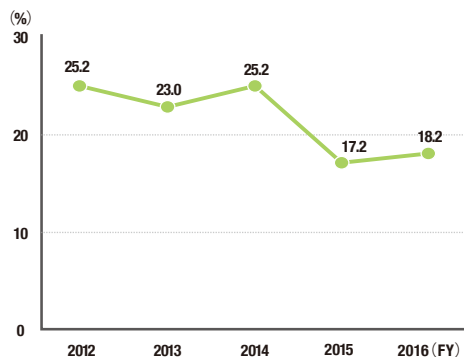


Economic Benefits (NGK and Domestic Group Companies)

(¥100 million)

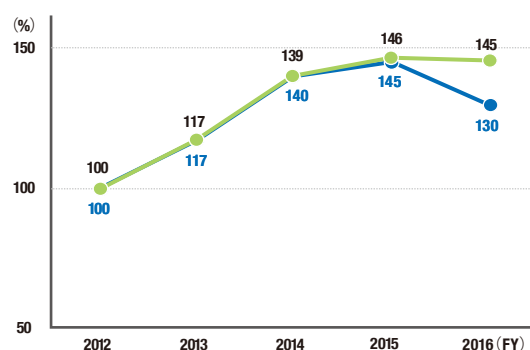


Cost-Effectiveness (NGK and Domestic Group Companies)



$$\text{Cost-effectiveness} = \frac{\text{Benefits}}{\text{Costs}}$$

Environmental Efficiency (NGK and Domestic Group Companies)



$$\text{CO}_2 \text{ eco-efficiency} = \frac{\text{net sales}}{\text{CO}_2 \text{ emissions}}$$

$$\text{Discarded materials eco-efficiency} = \frac{\text{net sales}}{\text{Total discarded materials generated}}$$

The above charts do not include data for NGK Electronics Devices, Inc. and other subsidiaries, depending on the target year: specifically, from FY2012 to FY2015 for charts (1) to (4); and in FY2012 for chart (5).

Coordination with Local Communities and Promotion of Contribution to the Society

The NGK Group is concerned about social issues in all nations and regions. We engage in social contribution activities in response to needs in each region in an aim to become a corporate citizen trusted by local communities.

Basic Approach

The NGK Group promotes social contribution activities based on the following concepts.

Focus of Activities

Centered on people and education, the environment and community involvement.

Company Activities and Employee Involvement

- NGK provides employees with opportunities to experience activities.
- NGK proactively encourages individual activities to engender employee satisfaction and a sense of confidence in the company.

Information Disclosure

NGK promotes an understanding of activities and provides activity information to inculcate a social contribution mindset among employees.

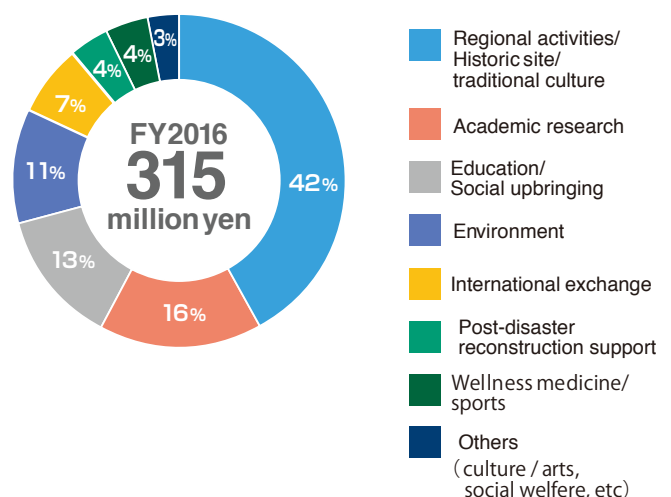
Social Contribution Activity Promotion System

At the NGK Group, social contribution activities are promoted under the leadership of the Social Contribution Subcommittee, which is chaired by the general manager of the General Affairs Department and reports to the CSR Committee.

NGK collects reports from Group companies in and outside of Japan on their activities. In fiscal 2016, a total of 88 reports were received.

Social Contribution Activity Promotion Status

	FY2013	FY2014	FY2015	FY2016
Social contribution expenditures	348 million yen	331 million yen	346 million yen	315 million yen
Number of social contribution programs	9	8	9	10
Number of collaborations with NPO/NGO	3	5	4	4



Provision of Scholarships and Living Assistance to International Students

NGK conducts ongoing support activities launched in 1997 with the establishment of the NGK Foundation for International Students. The Foundation provides housing and scholarships to International students visiting Japan with the aim of contributing to human resource cultivation that fosters the development of an international community. These activities were launched as a way of expressing gratitude for the warm support extended by regional communities around the world to NGK's expatriate employees and their families when NGK first advanced into the global market back in the 1930s. Our activities are conducted in the hope that the students will feel glad that they came to Japan and develop a fondness for the country. In fiscal 2016, we provided housing to 40 students from eight countries, and scholarships (non-repayable) to 20 students from 11 countries.

 For more details:

> The NGK Foundation
for International
Students

[http://www.ngk.co.jp/english/
csr/philanthropy/](http://www.ngk.co.jp/english/csr/philanthropy/)



NGK International House, housing for international students

Exchange between Supported Students, Communities and Employees

NGK organizes a variety of events and programs to provide opportunities for grassroots international relations between supported students, regional communities and employees. Major projects include language classes taught by international students, starting 2000, and cross-cultural exchange meetings where international students introduce their native countries, from 2006.

In fiscal 2016, we held Chinese and Korean language classes and 12 cross-cultural exchange meetings, for each of which 12 students from different countries took turns playing host. In these events, participating students and local residents enjoyed lively interactions. The cumulative total number of participants reached 920 in fiscal 2016.

Number of participants in international programs

	Chinese language class	Korean language class	Cross-cultural exchange
International students	4	4	20
Local residents	24	24	23



Malian cultural exchange meeting
(September 2016)



Indian cultural exchange meeting
(October 2016)

Communication after Support Ends

To maintain relationships with supported International students after support ends, each year, we send out a New Year's greeting that includes a company status report to former participants and supported students. We also distribute "NGK International Friendship Club Members Cards" that include our contact information to International students after support ends. In fiscal 2016, we sent New Year's greetings with updates on the Foundation and NGK to around 300 students who have received support in the past.

Social Contribution Activities in Collaboration with Regional Communities and NPOs

Aiming to be a corporate citizen trusted by regional communities, NGK collaborates with regional communities and NPOs to engage in social contribution activities in response to regional needs. In addition, employee volunteers from NGK Group companies in Japan and around the world conduct a variety of social contribution activities rooted in their regional communities.



For more details:

> Read more about social contribution activities conducted by NGK from:

<http://www.ngk.co.jp/csr/social/stakeholder/activity/>

Social Contribution Activities by NGK

Support to areas hit by the Kumamoto Earthquake

For early recovery of power systems infrastructure in areas hit by the Kumamoto Earthquake, the entire NGK Group helped to manufacture and supply insulators and other related equipment. A monetary donation of 10 million yen was also offered to support disaster victims and regional restoration. In addition, donations were collected from employees, to which the same amount of money was added by NGK to offer matching gifts. Furthermore, food supplies and mineral water stockpiled at NGK Headquarters were delivered to the disaster-hit areas via NPO Second Harvest Japan.



Donating to an NPO from our emergency supplies

Offering workplace experience to junior high school students from Rikuzentakata City

In January 2017, NGK took part in the workplace experience program for junior high school students from Rikuzentakata City, Iwate Prefecture sponsored by the Nagoya City Board of Education. We welcomed two students at NGK's AC Plant and invited them to try setting in and removing from a kiln an in-process HONEYCERAM product. This program has been launched under a friendship agreement concluded in 2012 between the Boards of Education of Nagoya City and Rikuzentakata City, under which students in each city visit each other every year.



Cooperation to Handa Eco Tankentai (parent-child environmental site tour)

NGK provided cooperation to a local environment-themed fieldwork program for families. It is hosted by Handa City to provide children with opportunities to visit public and business sites that focus on environmental efforts. We welcomed a total of 20 children and their parents to our Chita Site and gave them a tour around the insulator plant. Young and adult participants alike showed particular interest in the process of insulators gradually being formed on spinning wheels.



Social Contribution Activities Conducted by Group Companies in Japan

Akechi Insulators participating in a local historical pageant as a volunteer

In May 2016, five volunteer employees from Akechi Insulators, Ltd. participated in the 44th Mitsuhide Festival, a samurai pageant held to glorify the popular warlord born in the region. In the event held around Nihontaishomura, a theme park in Ena City, Gifu Prefecture, three out of the five participants paraded down the street in costume, asking for cultural donations and selling lucky charms. The remaining two (on behalf of the company, which is a member of a local traffic safety association) joined the pedestrian traffic control force stationed along the parade route.



Soshin Electric collecting stamps to support women's empowerment initiatives

In August 2016, at Soshin Electric Co., Ltd., 13 female employees at the Tokyo Main Office's sales and administration divisions organized a donation campaign in support of the CITY OL-AID volunteer initiative hosted by City Living (informational magazine published by Sankei Living Shimbun Inc.). In the campaign, the volunteer employees worked to collect used stamps from in-house resources, setting up collection boxes and advertising the campaign within the company. Their efforts resulted in the collection of 779 g of used stamps in aggregate, which were sent to the magazine publisher. Collected stamps are sold to philatelists around the world, and resulting proceeds are contributed to fund childbirth assistance and women's empowerment activities in developing regions.



NGK Okhotsk participating in the Okhotsk Abashiri Marathon Race as a volunteer group

In September 2016, a group of employees from NGK Okhotsk, Ltd. participated in the 2016 Okhotsk Abashiri Marathon Race to compete in and give assistance to the local sports event. On the day of the race, about 2,000 runners, including those from Okhotsk, competed in fine weather along the scenic course, which includes views of the Okhotsk Sea and the World Heritage listed Shiretoko Mountains, and six volunteer employees assisted the race operation by guiding runners in the intended direction in the middle of the course.



Social Contribution Activities Conducted by Overseas Group Companies

Siam NGK Technocera making donations to flood victims in southern Thailand

Siam NGK Technocera Co., Ltd. (SNTC) made donations to support victims of the massive flooding that hit southern Thailand in January 2017. In a bid to support victims, SNTC's volunteer workers organized an internal donation, collecting monetary contributions as well as medical and daily supplies and sending them to the responsible government agency.



Cherry tree planting to create a local scenic spot in Suzhou, China

NGK Ceramics Suzhou Co., Ltd. hosts a cherry tree planting campaign in Suzhou Taihu National Wetland Park every year. In fiscal 2016, its fifth year, the campaign was held on April 13, attended by 48 volunteer employees who worked to plant a total of 240 cherry seedlings. The company will continue engaging in local contribution activities.



Participating in a health-themed walk campaign in Virginia Beach

A group of employee volunteers from NGK-Locke Polymer Insulators (Team NGK) participated in a walk campaign in Virginia Beach. The event was hosted by the American Cancer Society to raise public awareness of the importance of mammography screening for early detection. As part of the campaign, a fundraising drive was held in the company ahead of the walk, collecting a total of more than 1,000 dollars.



Support for Volunteer Activities by Employees

The NGK Group proactively supports activities and provides information to create opportunities for employees to participate in volunteering outside the company.

Science Volunteer Activities

As a manufacturer, NGK engages in various activities to spark children's interest in science. In 1997, we started running in a science magazine a regular feature entitled NGK Science Site: Experiments at Home Series. We also launched a related webpage to post details of the featured experiments supervised by experts on a monthly basis. Each experiment is designed to excite children's interest in science by making use of readily available resources, such as PET bottles, batteries, vegetables and seasonings. Since 1998, the experiments introduced on NGK Science Site have been demonstrated at the Youngsters' Science Festival in Nagoya (hosted by the Japan Science Foundation) and other regional science events. Every year, NGK employee volunteers set up a booth to present a science lab. To date, a rough total of 40 sessions have been presented, attracting a cumulative total of 20,000 children and their parents.

 For more details:

> NGK Science Site:
<http://site.ngk.co.jp/>

TOPIC

NGK Science Site receives an advertising award

NGK Science Site was given a gold prize in the magazine ad section at the 38th Japan BtoB Advertising Award (2017). The award was granted in recognition of the inspiring illustrations and descriptions of science and the design of experiments that use familiar household items. We will continue this activity to introduce new easy-to-work-on science and craft projects.

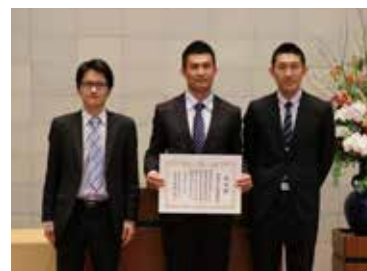


Cleanup Activities around Company Sites

As a member of various regional communities, the NGK Group proactively participates in cleanup activities around its sites. In fiscal 2016, these activities were conducted at all NGK sites and Group companies.

Also, the NGK Worker's Union has participated in cleanup activities around NGK headquarters and a nearby park for the past 25 years in cooperation with NGK Yu-Service Co., Ltd., and NGK Building Services, Ltd. In fiscal 2016, the activity was organized in Jinguhigashi Park, with a total of 556 employees participating in three sessions.

In March 2017, we were commended for these efforts with an award from the Nagoya City Urban Beautification Association. We received a certificate of appreciation from Nagoya City Mayor Takashi Kawamura, who also chairs the association.



Participating in the Fukushima Sunflower Project

The NGK Workers' Union participated in the Fukushima Sunflower Project. Participants become “foster parents” to sunflowers by purchasing seeds, growing flowers from them, harvesting the seeds, and sending the seeds back to the project organizer. The project aims to help the people of Fukushima connect with the rest of the world, make sure the earthquake disaster is never forgotten, and create employment in the prefecture, including for those with intellectual disabilities. In 2016, sunflowers came into full bloom in the “foster parent” garden beds expanded from the previous year at NGK's Nagoya Site, producing a harvest of a 10.6 kilograms of seeds compared with 7.4 kilograms for 2015.

In June 2016, the union held a disaster preparedness seminar inviting the director of Team Fukushima, the NPO that hosts the Fukushima Sunflower Project. The event provided the attendants, totaling 83, with a meaningful opportunity to directly communicate with disaster victims, helping them in planning future support activities.



Interaction with Regional Communities

The NGK Group engages in dynamic interactions with local residents through opportunities such as plant tours and regional events, as well as through opportunities for direct dialogue, making an effort to incorporate the ideas and opinions received in Group business activities and CSR activities

Plant Tours

Interactions with Children and Local Residents

NGK attempts to interact with regional communities through plant tours to deepen interest in and understanding of NGK and manufacturing. In fiscal 2015 we conducted six plant tours at three sites for a total of 152 participants consisting of elementary school students and local residents.

Plant Tours in Fiscal 2016 (NGK)

	Tours	Participants	Details
Chita Site	2	79	Hosted a plant tour for local residents. Hosted a plant tour for families (Eco-themed tour) as part of the Handa City Environment Department-sponsored program.
Komaki Site	3	39	Hosted student visitors from Aichi Prefectural Kasugainishi Senior High School and Aichi Prefectural Seto Pottery Senior High School. Hosted a site tour for ward mayors and officers of the regional.
Ishikawa Plant	2	101	Hosted student visitors from Ishikawa Technical Senior High School. Hosted visitors from the NGK Safety Liaison Network.

Plant Tour for Local Residents at the Chita Site

In November 2016, NGK hosted a plant tour at its Chita Site to create an opportunity to interact with local residents, who are important stakeholders for the company. Following an overview of NGK given by Shuhei Ishikawa, the director and senior vice president of the company and general manager of the Chita Site, participants were taken around to see the rolling process at the metal plant and the production and inspection processes at the insulator plant. In a Q&A session held at the end of the tour, we answered various questions from participants about efficiency enhancing activities at manufacturing sites and pricing for insulators. The tour helped the local residents better understand NGK's production and business activities.



The tour was attended by 61 local residents



Visit to the insulator plant

NGK Summer Festival celebrating the 50th year at Komaki Site and the first-ever launch at the Ishikawa Plant

NGK holds the NGK Summer Festival at its Komaki Site in July every year. In fiscal 2016, marking its 50th year, the event drew local residents, employees and their families, totaling 2,200 people. President Taku Oshima also appeared dressed in yukata to offer a word of thanks to visitors for their continued support of the company. In August, the Ishikawa Plant hosted its first ever Summer Festival in celebration of the fifth anniversary of the plant opening in 2011. The event attracted a total of 800 visitors from the local community and the company, namely, employees and their families.



NGK and Energy Support Signing Naming Rights Agreements

In 2017, NGK renewed its naming rights agreement for Nippongaishi Sports Plaza (including Nippongaishi Hall, Nippongaishi Arena and Nippongaishi Forum, all located in Nagoya City, Aichi Prefecture), which was concluded in 2007. Also, in April 2016, Energy Support Corporation signed a naming rights agreement for Inuyama City Gymnasium (Inuyama City, Aichi Prefecture). Under this agreement the facility was named the “Energy Support Arena,” reflecting the sponsor’s wish to contribute to the sound development of local communities through promoting athletic activities. The NGK Group will pursue these sponsorship projects for public properties as part of local contribution activities.



Collaboration on Environmental Education

See the “Environmental Education and Communication” section.

 For more details

> Environmental Education and Communication

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Communications with Stakeholders

Through various opportunities, the NGK Group makes an attempt to communicate with customers, suppliers, regional citizens, employees and a variety of stakeholders in an effort to build and maintain a trusting relationship.

System for Making Use of Customer Feedback in Management

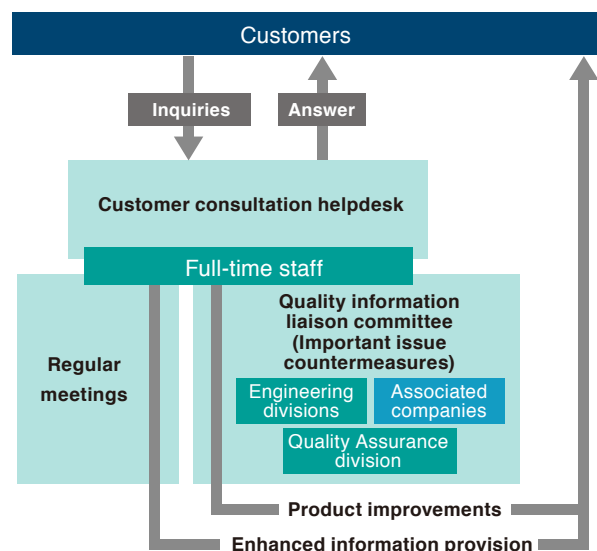
Establishment of a Customer Consultation Helpdesk

As the top industrial ceramics manufacturer in the industry, NGK makes use of its accumulated technologies to manufacture and sell C1 home-use water purifiers and promotes the creation of mechanisms for reflecting customer feedback.

We set up an C1 inquiry counter in-house for customers only to create a mechanism for reflecting customer feedback in our products and services.

During fiscal 2016, we received around 10,000 inquiries via phone and e-mail on various issues, including: installation methods, product performance, requests for catalogs and requests for repair and installation.

We also displayed C1 at the Chubu Electric Power Group Family Fair in May, introducing the wonderful features of C1 to customers directly.



Customer Cards

We also respond to various customer feedback provided on customer cards sent from the customers who purchased the C1.

Information on the customer card is added to a list and then used to improve the service we provide for our customers, such as notifying them when it is time to replace the cartridge.



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C1 Celebrating the 15th Anniversary

C1 celebrates its 15th anniversary in May 2017. We developed this product out of a desire to use NGK's ceramic technologies to contribute to general households.

There are many reasons behind the longevity of the product, including our efforts to support its excellent quality and to sincerely listen to and respond to the concerns of our customers.

We will continue to value communication with customers, as well as to improve our technologies and quality as we strive to deliver products that make our lives better.



Distributing the Latest Information on CSR Activities on the CSR-Web

The CSR-Web was established on our intranet to introduce Group CSR initiatives with the intent of inculcating an awareness of CSR among all NGK domestic Group. In addition to sharing CSR topics with all employees and presenting objectives for each area, information on the site is regularly updated to include CSR Committee meeting discussions and all, in principle, Q&A between senior management and general employees who attend the CSR Talk Live event in an attempt to provide a wealth of content only available on this website.

In fiscal 2016, we started publishing a monthly Compliance Newsletter, introducing and explaining familiar themes with four-frame comics.



Related information:

> Compliance Newsletter

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TOPIC

Site Visits by Management

As part of the commitment to bottom-up management, President Oshima of NGK visited various sites in order to hold direct discussions with employees. Such sites include departments at the head office, business units and sales offices, as well as production bases across the world.

These visits served as unique opportunities to identify and address the challenges at each site. Comments made later by employees who spoke with the president include, "His visit has made me feel a sense of unity with the NGK Group" and "Direct discussion with the president has inspired me."



CSR Talk Live (Dialogue with Employees Aimed at CSR Practices)

To deepen employees' understanding of CSR and its initiatives, the NGK Group conducts "CSR Talk Live," a talk event facilitating direct discussion with senior management held at all domestic sites since fiscal 2009.

In fiscal 2016, a total of nine events were held at eight locations, including Group companies, and were attended by about 330 employees. At the Talk Live event, the Senior Vice President and the CSR Committee Chair talked about CSR initiatives by the NGK Group, stressing the importance of CSR. Then, representatives from the Environmental Management Department and CSR Promotion Office detailed the NGK Report 2016 (internal edition), using specific examples.

The employees who attended the event asked questions and made comments on various initiatives, such as work-life balance, CSR and helplines. Moreover, a new Talk Live event titled "CSR lessons from our corporate history" was also held, with attendance open to the public. This proved a wonderful opportunity to think about and discuss the spirit that has led to the current CSR initiatives and to deepen our understanding of it by learning about the early history of NGK and exploring new perspectives.



CSR Talk Live events held in FY2016
(Location, Date, No. of Participants)

NGK Metex	October 17: 30
Ishikawa Plant	October 25: 23
NGK Kilntech, NGK Chem-Teck	October 31: 43
NGK Okhotsk	November 10: 31
Nagoya Site	November 17: 50 November 18: 51 November 21: 21
Chita Site	November 30: 47
Komaki Site	October 20: 49

Cumulative total number of
participants since launch
(2009 to 2016) :

3,339

CSR Talk Live Questions and Answers in the CSR Talk Live (Excerpt)

Corporate governance: Whistle-blowing System

Q Would you say the helpline has been used as expected?

A About 70 to 80% of the inquiries/reports are about interpersonal relations at workplaces. Each case is carefully handled and resolved. Since the protection of whistle-blowers is ensured, please make sure to report any suspected rule violations.

Human resources: Diversity

Q You mentioned diversity within NGK. Do you have any specific activity scheduled?

A We are planning to actively host non-Japanese employees temporarily assigned from overseas Group companies according to the needs at each division. We will also promote recruitment of people with disabilities.

CSR: Management

Q You mentioned that you would apply international standards. Yet, I'm not clear on what these standards are.

A We need to think about whether we are violating the broader and global rules and standards rather than determining things based on narrower standards, such as those applicable within the company and Japan. The 10 principles under the Global Compact, which the NGK Group signed in April 2015, serve as one of the current global concepts and standards.

Environment: Environmental Products

Q I now understand NGK's environmental initiatives, but I would like to know about their level of contribution to society.

A In terms of the environmental contribution through products, I consider it to be at quite a high level. The products that directly contribute to environmental preservation account for 60% of our total sales. We will aim for an even higher level by further highlighting our efforts for conserving biodiversity.

Earnings Presentations for Suppliers

NGK held an earnings presentation meeting for major suppliers in June 2016, attended by 238 participants from 131 companies.

In the meeting, the director in charge of purchasing explained the company's plan to expand production and asked the partner companies for continuous support and cooperation to a greater extent. This was followed by the finance director's briefing on NGK's business results, and an explanation by the purchasing director about activities to address issues associated with promoting global production and CSR procurement throughout the supply chain.



Suppliers invited to the earnings presentation.

Ongoing Operation of the Supplier Helpline

In 2008, NGK established the supplier helpline system. Receiving consultation via email, fax and telephone, we make an effort to respond with solutions quickly.

 For more details:

> **Supplier Helpline**

<http://www.ngk.co.jp/english/about/procure/index.html>

Visiting Individual Suppliers in Japan and Overseas

In order to ensure procurement from the most appropriate suppliers, NGK visits individual suppliers in Japan and overseas to conduct on-site audits, evaluating their QCD (quality, cost and delivery) performance in a fair and equitable manner. In fiscal 2016, we visited a total of 123 suppliers, consisting of 21 new and 102 existing companies. Following the visit, we explained audit results to each company, and asked them to conduct improvement measures in underperforming areas. Through these activities, we strive to strengthen our QCD management system as well as to communicate with our suppliers to forge a relationship of mutual trust with them.

Corporate Governance

NGK is conducting measures to expand and strengthen its corporate governance to increase corporate value with the intent of becoming a company trusted by all its stakeholders.

Reference URL

> Corporate Governance Report

http://www.ngk.co.jp/english/csr/pdf/governance_en.pdf

Basic Policies

Guidelines for Corporate Behavior and Thorough Observance of Behavioral Guidelines

To ensure appropriate operations and transparent management, NGK has set its sights on establishing and maintaining an organization capable of swiftly responding to changes in the business environment, and a fair and open management system emphasizing the interests of shareholders. These components make up NGK's basic approach to corporate governance. To put this approach into practice, NGK has chosen a corporate governance structure anchored by a Audit & Supervisory Board. In addition to the General Meeting of Shareholders, the Board of Directors and the Audit & Supervisory Board, NGK corporate governance includes the Executive Committee and several other committees established to assist the president in management decision-making. These bodies help to enhance governance efficacy by deliberating and reviewing important matters.

In recognition of needs to execute swift and optimal decision making and respond promptly to changes in the operating environment, NGK introduced executive officer system, thus separating the management decision-making and supervision functions from business execution functions, and clearly defining the responsibilities of both.

Furthermore, to strengthen the supervision and monitoring functions of the Board of Directors, major committees among those tasked with mitigating the various risks surrounding NGK are obligated to report to the Board of Directors, and NGK has established a new committee scheme, including a Nomination and Compensation Advisory Committee, a Corporate Council, a Conference of Outside Directors and Outside Auditors & Supervisory Board Members and a Business Ethics Committee, etc., to ensure the effectiveness of the Corporate Governance Code.

NGK will continue working toward developing a more comprehensive corporate governance scheme.

Reference Page

> Nomination and Compensation Advisory Committee, Corporate Council, Conference of Outside Directors and Outside Auditors & Supervisory Board Members, Business Ethics Committee

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Reference Page

> Corporate Governance Scheme

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Corporate Governance Enhancement

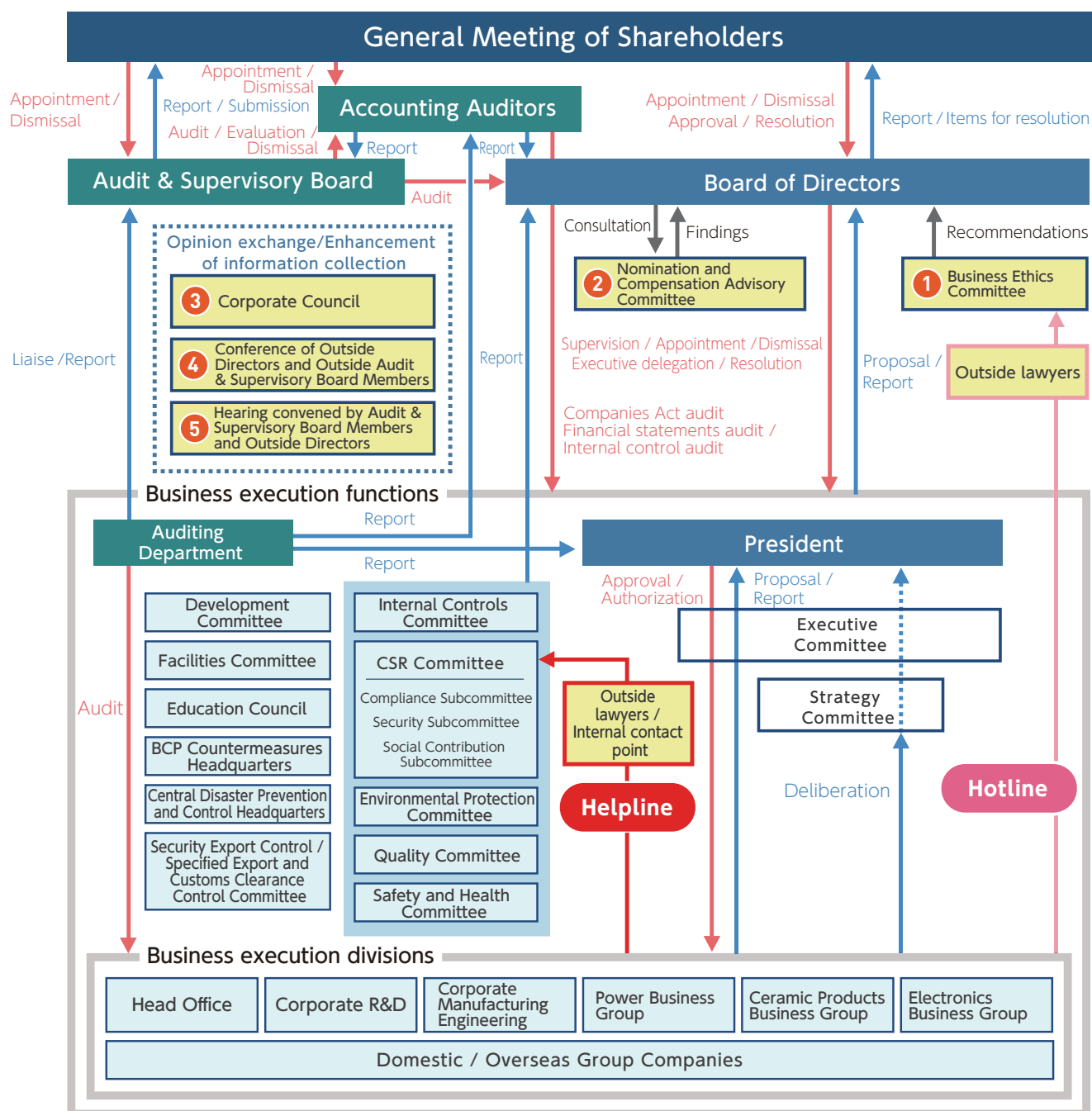
Ongoing structural enhancements aimed at strengthening corporate governance include the introduction of an executive officer system and an outside director system to improve the management supervision and monitoring functions and facilitate recommendations with respect to overall management.

April 1999	Formulated Guidelines for Corporate Behavior
April 2003	Revised to NGK Group Guidelines for Corporate Behavior
June 2005	Introduced an executive officer system
	Introduced a stock option
	Introduced an outside director system
July 2005	Established the CSR Committee
April 2007	Established the CSR Office

June 2010	Appointed independent directors
July 2011	Major revision to NGK Group Guidelines for Corporate Behavior
April 2015	Signed on to UN Global Compact
June 2015	Established the Global Compliance Office
December 2015	Established committees for corporate governance
June 2017	Appointed one additional outside director

Corporate Governance Structure Scheme

To ensure lawful business activities and management transparency, respond quickly to changes in the management environment, and create and maintain a fair management system from the shareholders perspective, NGK has created the following systems:



NGK INSULATORS, LTD., has further strengthened and enhanced its corporate governance structures by establishing committees to bolster the supervision and monitoring functions of the Board of Directors.

Board of Directors

The Board of Directors, comprising 13 members, deliberates matters prescribed in the Companies Act, as well as other important management issues, providing oversight for the execution of duties by directors. To clarify the division of roles between execution and supervision of management, Board of Directors meetings are led by a Chairman, who, in principle, does not execute business. The Board of Directors includes three outside directors to create a system enabling management monitoring based on professional knowledge and decision-making from a wider perspective. The current Board of Directors comprises 13 members (12 men and one woman)(as of June 29, 2017).

Audit & Supervisory Board

The Audit & Supervisory Board consists of four members, each of whom attends Board of Directors meetings and conducts other activities to audit the execution of duties by directors. The Audit & Supervisory Board includes two external members, each possessing significant business experience and extensive insight. The Audit & Supervisory Board members, including these highly independent outside members, conduct audits on the execution of duties by directors, business operations and the company's financial position.

Executive Committee

Comprising the president, directors, Audit & Supervisory Board members and executive officers and division heads designated by the president, this body deliberates the matters necessary to help the president with decision-making. The current Executive Committee comprises 15 members (14 men and one woman).

Business Ethics Committee

Comprised of outside directors and one internal director responsible for compliance, this committee monitors for fraud or illegalities involving senior management, as well as for compliance with the Competition Law and the Foreign Corrupt Practices Act, and reports directly to the Board of Directors. As a mechanism to prevent fraud or legal violations, in addition to the Helpline, an internal reporting system (Hotline) linked directly to outside directors was established with the aim of strengthening NGK's compliance structure.

 Reference Page

> Internal Reporting System
(Hotline)

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Corporate Council

The meeting enables outside directors to exchange opinions with representative directors etc when proactive recommendations for senior management are sought from outside directors regarding various management-related issues.

Nomination and Compensation Advisory Committee

Comprising a majority of outside directors, this committee attempts to ensure fairness and increase transparency related to determining the appointment and remuneration of board members and officers by deliberating matters related to the appointment and remuneration of board members and executive officers, Chief Executive Officer succession planning and other matters, the results of which are reported to the Board of Directors.

Conference of Outside Directors and Outside Audit & Supervisory Board Members

Comprised exclusively of outside directors, these meetings facilitate an exchange of opinions regarding NGK management issues, with the intent of proactively contributing to discussions at Board of Director meetings.

Hearing convened by Audit & Supervisory Board Members and Outside Directors

Comprised of Audit & Supervisory Board members and outside directors, these hearings gather information from internal sources regarding the business environment and issues surrounding NGK.

Bodies Concerning Observance of Laws, Regulations and Corporate Ethics

Internal Controls Committee	<p>This body deliberates matters necessary to help the president and Internal Controls Committee Chairman with decision-making regarding internal controls system assessment and reporting related to financial reporting based on the Financial Instruments and Exchange Act.</p> <ol style="list-style-type: none"> 1. Determines the scope of reporting for each fiscal year, assessment and reporting schedules, standards to assess internal controls and other basic matters 2. Summarizes internal controls assessment and drafts internal controls report.
CSR Committee	<p>This body assists the president and CSR Committee Chair with decision-making by deliberating matters necessary for the observance of laws, regulations and corporate ethics.</p> <p>Observance of Laws, Regulations and Corporate Ethics</p> <ol style="list-style-type: none"> 1. Determination and revision or abolition of basic policies related to the observance of laws, regulations and corporate ethics, including the NGK Group Guidelines for Corporate Behavior 2. Determination of systems, structures and strict observance of important activities pertaining to laws, regulations and corporate ethics company-wide 3. Determination, revision or abolition of risk management structures pertaining to laws, regulations and corporate ethics <p>Additionally, responses to items determined to pose a significant threat to the company among other matters, incidents or accidents related to laws, regulations or corporate ethics, as well as consideration and evaluation of the projects promoted by each subcommittee and other CSR-related items identified as important by the CSR Committee Chair, are also deliberated.</p>
Environmental Protection Committee	<p>This body formulates and deliberates the planning of matters necessary to help the president and the Environmental Protection Committee Chairman with decision-making regarding the realization of our Core Policy on the Environment to promote business activities in harmony with the environment.</p>
Quality Committee	<p>Aiming to increase customer satisfaction and trust by realizing even higher-quality products and services, this body deliberates the matters necessary to help the president and the Quality Committee Chairman with decision-making regarding the following items.</p> <ol style="list-style-type: none"> 1. Determination and revision or abolition of Quality Policy and Objectives 2. Items pertaining to the prevention of serious quality defects in the market and technological responses after occurrence 3. Other quality-related matters determined to be important
Safety and Health Committee	<p>This body deliberates important issues on safety and health to assist the decision-making of the president and Safety and Health Committee Chairman regarding the establishment of basic policies and priority targets pertaining to safety and health and the confirmation of labor accidents and priority activities.</p>
Development Committee	<p>This body deliberates items necessary to assist the decision-making of the president and Development Committee Chairman regarding policies, evaluations, budgets, major individual planning and commercialization projects related to development.</p>
Facilities Committee	<p>This body deliberates items necessary to assist the decision-making of the president and Facilities Committee Chairman regarding the examination and evaluation of policies, budgets, performance, and major individual planning related to capital expenditure and information systems.</p>
Education Council	<p>This body deliberates items necessary to assist the president's decision-making regarding policies, systems, structures and major promotion programs related to human resource development.</p>
BCP Countermeasures Headquarters	<p>Aimed at ensuring business continuity in times of emergency, this body executes the operation and maintenance of business continuity planning (BCP) in normal times as well as gives instructions on and support to restoration systems, and prioritizes restoration orders when BCP is in effect.</p>
Central Disaster Prevention and Control Headquarters	<p>This body executes requisite duties under commands from the Head and deliberates items necessary to assist the decision-making of the president and Head of this body regarding items related to earthquakes, storm and flood damage, fires and explosions that threaten or significantly impact the company.</p>
Security Export Control/ Specified Export and Customs Clearance Control Committee	<p>This body deliberates and determines items necessary for guidance for subsidiaries and affiliates, legal compliance and the improvement of other internal systems with respect to security export controls, specified export declaration systems and the management of customs clearance operations.</p>

Business Execution Status

Regarding business execution based on the Board of Directors resolutions, the president presides over company business as the chief executive of business execution. The Executive Committee holds discussions to assist the president's decision-making with respect to important matters regarding business execution.

In addition, the Board of Directors is asked for proactive recommendations for management by outside directors pertaining to management-related issues at Corporate Council, which facilitates an exchange of opinions between outside directors and representative directors.

Monitoring Status

In line with audit policies and plans defined by the Audit & Supervisory Board, Audit & Supervisory Board members make an effort to collect information through Hearing convened by Audit & Supervisory Board Members and Outside Directors, etc., in an attempt to communicate with directors and employees while monitoring director business execution by attending Board of Directors and Executive Committee meetings. At Audit & Supervisory Board meetings attended by outside Audit & Supervisory Board members, the Members exchange information with accounting auditors and Internal Auditing Department in an attempt to facilitate mutual cooperation.

Election of Board Members, Executive Officers and Audit & Supervisory Board Members

With respect to the nomination of candidates for the Board of Directors and Audit & Supervisory Board, all representative directors discuss matters related to each candidate. The Nomination and Compensation Advisory Committee, of which external directors make up a majority, then deliberates matters related to each candidate, and reports the results to the Board of Directors. As for candidates for the Audit & Supervisory Board, approval is obtained from the Audit & Supervisory Board in order to secure the independence of Audit & Supervisory Board members. With consideration given to the report made by the Nomination and Compensation Advisory Committee, candidates for the Board of Directors and Audit & Supervisory Board are determined by resolution of the Board of Directors and their confirmation is set as an agenda item for the General Meeting of Shareholders. Members of the Board of Directors and Audit & Supervisory Board are then appointed by resolution of the General Meeting of Shareholders. Also, to further clarify the directors' mission and responsibilities, the term of office for directors is one year.

Director Training

Newly appointed representative directors, directors and executive officers are provided with training conducted by attorneys practicing in the United States and Japan related to the Companies Act and the Competition Law, conducted at the time of their appointment. In addition, each year lectures are held, targeting all directors and executive officers, related to compliance with the Competition Law, focused on the expanding scope of Competition Law enforcement and practical business risks. In addition, with regard to external directors, we provide regular opportunities for the provision of individual explanations by personnel from relevant business divisions concerning mainly proposals presented to the Board of Directors meeting as well as information and exchange of opinions pertaining to business environment and related issues.



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> Policies on Training

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External Directors and Outside Audit & Supervisory Board Members

NGK appoints individuals who possess outstanding achievements and a wealth of experience from a variety of industries to monitor director business execution in an attempt to realize stronger, more efficient management. Additionally, in terms of outside director independence, overall determinations are made with consideration for the Tokyo Stock Exchange "Guidelines for Listing" to avoid conflicts of interest with general shareholders. Our three outside directors are professionals able to make objective, rational decisions, while our two Outside Audit & Supervisory Board Members provide opinions mainly from social and financial perspectives.

Activities of Outside Directors and Outside Audit & Supervisory Board Members

	Name	Attendance at Board of Director meetings	Main activities
External Directors	Hiroyuki Kamano	Attended 13 out of the 13 meetings held.	Mr. Kamano offers advice regarding compliance structure enhancement and management approaches for management planning utilizing his substantial experience and specialization as an attorney.
	Toshio Nakamura	Attended 13 out of the 13 meetings held.	Mr. Nakamura offers opinions that clarify the foundation of business decisions utilizing his wide-ranging experience and achievements in economic and industrial administration.

	Name	Attendance at Board of Director meetings	Attendance at Audit & Supervisory Board meetings	Main activities
Outside Audit & Supervisory Board Members	Setsuo Tanaka	Attended 12 out of 13 meetings held.	Attended all 14 Audit & Supervisory Board meetings	Mr. Tanaka offers advice pertaining to enhancing risk management systems utilizing his experience and achievements in police administration.
	Ichiro Terato	Attended 12 out of 13 meetings held.	Attended all 14 Audit & Supervisory Board meetings	Mr. Terato provides opinions on general management utilizing experience and wide-ranging knowledge gained in management positions with The Bank of Tokyo-Mitsubishi UFJ and the Nikon Corporation.

Current Independent Directors and Reasons for Appointment

Name	Reasons for Appointment
Outside Director Hiroyuki Kamano	Having long engaged in legal practice as an attorney-at-law, Mr. Kumano possesses a wealth of experience and achievements in the legal community, including his service as Vice-President of the Tokyo Bar Association. Drawing on this experience, he has been fulfilling his duties as an outside director of the company by sharing opinions regarding the management strategy and strengthening of the compliance structure, as well as offering suggestions in connection with the company's business operation and properly overseeing the management of the company. We have therefore elected him to the position of outside director.
Outside Director Toshio Nakamura	Having served as Director for the Trade Bureau of the Ministry of International Trade and Industry (former name of the Ministry of Economy, Trade and Industry), Director-General of the Small and Medium Enterprise Agency, and President of the Japan Chamber of Commerce and Industry, Mr. Nakamura has long been playing a vital role in the promotion of commerce and industry. By leveraging his knowledge and abundant experience cultivated over the course of his career, he has been appropriately fulfilling his duties as an outside director of the company by sharing his opinions on the importance of clarifying the basis for business decisions, as well as offering suggestions in connection with the company's business operation and overseeing the management of the company. We have therefore elected him to the position of outside director.
Outside Director Emiko Hamada	Ms. Hamada has made remarkable achievements, such as leading the invention and world-first commercialization of the CD-R (recordable CD) while working at Taiyo Yuden Co., Ltd. Since then, she has been engaged in research activities mainly based on industry-academia-government collaboration as Professor at the Nagoya Institute of Technology and Visiting Professor at Nagoya University. We have elected her to the position of outside director having judged her capable of appropriately fulfilling the relevant duties by offering suggestions in connection with business operations, starting with the company's technology development, and overseeing the management of the company by utilizing the insights she has developed over the course of her career.
Outside Audit & Supervisory Board Member Setsuo Tanaka	Mr. Tanaka has served various key management positions in the National Police Agency including as Commissioner General of the National Police Agency. We have elected him to the position of Outside Audit & Supervisory Board member on the expectation that he would provide suggestions regarding the overall management of the company from the perspectives of the legitimacy of the company's business practices and risk management by leveraging his wealth of experience and achievements in public administration.
Outside Audit & Supervisory Board Member Ichiro Terato	Mr. Terato has long engaged in corporate management, including his service as Senior Management Executive Officer at the Bank of Tokyo-Mitsubishi, Ltd. (former name of the Bank of Tokyo-Mitsubishi UFJ, Ltd.) and Representative Director and Senior Executive Vice President of Nikon Corporation. By leveraging his ample experience and expertise fostered over the course of his career as a corporate management expert, he has been appropriately fulfilling his duties as an outside Audit & Supervisory Board member of the company to enhance the company's corporate governance by way of offering opinions and advice regarding the overall management of the company. Based on this, we have elected him to the position of outside Audit & Supervisory Board member.

Policies for Determining Remuneration, etc. of Directors and Audit & Supervisory Board Members

With the aim of incentivizing the realization of NGK's corporate philosophy and management policies, as well as to heighten the transparency, fairness and clarity of their responsibilities, the remuneration of NGK directors is comprised of three components: (1) a level-based, fixed annual salary as basic remuneration, (2) an annual performance-based bonus to heighten the link with the company's performance and further clarify the fulfillment of responsibilities of each director, and (3) stock-related remuneration designed to boost motivation and morale toward enhancing corporate value over the medium- to long-term through sound company management by having them share with shareholders the risk of stock price decline as well as the rewards of stock price increases and increasing their sensitivity to NGK's share prices.

In terms of the ratio of fixed annual remuneration to variable remuneration, from the perspective of emphasis on maintaining and improving performance over the medium- to long-term, NGK sets the performance-based variable remuneration at an appropriate level.

For the purpose of ensuring fairness and increasing transparency during the process of determining remuneration, the Nomination and Compensation Advisory Committee comprising a majority of outside directors deliberates matters related to the policies for determining remuneration, proposals on the total amount of remuneration for directors and Audit & Supervisory Board members, and proposals on the amount of remuneration for individual directors and executive officers, the results of which are reported to the Board of Directors.

Outside directors and Audit & Supervisory Board members receive only basic remuneration based on their supervision of management from an independent perspective and role as monitors.

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> Policies and Procedures
for Determining
Remuneration of Senior
Management and
Directors by the Board
of Directors

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Remuneration of Directors and Audit & Supervisory Board members (FY2016)

Director category	Total remuneration (Millions of yen)	Total remuneration by type (Millions of yen)				Applicable directors (people)
		Basic remuneration	Stock options	Bonus	Retirement benefits	
Directors (excluding Outside Directors)	692	419	75	197	—	10
Audit & Supervisory Board Members (Excluding Outside Audit & Supervisory Board Members)	59	59	—	—	—	2
Outside Directors and Outside Audit & Supervisory Board Members	52	52	—	—	—	4

Directors Receiving Total Remuneration of ¥100 Million or More (FY2016)

Name	Director category	Remuneration by type (Million yen)				Total remuneration (Million yen)
		Basic remuneration	Stock option	Bonus	Retirement benefits	
Eiji Hamamoto	Director	59	13	35	—	107
Taku Oshima	Director	68	13	41	—	123

Comments from Outside Directors

Outside Director **Hiroyuki Kamano**

Understanding Compliance from a Global Perspective

In December of 2015, NGK reformed its governance scheme. In recent years the remuneration of executives has become a hot topic within corporate governance in Japan, and NGK aims to build a governance scheme to address this, including establishment of the Nomination and Compensation Advisory Committee. I also feel that NGK has overcome various problems with respect to compliance, and we are moving in a very positive direction. Originally, compliance was focused on operations in the head office however, we are now advancing to the point where NGK's wide-ranging corporate activities can be viewed from a global perspective. I believe that it is important to enliven discussion on long-term strategy to improve corporate value while citing future problems and to make efforts to optimize our corporate portfolio for the next generation. Business strategy and governance are one in the same thus, as we globalize, we will be called upon to even further strengthen our efforts in this area.



Outside Director **Toshio Nakamura**

Remaining Incisive towards Issues Is Crucial

It has been six terms now since I became involved in the management of NGK as an outside director, and I feel that the corporate governance of NGK has progressed very well over these past few years. In the area of risk management, it is crucial to create a system that can discern risks, clarify the decision-making process, and verify and accurately respond when problems do arise. Additionally, it is also important for everyone in the company, from the management to the employees, to share an incisiveness about whether or not there is an internal problem. On this point, I feel that after repeated communication and training, the mentality of the employees has changed. Another important role for corporate governance is to endeavor for the continued success of the company. For NGK, It is important to properly refine basic technology, discern the potential of its technology and seek to apply these in new friends. Specific efforts, such as “2017 Challenge 30” , are already underway, so I expect to see momentum develop there for major leaps forward in the future.



Outside Director **Emiko Hamada**

Using a Technological Perspective to Become Involved in Both the Workplace and in the Business

I have had a strong impression of NGK as a highly technical and research-oriented company from the outside. I was appointed as an outside director beginning in 2017. I hope to bring new potential to NGK when developing new technology by providing my outsider's perspective as the first technological development-related outside director. To that end, I hope to engage in discussions with the people in development and to actively visit the workplace. I also believe that I can play a role in sharing my knowledge on the culture and rules of the electronics industry from my own abundant experience in the field of electronics, when NGK further penetrates the electronics industry. I would like to contribute to the future growth of NGK from perspectives that have been absent within the company and in new ways that no one has been aware of up to now.



Whistle-blowing System

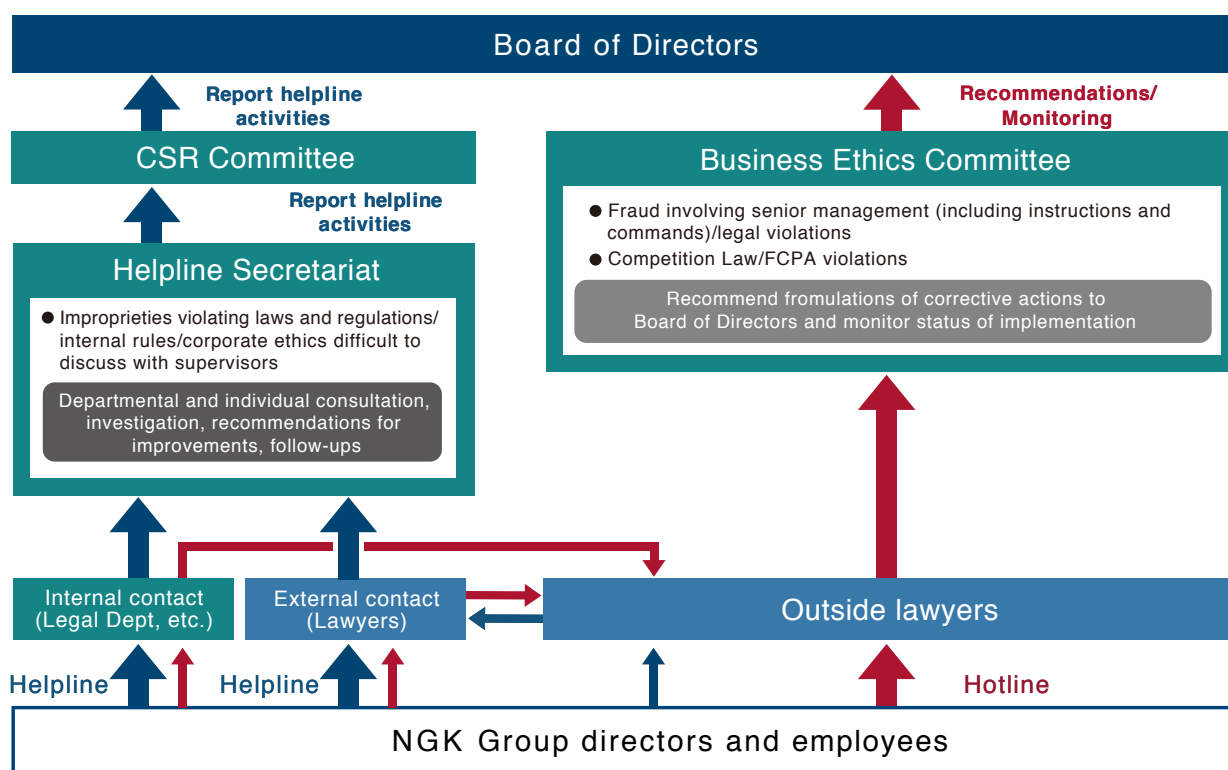
Helpline

We have established a helpline to receive inquiries and reports from employees aimed at curtailing and preventing activities contrary to the spirit of the NGK Group Guidelines for Corporate Behavior and to facilitate the quick resolution when issues occur. Each overseas Group company has its own helpline. Those seeking advice or reporting issues are promised protection under corporate regulations. There were 17 consultation cases in fiscal 2016.

Hotline

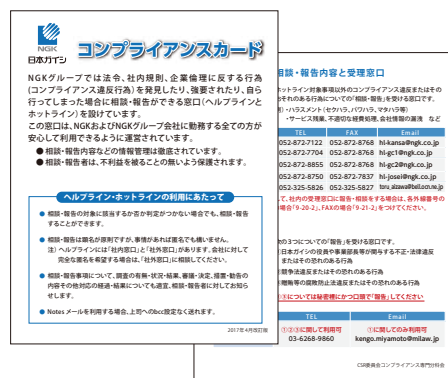
We have established a hotline as an internal control system for responding to fraud and legal infractions committed by senior management, including Competition Law and Anti-Corruption laws and regulations violations. The hotline is operated by outside lawyers, with issues handled by the Business Ethics Committee, composed mainly of outside directors, who report directly to the Board of Directors.

We have been pushing forward with the establishment of the hotline at overseas Group companies in light of the circumstances in each country.



Compliance Card

For thorough awareness of the Whistle-blowing System, we created carry-size compliance card and distributed it to all employees at NGK and all domestic Group companies.



Approaches to Observe the Corporate Governance Code

In accordance with the basic principles of the Corporate Governance Code mandated by the Tokyo Stock Exchange, NGK's implementation status is as follows: NGK implements all of the individual principles of Corporate Governance Code.

Disclosure based on the principles of the Japan's Corporate Governance Code

Principle 1-4. Policy on Cross-Shareholdings and Standards for Exercise of Voting Rights Pertaining to Cross-Shareholdings

NGK continuously holds shares of listed companies, which contribute to long-term business development, as cross-shareholdings, primarily in order to maintain and strengthen business relationships.

NGK holds the shares of Morimura Group, which was established by the same founders of NGK, to enhance the brand value of NGK Group. NGK Group companies will mutually work on the improvement of management quality and each company will contribute to the development of the industry focusing on ceramics.

At its Board of Directors' meeting, NGK determines the necessity of the continuous holding of shares as cross-shareholdings by regularly reviewing the significance of holding, stock prices, dividend yields, ratings, and so forth, and NGK gives specific explanations on the purpose and rationality of holding of shares as cross-shareholdings in its annual securities reports.

For voting rights pertaining to cross-shareholdings, NGK exercises voting rights focusing on factors including whether the content of proposals adversely affect the interest of shareholders and, from a medium to long term perspective, whether the investee company implements management that emphasizes the enhancement of corporate value and the interest of shareholders.

Principle 1-7. Framework of Procedures for Related Party Transactions

At NGK, transactions with directors and corporate officers are designated as matters to be approved by the Board of Directors in accordance with the procedures pertaining to conflict of interest transactions prescribed in laws and regulations. NGK deliberates and makes a resolution of said transactions, at its Board of Directors' meeting, in terms of whether or not the content and conditions of transactions are appropriate and do not impair NGK, and discloses the major content of transactions in its business reports and annual securities reports. Transactions with audit & supervisory board members and major shareholders that do not pose a conflict of interest prescribed in laws and regulations are also designated as matters to be approved at the Board of Directors' meeting, as well as disclosed as above.

Principle 3-1. Full Disclosure

1. Company objectives (e.g., business principles.), business strategies and business plans;

NGK's corporate philosophy states "NGK products and technologies must create new value and contribute to the quality of life." Business strategies and plans are disclosed in our Consolidated Financial Results as well as on our website.

2. Basic views and guidelines on corporate governance

For details regarding NGK's basic views on corporate governance, please see Page 128 "Basic Policies" in this report. NGK's basic guidelines on corporate governance are as follows:

(1) Securing the rights and equality of shareholders

To effectively secure shareholders' rights including voting rights at a General Meeting of Shareholders, NGK complies with appropriate procedures pertaining to the exercise of voting rights by shareholders, and provides information that sufficiently explains to shareholders in both quality and quantity through timely and appropriate information disclosure.

(2) Appropriate cooperation with stakeholders other than shareholders

Based on its corporate philosophy, NGK endeavors to ensure sustainable growth and create medium- to long-term corporate value by actively promoting appropriate cooperation with various stakeholders, including employees, customers, business partners, creditors, and local communities.

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> Basic Policies

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(3) Ensuring appropriate information disclosure and transparency

Recognizing that appropriate disclosure of information contributes to ensuring the transparency of corporate management as well as improving corporate governance, NGK actively provides not only financial information, such as financial conditions and operating results of NGK, but also non-financial information, such as information related to business strategies and business issues, risks, and corporate governance.

(4) Responsibilities of the Board of Directors, etc.

Based on recognition that the major responsibilities of the Board of Directors are to present the basic policy on management as well as supervision and monitoring of the performance of duties by directors, NGK will leverage the various committees pertaining to business execution and advisory committees that consist mainly of outside directors/audit & supervisory board members so that the Board of Directors can adequately fulfill their responsibilities.

(5) Dialogue with shareholders

Based on recognition that constructive dialogue with shareholders is important for the sustainable growth and the enhancement of medium- to long-term corporate value, NGK sincerely responds to dialogue requested by shareholders in cooperation with the relevant divisions as necessary, and works to provide the management with effective feedback on opinions and concerns of shareholders.

3. Board Policies and procedures in determining of the remuneration of the senior management and directors

Remuneration policy

With the aim of providing motivation to realize NGK's corporate philosophy and management policies, as well as heighten the transparency, fairness and clarity of director responsibilities, director (excluding outside directors) and executive officer remuneration is comprised of three components

1. a level-based, fixed annual salary as basic remuneration,
2. an annual performance-based bonus to heighten the connection to company performance and further clarify the fulfillment of responsibilities by each director, and
3. stock-related remuneration to boost motivation and morale aimed at enhancing corporate value over the mid- to long-term through proper company management,

by sharing the shareholders' risk of declines as well as the merits of stock price increases and increasing sensitivity to NGK share prices. In terms of the ratio of fixed annual remuneration to variable remuneration, from the perspective of emphasis on maintaining and improving performance over the mid to long-term, NGK sets the performance-based variable remuneration at an appropriate level.

Outside directors and audit & supervisory board members receive only basic remuneration based on their supervision of management from an independent perspective and role as monitors; no performance or share price-based remuneration is provided.

In terms of amounts, resolutions at the regular general shareholders meeting held in June 2007 and June 2017, excluding stock-related remuneration, namely stock options, capped annual compensation for directors at 800 million yen and outside director compensation was capped at 60 million yen per year. Similarly, resolutions for director (excluding outside director) stock options were limited to 200 million yen or less per year, while Audit & Supervisory Board members' remuneration, etc., was capped at 100 million yen per year.

Remuneration procedure

Regarding directors' remuneration, the Nomination and Compensation Advisory Committee, which consists of majority of outside directors to ensure fairness and increase the transparency of the process, deliberates on remuneration policy, the overall limit of director and executive officer remuneration, as well as the amount of remuneration received by individual directors and executive officers. The outcomes of the deliberations are then reported to the Board of Directors. Based on the Committee's advice, the Board then decides on the remuneration for the directors and executive officers. Upon the board resolution, annual remuneration, including bonuses, is determined in consultation with representative directors.

In terms of specific procedures, the basic remuneration is determined by considering corporate performance and the level of remuneration within the similar industry, with the amount set according to position or rank. Performance-based bonuses, which are annual bonuses, are determined based on management indicators and increases/decreases in performance, including annual consolidated operating margins, consolidated sales and consolidated ROE. In terms of stock-related remuneration, as a long-term incentive, the allotment of stock remuneration-type stock options with a strike price of 1 yen per share are determined in accordance with position or rank. In principle, conditions determining the exercise of stock options stipulate that stock options can be exercised starting one year after a director's resignation for no longer than a period of five years. The amount of remuneration for each audit & supervisory board members is determined by discussion by audit & supervisory board members.

4. Board Policies and procedures in the appointment of the senior management and the nomination of directors and audit and supervisory board member candidates (Policies)

Nomination policy

NGK is a manufacturer in the business of providing ceramics and other materials and related products to a variety of industries in a wide range of areas in and outside Japan. The senior management directors and executive officers responsible for business execution, are required to engage in business judgments and decision-making based on individual knowledge pertaining to each NGK business area, production technologies and research and development, as well as financial, legal and labor-related knowledge. Similarly, standing audit & supervisory board members are also required to conduct monitoring based on a specialized knowledge of finance, etc., and knowledge gained through individual business experience. Accordingly, candidate nominations place importance on practical experience with production technologies, research and development, sales and planning, etc., as well as leadership and financial, legal and labor-related knowledge. Outside director and outside audit & supervisory board member candidates are nominated for their high degree of specialization in law, corporate finance and other areas, as well as knowledge related to international affairs, and social and economic trends. In accordance with NGK's Articles of Incorporation, the total number of directors is limited to 15 or less.

The Nomination and Compensation Advisory Committee, consisting of a majority of outside director, deliberates on these policies and the results of deliberation are reported to the Board of Directors.

Nomination procedure

Regarding the nominations of directors and audit & supervisory board members, each candidate's suitability is assessed by all representative directors. With regard to audit & supervisory board member candidates, the approval of Audit & Supervisory Board is obtained to ensure independence. Moreover, the Nomination and Compensation Advisory Committee, established to ensure fairness and improve transparency in the nomination process, screens each candidate, and the outcome of the deliberations is then reported to the Board of Directors. Based on the Committee's advice, the Board of Directors approves the nomination of candidates and puts the matter to a resolution at a General Meeting of Shareholders.

5. Explanations regarding the individual nomination and appointment when appointing director and audit & supervisory board member candidates and the senior management

Concerning reasons for the appointment of the directors and executive officers elected at the 151th Annual Shareholders' Meeting, please refer to "Convocation Notice of the 151th Annual Shareholders' Meeting," posted on our website (<http://www.ngk.co.jp/english/ir/>). : The reasons for the appointment of Audit & Supervisory Board Members (excluding Outside members) whose term of office had not expired are as follows:

Takeyuki Mizuno :

With business management experience focused on manufacturing, Mr. Mizuno was involved in the establishment of the Ceramics Division for Semiconductor Manufacturing Equipment after being engaged in technological development in the Ceramic Product Business Group. He also served as Head of the Manufacturing Technologies Division and Chair of the Quality Committee and the Environmental Committee. He was appointed as a Audit & Supervisory Board Member in consideration of the knowledge gained through these positions as well as his ability to monitor NGK business management.

Ken Sugiyama :

After joining NGK, Mr. Sugiyama spent many years in the Finance Department, where he served as General Manager. In addition to involvement in the business management of an overseas subsidiary, he also has experience as head of the Auditing Department. He was appointed as an Audit & Supervisory Board Member in consideration of his wealth of knowledge and experience related to financial accounting and business auditing.

 Reference URL

Our website
<http://www.ngk.co.jp/english/ir/>

Supplementary Principle 4-1-1. Outline of the Scope of Matters Delegated to the Management

At NGK, matters prescribed by laws and regulations to be resolved at the Board of Directors, and corresponding matters deemed necessary to be resolved at the Board of Directors in light of their significance and characteristics, etc., are decided and resolved at the Board of Directors. The Board of Directors deliberates on the formulation of management strategies and management plans to provide a strategic direction for the achievement of NGK's management philosophies, and delegates decisions on business execution to NGK's management based on such direction.

Matters to be judged and determined by the Board of Directors are specifically prescribed in the Articles of Incorporation and the Board of Directors' Regulations of NGK, which primarily include company-wide unified budgeting, strategic planning such as dissolution, mergers, and alliances of the company, share-handling regulations, determination to call a General Meeting of Shareholders, appointing and removing representative directors, approval of financial statements, business reports, etc., the disposal and acceptance of transfer of important assets (long-term holding securities, land, equipment, etc.), the appointment and dismissal of an important employee, and the establishment and change of important organizations.

NGK has introduced a corporate officer system, thus separating management decision-making and business execution to expedite decision-making, and matters other than the above are decided by the management pursuant to the administrative authority table prescribed separately.

Principle 4-9. Independence Standards for Independent Outside Directors

In addition to the requirements for an outside director under the Companies Act and for an independent director specified by the Tokyo Stock Exchange, NGK may not designate a person who falls under any of the following items as an outside director with independence (hereinafter referred to as the "Independent Outside Director"); provided, however, that if NGK considers that such person, who falls under any of the items, is appropriate as the Independent Outside Director of NGK in light of such person's personality, insight, etc., NGK may designate said person as an Independent Outside Director on the condition that said person satisfies the requirements for an outside director under the Companies Act and for an independent director specified by the Tokyo Stock Exchange as well as on the condition that NGK externally explains the reason why such person is appropriate as the Independent Outside Director of NGK.

In these independence standards, a person who executes business refers to an executive director, executive officer, corporate officer, manager, or other employee, and NGK Group refers to NGK or NGK's subsidiaries or affiliated companies.

1. A major shareholder who holds 10% or more of the current voting rights of NGK. If such major shareholder is a corporation, a person who has executed the business of said corporation during the last three fiscal years including the most recent fiscal year.
2. A person who currently executes the business of a business partner where the amount of transactions between NGK Group in any of the last three fiscal years including the most recent fiscal year is 2% or more of the consolidated sales of either said business partner or NGK Group.
3. A person who has executed the business of a financial institution or other corporation that is a major creditor, which is indispensable for NGK Group's fundraising and on which NGK Group depends to the extent that it is irreplaceable, in the past three fiscal years including the most recent fiscal year.
4. An incumbent director or officer of an organization that receives a donation or grant from NGK Group in the amount exceeding ¥10 million per year or 30% of average annual total expenses of such organization, whichever the greater, in any of the last three fiscal years including the most recent fiscal year.
5. A certified public accountant, tax accountant or an incumbent employee of an auditing firm or tax accounting firm who served as an accounting auditor or accounting advisor of NGK Group in the past three fiscal years including the most recent fiscal year.
6. A person who is a lawyer, certified public accountant, tax accountant, or other consultant who does not correspond to any of the individuals mentioned in 5. above and who, in addition to his/her remuneration as an officer, has received cash and other property benefits of ¥10 million or more per year from the NGK Group in the past three fiscal years including the most recent fiscal year, or an incumbent employee, etc., of a law firm, auditing firm, tax accounting firm, consulting firm, or other advisory firm that does not correspond to any of the firms mentioned in 5. above, which received a payment of more than 2% of its annual consolidated gross sales from NGK Group in any of the last three fiscal years including the most recent fiscal year.
7. A person who has executed the business of a company, of which NGK is currently a major shareholder, in the last three fiscal years including the most recent fiscal year.
8. Relatives within the second degree of kinship to a person who falls under the items 1 to 7 above.

Supplementary Principle 4-11-1. Views on the Balance Between Knowledge, Experience, and Skills of the Board of Directors as a Whole, and Diversity and Size of the Board

At NGK, the Board of Directors is comprised of persons who have practical experience in business operations in various business fields, such as manufacturing technology, research and development, sales, and planning as well as leadership, persons who have knowledge of finance, legal affairs, and labor affairs, highly independent external personnel who have a high level of expertise in legal affairs, corporate finance, etc., and knowledge, etc., of international affairs, social and economic trends, and the Articles of Incorporation of NGK stipulate that the number of directors shall not exceed fifteen. NGK recognizes that the appointment of young as well as foreign persons is a priority issue for ongoing consideration in terms of necessity associated with future business expansion.

Supplementary Principle 4-11-2. Status of Directors and Audit & Supervisory Board Members Who Also Serve as Officers at Other Listed Companies

With regard to the status of directors and audit & supervisory board members who also serve as directors and audit & supervisory board members at other companies, NGK discloses such status each year in its convocation notice of the General Meeting of Shareholders, annual securities reports, and report on corporate governance.

Supplementary Principle 4-11-3. A Summary of the Results of Analyses and Evaluation on the Effectiveness of the Board of Directors

The operation of meetings of NGK's Board of Directors has been conducted appropriately in accordance with the applicable laws and regulations, the Articles of Incorporation, and internal regulations, and discussions have been held actively in the meetings. With regard to its effectiveness, the Board of Directors issued a survey on the fiscal year ended March 31, 2017 to all directors and audit & supervisory board members. The results were reported at the Board of Directors' meeting, after the analysis and evaluation by an external organization. As a result, the Board of Directors is considered to be effective, with its strength in members being committed and able to conduct sound and transparent discussions while reliably monitoring compliance and complying with governance requirements. Moreover, based on these results, NGK will work to continue to maintain and strengthen the effectiveness of the Board of Directors, such as further enriching discussions on the most important issues (significant themes related to long-term strategies).

Supplementary Principle 4-14-2. Training Policies for Directors and Audit & Supervisory Board Members

Taking into account that directors and audit & supervisory board members assume the duty of care of a good manager as a fiduciary of NGK, NGK has established training policies to provide the following opportunities to improve their skills and knowledge so that they can adequately fulfil their respective responsibilities as an expert in management or as a supervisor of business execution.

1. Training for internal officers relating to the Companies Act, Financial Instruments and Exchange Act, competition laws, and corporate governance and compliance
2. The provision of individual explanations from the relevant divisions to outside directors/audit & supervisory board members mainly relating to the items brought up at the Board of Directors' meetings as well as the periodical provision of information to and opportunities to exchange opinions with outside directors/audit & supervisory board members on the business environment and issues.

Principle 5-1. Policy for Measures and Organizational Structures Aimed at Promoting Constructive Dialogue with Shareholders

NGK strives to provide accurate and prompt explanations concerning business conditions and operational policies and to maximize its corporate value through mutual communication between shareholders and investors.

With regard to the requests of meetings, questions at the General Meeting of Shareholders, and inquiries through NGK's website from shareholders and investors, both NGK's Finance & Accounting Department and General Affairs Department, under the direction of directors responsible for these departments, sincerely respond to shareholders and investors in close cooperation with the Corporate Strategy Office, Corporate Communications Department, Legal Department, and other departments where appropriate, thereby working to promote constructive dialogue with shareholders.

NGK also places emphasis on opportunities to conduct direct dialogue with institutional investors, and holds financial results briefings (twice each year) and overseas IR (twice each year) and others with the senior managements.

NGK provides feedback to its management by regularly reporting the results of such dialogue to the Board of Directors, thereby leading to the improvement of the efficiency and transparency of management.

NGK conducts dialogue with shareholders and investors for the purpose of improving corporate value and capital efficiency as well as the promotion of sustainable growth, and given that the disclosure of unpublished material facts in the dialogue will impair the equality among shareholders, NGK, in principle, has no intention to disclose unpublished material facts.

The Board of Directors and the executive bodies overseen by the president are responsible for establishing and operating NGK's internal control system. The Auditing Department, a specialized internal audit body, is responsible for assessing the status of business execution at each operating division. Moreover, NGK has established the Internal Controls Committee to manage its reporting system for internal controls pursuant to Japan's Financial Instruments and Exchange Act.

The NGK Group Guidelines for Corporate Behavior were formulated as a policy embodying the Group's corporate philosophy. These guidelines specify the Group's fundamental stance with respect to business activities and corporate behavior to ensure it remains a company that is beneficial to society, even in the pursuit of its economic goals. The CSR Committee, under which Compliance Subcommittee, Security Subcommittee, and Social Contribution Subcommittee are organized, is responsible for a range of activities that include formulating NGK Group Guidelines for Corporate Behavior, ensuring compliance with laws, regulations and corporate ethics is fully entrenched throughout the Group, and developing responses to incidents and accidents which it believes could significantly impact the Company. The Committee's actions are designed to maintain and improve the level of the Group's internal control system.

Please note that the "resolution for the development of systems to ensure the appropriateness of operations" was amended at a Board of Director meeting held in March 2017.



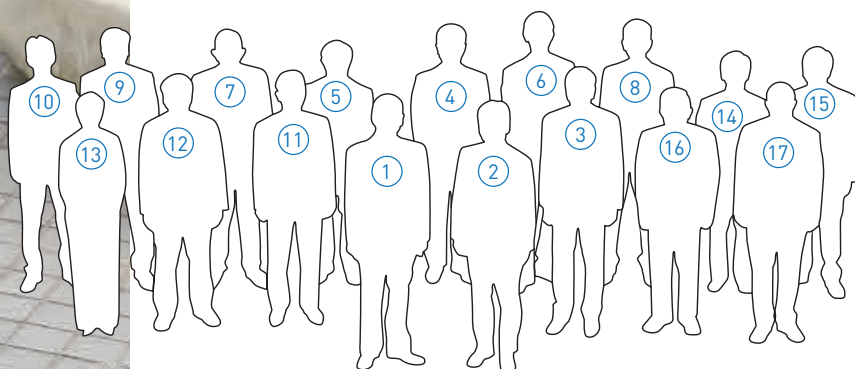
Board of Directors

- ① **Eiji Hamamoto**
Chairman
- ② **Taku Oshima**
President
- ③ **Yukihisa Takeuchi**
Executive Vice President
Group Executive, Corporate R&D, Development Committee Chair
- ④ **Susumu Sakabe**
Director and Senior Vice President
Responsible for the Finance Dept. and Purchasing Dept., General Manager, Tokyo Main Office
- ⑤ **Hiroshi Kanie**
Director and Senior Vice President
Group Executive, Ceramic Products Business Group, General Manager, Nagoya Site
- ⑥ **Ryohei Iwasaki**
Director and Senior Vice President
Responsible for Corporate Strategy Office, New Business Planning Office, Secretarial Office, Corporate Communications Dept., and Human Resources Dept., Senior Officer in charge of Group Companies
- ⑦ **Hideaki Saito**
Director and Senior Vice President
Group Executive, Power Business Group, General Manager, Komaki Site

- ⑧ **Shuhei Ishikawa**
Director and Senior Vice President
Group Executive, Electronics Business Group, General Manager, Electronic Components Div., Electronics Business Group
- ⑨ **Nobumitsu Saji**
Director and Senior Vice President
Responsible for Auditing Dept., Group Compliance Dept., Legal Dept., Intellectual Property Dept., and General Affairs Dept., CSR Committee Chair, Internal Controls Committee Chair, and General Manager, Osaka Site
- ⑩ **Chiaki Niwa**
Director and Senior Vice President
Group Executive, Corporate Manufacturing Engineering, Responsible for Environmental Management Dept. Quality Management Dept. and Safety and Health Management Dept., Facilities Committee Chair, NGK Environmental Protection Committee Chair, Quality Committee Chair, and Safety and Health Committee Chair
- ⑪ **Hiroyuki Kamano**
Outside Director
- ⑫ **Toshio Nakamura**
Outside Director
- ⑬ **Emiko Hamada**
Outside Director

Auditors and Supervisory Board

- ⑭ **Takeyuki Mizuno**
Audit & Supervisory Board Member
- ⑮ **Ken Sugiyama**
Audit & Supervisory Board Member
- ⑯ **Setsuo Tanaka**
Audit & Supervisory Board Member, Outside
- ⑰ **Ichiro Terato**
Audit & Supervisory Board Member, Outside



Executive Officers



Hiroshi Kurachi
Senior Vice President
General Manager,
Engineering Div., General
Manager, Sensor Div.,
Ceramic Products
Business Group



Takaya Teshima
Senior Vice President
Group Vice Executive,
Electronics Business
Group, General Manager,
Chita Site



Atsushi Matsuda
Senior Vice President
General Manager, Worldwide
Sales & Marketing Div., Ceramic
Products Business Group,
General Manager, Overseas
Sales Dept., Worldwide Sales &
Marketing Div., Ceramic
Products Business Group



Hiroto Matsuda
Vice President
General Manager,
Manufacturing Div.,
Ceramic Products
Business Group



Hiroyuki Tsuji
Vice President
General Manager,
Manufacturing Engineering
Dept., Corporate
Manufacturing Engineering



Tomohiro Yamada
Vice President
President, NGK
Electronics Devices Inc.



Tadaaki Yamada
Vice President
General Manager, Human
Resources Dept.



Akira Katoh
Vice President
General Manager, New
Metals Div., Electronics
Business Group



Shigeru Kobayashi
Vice President
Group Vice Executive,
Power Business Group,
General Manager,
Insulator Div., Power
Business Group



Tsutomu Nanataki
Vice President
Group Vice Executive,
Corporate R&D, Project
Leader, Functional
Materials Development
Project, Corporate R&D



Masanobu Inoue
Vice President
General Manager,
Industrial Process Div.,
Ceramic Products
Business Group



Hiroharu Kato
Vice President
President, NGK EUROPE
GmbH

Corporate Outline

Company Name

NGK INSULATORS, LTD.

Established

May 5, 1919

Address

2-56 Suda-cho, Mizuho,
Nagoya 467-8530, Japan
Telephone + (81) 52-872-7181

Paid-In Capital

69.8 billion yen
(As of March 31, 2017)

Net Sales

401.3 billion yen
(Consolidated, for FY2016)

Employees

NGK

Full-time: 3,937 (As of March 31, 2017)

Contract & Temporary: 516 (Avg. in FY2016)

Consolidated

Full-time: 17,517 (As of March 31, 2017)

Contract & Temporary: 3,451 (Avg. in FY2016)

Business Development by Region

(As of March 31, 2017)

NGK INSULATORS, LTD.

58 consolidated subsidiaries

2 equity-method affiliates

21 in Japan

14 in North/Central America

6 in Europe

17 in Asia and elsewhere

Organization

Power Business Group

- Business Planning Dept.
- Sales and Marketing Div.
- Sales Dept.
- Insulator Div.
- Electrical Equipment Dept.
- NAS Battery Div.
- Quality Assurance Dept.

Ceramic Products Business Group

- Business Planning Dept.
- Worldwide Sales and Marketing Div.
- Engineering Div.
- Manufacturing Div.
- Sensor Div.
- Industrial Process Div.
- Quality Assurance Dept.

Electronics Business Group

- Business Planning Dept.
- High Performance Ceramics Div.
- New Metals Div.
- Electronic Components Div.
- Quality Assurance Dept.

Head Office

- Auditing Dept.
- Environmental Management Dept.
- Quality Management Dept.
- Safety and Health Management Dept.
- Corporate Strategy Office
- New Business Planning Office
- Secretarial Office
- Corporate Communications Dept.
- Human Resources Dept.
- Group Compliance Dept.
- Finance & Accounting Dept.
- Legal Dept.
- Intellectual Property Dept.
- General Affairs Dept.
- Purchasing Dept.

Corporate R&D

- Business Planning Dept.
- Wafer Project
- NCM Project
- Functional Materials Development Project
- SOFC Project
- ZNB Project
- Materials Research Laboratory
- Future Technology Management Center

Corporate Manufacturing Engineering

- Administration Dept.
- Manufacturing Engineering Dept.
- Information Technology Dept.
- Construction & Maintenance Dept.

Global Network (List of Group Companies)

Japan

ENERGY SUPPORT CORPORATION

Manufacture and sale of power distribution equipment etc.

AKECHI INSULATORS, LTD.

Manufacture of insulators for power distribution and other ceramic products

IKEBUKURO HORO KOGYO CO., LTD.

Design and manufacture of glass-lined apparatus

NGK CHEM-TECH, LTD.

Sale and maintenance services for corrosion-resistant equipment and glass linings

NGK FILTECH, LTD.

Design and manufacture of pharmaceutical water purification systems and membrane filtration systems

NGK ADREC CO., LTD.

Manufacture of refractories

NGK KILNTECH CORPORATION

Design, manufacture, and sale of heating devices

SOSHIN ELECTRIC CO., LTD.

Manufacture and sale of electronic components for communication devices

NGK ELECTRONICS DEVICES, INC.

Manufacture and sale of ceramic packages, functional circuit boards, and electronic functional components

NGK CERAMIC DEVICE CO., LTD.

Manufacture of electronic functional components

NGK OKHOTSK, LTD.

Manufacture of jigs for ceramics production

NGK METEX CORPORATION

Processing of beryllium copper wrought products

NGK FINE MOLDS, LTD.

Manufacture and sale of metal molds

NGK SPORTS PLANNING CO., LTD.

Management of tennis clubs and golf ranges

NGK LIFE CO., LTD.

Insurance agency service and golf course management

NGK YU-SERVICE CO., LTD.

Welfare and business services

NGK LOGISTICS, LTD.

Transportation and storage of products, raw materials, and equipment

NGK BUILDING SERVICE, LTD.

Building administration and maintenance

North America

LOCKE INSULATORS, INC.

Manufacture of insulators for substations

NGK-LOCKE INC.

Sale of insulators and other products related to energy supply

NGK-LOCKE POLYMER INSULATORS, INC.

Manufacture of polymer insulators

NGK CERAMICS USA, INC.

Manufacture of automotive ceramics

NGK AUTOMOTIVE CERAMICS USA, INC.

Sale of automotive ceramics

FM INDUSTRIES, INC.

Processing and coating of metal modules for semiconductor manufacturing equipment; manufacture of modules

NGK ELECTRONICS USA, INC.

Sale of ceramics for semiconductor manufacturing equipment

NGK METALS CORPORATION

Manufacture and sale of beryllium copper products

NGK INSULATORS OF CANADA, LTD.

Sale of insulators and other products related to energy supply and automotive ceramics

NGK CERAMICS MEXICO, S. DE R.L. DE C.V.

Manufacture of automotive ceramics

Europe, Africa

NGK BERLCO U.K. LTD.

Processing and sales of beryllium copper products

NGK CERAMICS EUROPE S.A.

Manufacturing of automotive ceramics

NGK EUROPE GMBH

Sales of automotive ceramics etc.

NGK DEUTSCHE BERYLCO GMBH

Sales of beryllium copper products

NGK BERYLCO FRANCE

Manufacturing and sales of beryllium copper products

NGK CERAMICS POLSKA SP. Z O.O.

Manufacturing of automotive ceramics

NGK CERAMICS SOUTH AFRICA (PTY) LTD.

Manufacturing and sales of automotive ceramics

Asia, Others

NGK INSULATORS TANGSHAN CO., LTD.

Manufacture and sale of insulators for power transmission

NGK INSULATORS (CHINA) INVESTMENT CO., LTD.

Sale of insulators and other products related to energy supply and beryllium copper products

NGK CERAMICS SUZHOU CO., LTD.

Manufacture and sale of automotive ceramics

NGK TECHNOCERA SUZHOU CO., LTD.

Design, manufacture, and sale of heating devices; sale of refractories

NGK AUTOMOTIVE CERAMICS KOREA CO., LTD.

Sale of ceramics for automobiles and semiconductor manufacturing equipment

P.T. NGK CERAMICS INDONESIA

Manufacture and sale of automotive ceramics

NGK CERAMICS (THAILAND) CO., LTD.

Manufacture and sale of automotive ceramics

SIAM NGK TECHNOCERA CO., LTD.

Manufacture and sale of refractories

NGK TECHNOLOGIES INDIA PVT. LTD.

Sale of automotive ceramics and beryllium copper products

NGK STANGER PTY. LTD.

Manufacture and sale of power distribution equipment; sale of insulators for power distribution/transmission

GRI Guidelines ISO26000 Comparison Table

Standard Disclosures

		ISO26000 Issues	Publication Location	
			Web Version Full Report	Print Version
Strategy and Analysis				
G4-1	Provide a statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and the organization's strategy for addressing sustainability.	—	- Management's Commitment	P13-14 Top Commitment P19-22 Special Talk
G4-2	Provide a description of key impacts, risks, and opportunities.	—	- Management's Commitment - Risk Management - Preservation of Global Environment - Business Overview	P13-18 Top Commitment P27-38 Business Overview P41 Thorough Enforcement of Compliance/Risk Management
Organizational Profile				
G4-3	Report the name of the organization.	—	- About NGK	P55 Corporate Outline
G4-4	Report the primary brands, products, and services.	—	- Products	P3-4 NGK Profile P7-12 Skills Cultivated through Experience P27-38 Business Overview
G4-5	Report the location of the organization's headquarters.	—	- About NGK	F4 P55 Corporate Outline
G4-6	Report the number of countries where the organization operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report.	—	- About NGK - Investor Relations > IR Library > Annual Report > Subsidiaries and Affiliated Companies (P7-11)	P3-4 NGK Profile P55 Corporate Outline
G4-7	Report the nature of ownership and legal form.	—	- Investor Relations > IR Library > Financial Statements > Overview of Business Results and Others (P5)	
G4-8	Report the markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).	—	- About NGK > Corporate Outline	P27-38 Business Overview P23-24 Financial Highlights
G4-9	a. Report the scale of the organization, including: - Total number of employees - Total number of operations - Net sales - Total capitalization broken down in terms of debt and equity - Quantity of products or services provided	—	- About NGK > Corporate Outline Investor Relations > IR Library > Annual Report > Financial Highlights (P2-3); Subsidiaries and Affiliates (P7-11) - Products	P3-4 NGK Profile P23-24 Financial Highlights P26 Summary of Consolidated Financial Results for Five Fiscal Years
G4-10	- Report the total number of employees by employment contract and gender. - Report the total number of permanent employees by employment type and gender - Report the total workforce by employees and supervised workers and by gender - Report the total workforce by region and gender. - Report whether a substantial portion of the organization's work is performed by workers who are legally recognized as self-employed, or by individuals other than employees or supervised workers, including employees and supervised employees of contractors. - Report any significant variations in employment numbers	—	- Respect of Humanity and Assurance of Comfortable Working Environment	P3-4 NGK Profile P25 Non-Financial Highlights
G4-11	- Report the percentage of total employees covered by collective bargaining agreements.	—	- Investor Relations > IR Library > Financial Statements > Overview of Employees(P12)	
G4-12	- Describe the organization's supply chain.	—	- Implementation of Fair, Free and Transparent Transactions	P44 Implementation of Fair, Free and Transparent Transactions

G4-13	Report any significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain, including: - operations, including facility openings, closings, and expansions - Changes in the share capital structure and other capital formation, maintenance, and alteration operations (for private sector organizations) - Changes in the location of suppliers, the structure of the supply chain, or in relationships with suppliers, including selection and termination	—	NA	NA
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization.	—	- CSR Management - Thorough Enforcement of Compliance - Implementation of Fair, Free and Transparent Transactions - Respect of Humanity and Assurance of Comfortable Working Environment - Risk Management	P39 CSR Management
G4-15	List externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.	—	- Management's Commitment CSR Management > Human rights initiatives	P13-18 Top Commitment P39 CSR Management
G4-16	List memberships of associations (such as industry associations) and national or international advocacy organizations in which the organization: - Holds a position on the governance body - Participates in projects or committees - Provides substantive funding beyond routine membership dues - Views membership as strategic	—	- CSR Management > Human rights initiatives	P39 CSR Management
Identified Material Aspects and Boundaries				
G4-17	- List all entities included in the organization's consolidated financial statements or equivalent documents. - Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	—	- CSR Report 2017 Editorial Policy - About NGK - Preservation of Global Environment	P1 Editorial Policy P55 Corporate Outline
G4-18	- Explain the process for defining the report content and the Aspect Boundaries. - Explain how the organization has implemented the Reporting Principles for Defining Report Content.	—	- CSR Management - NGK Report 2017 Editorial Policy	P6 Corporate Philosophy
G4-19	- List all the material Aspects identified in the process for defining report content.	—	- CSR Management	P6 Corporate Philosophy
G4-20	For each material Aspect, report the Aspect Boundary within the organization, as follows: - Report whether the Aspect is material within the organization - If the Aspect is not material for all entities within the organization (as described in G4-17), select one of the following two approaches and report either: - The list of entities or groups of entities included in G4-17 for which the Aspect is not material or - The list of entities or groups of entities included in G4-17 for which the Aspects is material - Report any specific limitation regarding the Aspect Boundary within the organization		- CSR Management > Materiality	P6 Corporate Philosophy
G4-21	For each material Aspect, report the Aspect Boundary outside the organization, as follows: - Report whether the Aspect is material outside of the organization - If the Aspect is material outside of the organization, identify the entities, groups of entities or elements for which the Aspect is material. In addition, describe the geographical location where the Aspect is material for the entities identified - Report any specific limitation regarding the Aspect Boundary outside the organization	—	※ Listed as necessary	※Listed as necessary

G4-22	Report the effect of any restatements of information provided in previous reports, and the reasons for such restatements.	—	NA	NA
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries.	—	NA	NA
Stakeholder Engagemen				
G4-24	- Provide a list of stakeholder groups engaged by the organization.	6.2 Organiza- tional governance	- CSR Management > Targeted Stakeholder and Response Policies	P39 CSR Management
G4-25	- Report the basis for identification and selection of stakeholders with whom to engage.	6.2 Organiza- tional governance	- CSR Management > Targeted Stakeholder and Response Policies	
G4-26	- Report the organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	6.2 Organiza- tional governance	- CSR Management Communications with stakehold- ers > System for Making Use of - Customer Feedback in Management - Coordination with local communities and promotion of contribution to the society	P44 Implementation of Fair, Free and Transparent Transactions P42 CSR Talk Live
G4-27	- Report key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting. Report the stakeholder groups that raised each of the key topics and concerns.	6.2 Organiza- tional governance	- Implementation of fair, free and transparent transactions > Communication Activities with Procurement Partners - Communications with stakehold- ers > System for Making Use of Customer Feedback in Management - Communications with stakehold- ers > Dialogue with Employees Third Party Opinion	P44 Implementation of Fair, Free and Transparent Transactions P50 Communication with Stakeholders
Report Profile				
G4-28	- Reporting period (such as fiscal or calendar year) for information provided.	—	- NGK Report 2017 Editorial Policy	P1 Editorial Policy
G4-29	- Date of most recent previous report (if any).	—		F4
G4-30	- Reporting cycle (such as annual, biennial).	—	- NGK Report 2017 Editorial Policy	P1 Editorial Policy
G4-31	- Provide the contact point for questions regarding the report or its contents.	—	- Contact	F4
G4-32	- Report the 'in accordance' option the organization has chosen. - Report the GRI Content Index for the chosen option (see tables below). - Report the reference to the External Assurance Report, if the report has been externally assured.	—	- Independent Practitioner's Assurance Report	P57 Independent Practitioner's Assurance Report
G4-33	- Report the organization's policy and current practice with regard to seeking external assurance for the report. - If not included in the assurance report accompanying the sustainability report, report the scope and basis of any external assurance provided. - Report the relationship between the organization and the assurance providers. - Report whether the highest governance body or senior executives are involved in seeking assurance for the organization's sustainability report.	—	- Independent Practitioner's Assurance Report - Third Party Opinion	P57 Independent Practitioner's Assurance Report P58 Third Party Opinion
Governance				
G4-34	- Report the governance structure of the organization, including committees of the highest governance body. Identify any committees responsible for decision-making on economic, environmental and social impacts.	6.2 Organiza- tional governance	Corporate Governance	P51 Corporate Governance
G4-35	- Report the process for delegating authority for economic, environmental and social topics from the highest governance body to senior executives and other employees.	6.2 Organiza- tional governance	- Corporate Governance > Corporate Governance Scheme > Committees on Corporate Governance	P51 Corporate Governance
G4-36	- Report whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental and social topics, and whether post holders report directly to the highest governance body	6.2 Organiza- tional governance	- Corporate Governance - CSR Management - Preservation of Global Environ- ment > Environmental Manage- ment Frameworks and Environ- mental Management System	P51 Corporate Governance

G4-37	<ul style="list-style-type: none"> - Report processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics. If consultation is delegated, describe to whom and any feedback processes to the highest governance body 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance > Corporate Governance Scheme > Committees on Corporate Governance > Corporate Governance Enhancement - CSR Management 	P51 Corporate Governance
G4-38	<p>Report the composition of the highest governance body and its committees by:</p> <ul style="list-style-type: none"> - Executive or non-executive - Independence - Tenure on the governance body - Number of each individual's other significant positions and commitments, and the nature of the commitments - Gender - Membership of under-represented social groups - Competences relating to economic, environmental and social impacts - Stakeholder representation 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance > Corporate Governance Scheme Investor Relations > IR Library > Annual Report > Board of Directors, Executive Officers and Audit & Supervisory Board (P62-66) 	P51 Corporate Governance
G4-39	<ul style="list-style-type: none"> - Report whether the Chair of the highest governance body is also an executive officer (and, if so, his or her function within the organization's management and the reasons for this arrangement). 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance > Corporate Governance Scheme CSR Management 	P51 Corporate Governance
G4-40	<p>Report the nomination and selection processes for the highest governance body and its committees, and the criteria used for nominating and selecting highest governance body members, including:</p> <ul style="list-style-type: none"> - Whether and how diversity is considered - Whether and how independence is considered - Whether and how expertise and experience relating to economic, environmental and social topics are considered - Whether and how stakeholders (including shareholders) are involved 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance 	
G4-41	<p>Report processes for the highest governance body to ensure conflicts of interest are avoided and managed. Report whether conflicts of interest are disclosed to stakeholders, including, as a minimum:</p> <ul style="list-style-type: none"> - Cross-board membership - Cross-shareholding with suppliers and other stakeholders - Existence of controlling shareholder - Related party disclosures 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance > Investor Relations > IR Library > Annual Report > Corporate Governance (P67-76) 	
G4-42	<ul style="list-style-type: none"> - Report the highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental and social impacts. 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance - CSR Management 	
G4-43	<ul style="list-style-type: none"> - Report the measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental and social topics. 	6.2 Organizational governance	<ul style="list-style-type: none"> - CSR Management 	
G4-44	<ul style="list-style-type: none"> - Report the processes for evaluation of the highest governance body's performance with respect to governance of economic, environmental and social topics. Report whether such evaluation is independent or not, and its frequency. Report whether such evaluation is a self-assessment. - Report actions taken in response to evaluation of the highest governance body's performance with respect to governance of economic, environmental and social topics, including, as a minimum, changes in membership and organizational practice. 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance - CSR Management 	P51 Corporate Governance P39 CSR Management

G4-45	<ul style="list-style-type: none"> - Report the highest governance body's role in the identification and management of economic, environmental and social impacts, risks, and opportunities. Include the highest governance body's role in the implementation of due diligence processes. - Report whether stakeholder consultation is used to support the highest governance body's identification and management of economic, environmental and social impacts, risks, and opportunities. 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance - Risk Management - Preservation of Global Environment > Environmental Management Frameworks and Environmental Management System 	P51 Corporate Governance
G4-46	<ul style="list-style-type: none"> - Report the highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental and social topics. 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance - Risk Management > Risk Management System 	
G4-47	<ul style="list-style-type: none"> - Report the frequency of the highest governance body's review of economic, environmental and social impacts, risks, and opportunities. 	6.2 Organizational governance	<ul style="list-style-type: none"> - CSR Management - Risk Management 	
G4-48	<ul style="list-style-type: none"> - Report the highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material Aspects are covered. 	6.2 Organizational governance	<ul style="list-style-type: none"> - CSR Management 	
G4-49	<ul style="list-style-type: none"> - Report the process for communicating critical concerns to the highest governance body. 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance - Risk Management 	
G4-50	<ul style="list-style-type: none"> - Report the nature and total number of critical concerns that were communicated to the highest governance body and the mechanism(s) used to address and resolve them. 	6.2 Organizational governance		
G4-51	<ul style="list-style-type: none"> - Report the remuneration policies for the highest governance body and senior executives for the below types of remuneration: <ul style="list-style-type: none"> - Fixed pay and variable pay: <ul style="list-style-type: none"> > Performance-based pay > Equity-based pay > Bonuses > Deferred or vested shares - Sign-on bonuses or recruitment incentive payments - Termination payments - Clawbacks - Retirement benefits, including the difference between benefit schemes and contribution rates for the highest governance body, senior executives, and all other employees. - Specific restrictions on organizational boundaries 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance > Support for the Corporate Governance Code - Investor Relations > IR Library > Financial Statements > Remuneration of the senior management and executive officer (P76) 	
G4-52	<ul style="list-style-type: none"> - Report the process for determining remuneration. Report whether remuneration consultants are involved in determining remuneration and whether they are independent of management. Report any other relationships which the remuneration consultants have with the organization. 	6.2 Organizational governance	<ul style="list-style-type: none"> - Corporate Governance - Corporate Governance Report 	
G4-53	<ul style="list-style-type: none"> - Report how stakeholders' views are sought and taken into account regarding remuneration, including the results of votes on remuneration policies and proposals, if applicable. 	6.2 Organizational governance		
G4-54	<ul style="list-style-type: none"> - Report the ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same country. 	6.2 Organizational governance		
G4-55	<ul style="list-style-type: none"> - Report the ratio of percentage increase in annual total compensation for the organization's highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same country. 	6.2 Organizational governance		

Ethics and Integrity				
G4-56	- Describe the organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics.	6.2 Organizational governance	- CSR Management	P6 Corporate Philosophy
G4-57	- Report the internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity, such as helplines or advice lines.	6.2 Organizational governance	- Thorough Enforcement of Compliance > Compliance Promotion Structure	P51 Corporate Governance
G4-58	- Report the internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines.	6.2 Organizational governance	- Thorough Enforcement of Compliance > Compliance Promotion Structure	P51 Corporate Governance
Disclosures on Management Approach				
G4-DMA	<ul style="list-style-type: none"> - Report why the Aspect is material. Report the impacts that make this Aspect material. - Report how the organization manages the material Aspect or its impacts. - Report the evaluation of the management approach, including: <ul style="list-style-type: none"> - The mechanisms for evaluating the effectiveness of the management approach - The results of the evaluation of the management approach - Any related adjustments to the management approach 		<ul style="list-style-type: none"> - CSR Management - Preservation of Global Environment > Environmental Management Frameworks and Environmental Management System 	P39 CSR Management
Economic Performance				
G4-EC1	- Direct economic value generated and distributed	6.8.3 Community involvement 6.8.7 Wealth and income creation	- Investor Relations > IR Library > Annual Report > Financial Highlights (P2)	P18-22 Business Overview P43-44 Financial Highlights
G4-EC2	- Financial implications and other risks and opportunities for the organization's activities due to climate change	6.2 Organizational governance 6.5.5 Climate change mitigation and adaptation		
G4-EC3	- Coverage of the organization's defined benefit plan obligations			
G4-EC4	- Financial assistance received from government	6.6.4 Responsible political involvement		
G4-EC5	- Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	6.4.4 Conditions of work and social protection 6.8.7 Wealth and income creation		
G4-EC6	- Proportion of senior management hired from the local community at significant locations of operation	6.8.5 Employment creation and skills development		
G4-EC7	- Development and impact of infrastructure investments and services supported	6.3.9 Economic, social and cultural rights 6.8.9 Social investment		
G4-EC8	- Significant indirect economic impacts, including the extent of impacts	6.3.9 Economic, social and cultural rights 6.6 Fair operating practices 6.7 Consumer issues 6.8 Community involvement and development		

G4-EC9	- Proportion of spending on local suppliers at significant locations of operation	6.6.6 Promoting social responsibility in the value chain 6.8.5 Employment creation and skills development		
Environmental				
G4-EN1	- Materials used by weight or volume	6.5.4 Sustainable resource use	- Preservation of Global Environment > Overall Perspective of Environmental Impact	P45 Overview Perspective of Environmental Impact
G4-EN2	- Percentage of materials used that are recycled input materials	6.5.4 Sustainable resource use	- Preservation of Global Environment > Environmental Impact Reduction Initiatives	P46 Results of Initiatives within the Fourth Five-Year Environmental Action Plan (2016-2020)
G4-EN3	- Energy consumption within the organization	6.5.4 Sustainable resource use 6.5.5 Climate change mitigation and adaptation	- Preservation of Global Environment > Overall Perspective of Environmental Impact	P45 Overview Perspective of Environmental Impact
G4-EN4	- Energy consumption outside of the organization	6.5.4 Sustainable resource use 6.5.5 Climate change mitigation and adaptation	- Preservation of Global Environment > Overall Perspective of Environmental Impact	P45 Overview Perspective of Environmental Impact
G4-EN5	- Energy intensity	6.5.4 Sustainable resource use	- Preservation of Global Environment > Five-Year Environmental Action Plan	P46 Results of Initiatives within the Fourth Five-Year Environmental Action Plan (2016-2020)
G4-EN6	- Reduction of energy consumption	6.5.4 Sustainable resource use	- Preservation of Global Environment > Five-Year Environmental Action Plan	P46 Results of Initiatives within the Fourth Five-Year Environmental Action Plan (2016-2020)
G4-EN7	- Reductions in energy requirements of products and services	6.5.4 Sustainable resource use 6.5.5 Climate change mitigation and adaptation	- Products > Power Business >NAS Batteries, Electronics Business, Ceramic Products Business - Special Feature: Environmental Products	P47 Development and Distribution of Products Contributing to Environmental Protection
G4-EN8	- Total water withdrawal by source	6.5.4 Sustainable resource use	- Preservation of Global Environment > Overall Perspective of Environmental Impact	
G4-EN9	- Water sources significantly affected by withdrawal of water	6.5.4 Sustainable resource use 6.5.6 Protection of the environment, biodiversity and restoration of natural habits	- Preservation of Global Environment > Environmental Impact Reduction Initiatives	
G4-EN10	- Percentage and total volume of water recycled and reused	6.5.4 Sustainable resource use		
G4-EN11	- Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	6.5.6 Protection of the environment, biodiversity and restoration of natural habits	NA	NA
G4-EN12	- Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	6.5.6 Protection of the environment, biodiversity and restoration of natural habits		
G4-EN13	- Habitats protected or restored	6.5.6 Protection of the environment, biodiversity and restoration of natural habits	- Preservation of Global Environment > Biodiversity Initiatives	P48 Initiatives for Biodiversity Conservation

G4-EN14	- Total number of iuch red list species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	6.5.6 Protection of the environment, biodiversity and restoration of natural habits		
G4-EN15	- Direct greenhouse gas (GHG) emissions (scope 1)	6.5.5 Climate change mitigation and adaptation	- Preservation of Global Environment > Overall Perspective of Environmental Impact	P48 Reduction of CO ₂ Emissions and Discarded Materials
G4-EN16	- Energy indirect greenhouse gas (GHG) emissions (scope 2)	6.5.5 Climate change mitigation and adaptation	- Preservation of Global Environment > Overall Perspective of Environmental Impact	P48 Reduction of CO ₂ Emissions and Discarded Materials
G4-EN17	- Other indirect greenhouse gas (GHG) emissions (scope 3)	6.5.5 Climate change mitigation and adaptation		
G4-EN18	- Greenhouse gas (GHG) emissions intensity	6.5.5 Climate change mitigation and adaptation	- Preservation of global environment Prevention of global warming	P48 Reduction of CO ₂ Emissions and Discarded Materials
G4-EN19	- Reduction of greenhouse gas (GHG) emissions	6.5.5 Climate change mitigation and adaptation	- Preservation of global environment Prevention of global warming	P48 Reduction of CO ₂ Emissions and Discarded Materials
G4-EN20	- Reduction of greenhouse gas (GHG) emissions	6.5.3 Prevention of pollution 6.5.5 Climate change mitigation and adaptation		
G4-EN21	- NOx, SOx, and other significant air emissions	6.5.3 Prevention of pollution		
G4-EN22	- Total water discharge by quality and destination	6.5.3 Prevention of pollution	- Preservation of Global Environment > Overall Perspective of Environmental Impact *Total amount only	P45-48 Preservation of Global Environment *Total amount only
G4-EN23	- Total weight of waste by type and disposal method	6.5.3 Prevention of pollution	- Preservation of Global Environment > Overall Perspective of Environmental Impact * Total weight of waste by disposal method Preservation of Global Environment > Overall Perspective of Environmental Impact	
G4-EN24	- Total number and volume of significant spills	6.5.3 Prevention of pollution	NA	NA
G4-EN25	- Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally	6.5.3 Prevention of pollution		
G4-EN26	- Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharges of water and runoff	6.5.6 Protection of the environment, biodiversity and restoration of natural habits	- Preservation of Global Environment > Biodiversity Initiatives	
G4-EN27	- Extent of impact mitigation of environmental impacts of products and services	6.5 Environment 6.6.6 Promoting social responsibility in the value chain 6.7.5 Sustainable consumption	- Preservation of Global Environment > Creating Products that Contribute to the Environment	P45-48 Preservation of Global Environment
G4-EN28	- Percentage of products sold and their packaging materials that are reclaimed by category	6.5.4 Sustainable resource use 6.6.6 Promoting social responsibility in the value chain 6.7.5 Sustainable consumption		

G4-EN29	- Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	6.2 Organizational governance 6.5 Environment 6.6.3 Anti-corruption	NA	
G4-EN30	- Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce	6.5 Environment 6.6.6 Promoting social responsibility in the value chain	- Preservation of Global Environment > Five-Year Environmental Action Plan	P46 Results of Initiatives within the Fourth Five-Year Environmental Action Plan (2016-2020)
G4-EN31	- Total environmental protection expenditures and investments by type	6.2 Organizational governance 6.5 Environmentchain	- Preservation of Global Environment > Environmental Accounting	
G4-EN32	- Percentage of new suppliers that were screened using environmental criteria	6.5 Environment 6.6.6 Promoting social responsibility in the value chain		
G4-EN33	- Significant actual and potential negative environmental impacts in the supply chain and actions taken	6.5 Environment 6.6.6 Promoting social responsibility in the value chain		
G4-EN34	- Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	6.2 Organizational governance 6.5 Environment	NA	NA
Labor Practices and Decent Work				
G4-LA1	- Total number and rates of new employee hires and employee turnover by age group, gender and region	6.3.10 Fundamental principles and rights at work 6.4.3 Employment and employment relationship	- Respect of Humanity and Assurance of Comfortable Working Environment	P3-4 NGK Profile P25 Non-Financial Highlights
G4-LA2	- Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	6.4.4 Conditions of work and social protection relationship		
G4-LA3	- Return to work and retention rates after parental leave, by gender	6.4.4 Conditions of work and social protection	- Respect of Humanity and Assurance of Comfortable Working Environment > Promoting a Work-Life Balance	
G4-LA4	- Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	6.4.4 Conditions of work and social protection		
G4-LA5	- Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	6.3.10 Fundamental principles and rights at work 6.4.3 Employment and employment relationship 6.4.6 Health and safety at work	- Respect of Humanity and Assurance of Comfortable Working Environment > Health and Safety	
G4-LA6	- Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	6.4.6 Health and safety at work	- Respect of Humanity and Assurance of Comfortable Working Environment > Health and Safety	
G4-LA7	- Workers with high incidence or high risk of diseases related to their occupation	6.4.6 Health and safety at work		

G4-LA8	- Health and safety topics covered in formal agreements with trade unions	6.4.6 Health and safety at work 6.4.5 Social Dialogue	- Respect of Humanity and Assurance of Comfortable Working Environment > Health and Safety	
G4-LA9	- Average hours of training per year per employee by gender, and by employee category	6.4.7 Human development and training in the workplace	- Respect of Humanity and Assurance of Comfortable Working Environment > Human Resource Development	
G4-LA10	- Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	6.4.7 Human development and training in the workplace 6.8.5 Employment creation and skills development	- Respect of Humanity and Assurance of Comfortable Working Environment > Human Resource Development	
G4-LA11	- Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	6.4.7 Human development and training in the workplace	- Respect of Humanity and Assurance of Comfortable Working Environment > Human Resource Development	
G4-LA12	- Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	6.3.10 Fundamental principles and rights at work 6.4.3 Employment and employment relationship	- Respect of Humanity and Assurance of Comfortable Working Environment > Diversity	
G4-LA13	- Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	6.3.10 Fundamental principles and rights at work 6.4.3 Employment and employment relationship and employment relationship	- Careers Starting salary for disabled employees disclosed on external sites (Careers > Disabled Employment > Compensation and work conditions)	
G4-LA14	- Percentage of new suppliers that were screened using labor practices criteria	6.4.4 Conditions of work and social protection 6.6.6 Promoting social responsibility in the value chain		
G4-LA15	- Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	6.4.4 Conditions of work and social protection 6.6.6 Promoting social responsibility in the value chain	- Implementation of Fair, Free and Transparent Transactions > Promotion of CSR Procurement	
G4-LA16	- Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	6.2 Organizational governance 6.4.4 Conditions of work and social protection		
SOCIAL (Human Rights)				
G4-HR1	- Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	6.3 Human rights 6.6 Fair operating practices		
G4-HR2	- Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	6.3 Human rights 6.6.6 Promoting social responsibility in the value chain	- Thorough Enforcement of Compliance > Promoting Compliance Education	
G4-HR3	- Total number of incidents of discrimination and corrective actions taken	6.3.3 Due diligence 6.3.6 Resolving grievances 6.3.7 Discrimination and vulnerable groups		

G4-HR4	- Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	6.3.3 Due diligence 6.3.5 Avoidance of complicity 6.3.10 Fundamental principles and rights at work 6.4.5 Social Dialogue 6.6.6 Promoting social responsibility in the value chain		
G4-HR5	- Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	6.3.3 Due diligence 6.3.5 Avoidance of complicity 6.3.10 Fundamental principles and rights at work 6.6.6 Promoting social responsibility in the value chain	- Implementation of Fair, Free and Transparent Transactions > Promotion of CSR Procurement	P44 Implementation of Fair, Free and Transparent Transactions
G4-HR6	- Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures taken to contribute to the elimination of all forms of forced or compulsory labor	6.3.3 Due diligence 6.3.5 Avoidance of complicity 6.3.10 Fundamental principles and rights at work 6.6.6 Promoting social responsibility in the value chain	- Implementation of Fair, Free and Transparent Transactions > Promotion of CSR Procurement	P44 Implementation of Fair, Free and Transparent Transactions
G4-HR7	- Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations	6.3 Human rights 6.4.7 Human development and training in the workplace 6.6.6 Promoting social responsibility in the value chain		
G4-HR8	- Total number of incidents of violations involving rights of indigenous peoples and actions taken	6.3.3 Due diligence 6.3.6 Resolving grievances 6.3.7 Discrimination and vulnerable groups 6.6.6 Promoting social responsibility in the value chain	NA	NA
G4-HR9	- Total number and percentage of operations that have been subject to human rights reviews or impact assessments	6.3 Human rights 6.6 Fair operating practices		
G4-HR10	- Percentage of new suppliers that were screened using human rights criteria	6.3 Human rights 6.6.6 Promoting social responsibility in the value chain		
G4-HR11	- Significant actual and potential negative human rights impacts in the supply chain and actions taken	6.3 Human rights 6.6.6 Promoting social responsibility in the value chain		
G4-HR12	- Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	6.3 Human rights		

SOCIAL (Society)

G4-SO1	- Percentage of operations with implemented local community engagement, impact assessments, and development programs	6.3.3 Due diligence 6.5 Environment 6.6 Fair operating practices 6.8 Community involvement and development	- Coordination with Local Communities and Promotion of Contribution to the Society	
G4-SO2	- Operations with significant actual and potential negative impacts on local communities	6.3.3 Due diligence 6.5 Environment 6.6 Fair operating practices 6.8 Community involvement and development	NA	NA
G4-SO3	- Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	6.2 Organizational governance 6.6 Fair operating practices	- Thorough Enforcement of Compliance > Corruption Prevention Structure	
G4-SO4	- Communication and training on anti-corruption policies and procedures	6.2 Organizational governance 6.4.7 Human development and training in the workplace 6.6 Fair operating practices	- Thorough Enforcement of Compliance > Corruption Prevention Structure	
G4-SO5	- Confirmed incidents of corruption and actions taken	6.2 Organizational governance 6.6 Fair operating practices	NA	NA
G4-SO6	- Total value of political contributions by country and recipient/beneficiary	6.6.4 Responsible political involvement 6.8.9 Social investment		
G4-SO7	- Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	6.6.3 Anti-corruption 6.6.5 Fair competition	- Thorough Enforcement of Compliance > Status of Law and Regulations Violations	
G4-SO8	- Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	6.2 Organizational governance 6.6 Fair operating practices	- Thorough Enforcement of Compliance > Status of Law and Regulations Violations	
G4-SO9	- Percentage of new suppliers that were screened using criteria for impacts on society	6.6 Fair operating practices		
G4-S10	- Significant actual and potential negative impacts on society in the supply chain and actions taken	6.6 Fair operating practices		
G4-S11	- Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms	6.6 Fair operating practices		

SOCIAL (Product Responsibility)				
G4-PR1	- Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	6.6.3 Anti-corruption 6.6.6 Promoting social responsibility in the value chain 6.7.4 Protecting consumers' health and safety	- Providing Products that Contribute to Better Social Environment - Preservation of Global Environment > Five-Year Environmental Action Plan	P46 Results of Initiatives within the Fourth Five-Year Environmental Action Plan (2016-2020)
G4-PR2	- Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes	6.2 Organizational governance 6.6.3 Anti-corruption 6.6.6 Promoting social responsibility in the value chain 6.7.4 Protecting consumers' health and safety	NA	NA
G4-PR3	- Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements	6.7.6 Consumer service, support, and complaint and dispute resolution	- Providing Products that Contribute to Better Social Environment	
G4-PR4	- Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	6.2 Organizational governance 6.7.3 Fair marketing, factual and unbiased information and fair contractual practices	NA	NA
G4-PR5	- Results of surveys measuring customer satisfaction	6.7.6 Consumer service, support, and complaint and dispute resolution		
G4-PR6	- Sale of banned or disputed products	6.7 Consumer issues	NA	NA
G4-PR7	- Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes	6.2 Organizational governance 6.7.3 Fair marketing, factual and unbiased information and fair contractual practices	NA	NA
G4-PR8	- Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	6.3.6 Resolving grievances 6.7.6 Consumer service, support, and complaint and dispute resolution 6.7.7 Customer data protection and privacy	NA	NA
G4-PR9	- Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	6.2 Organizational governance 6.7.3 Fair marketing, factual and unbiased information and fair contractual practices	NA	NA

Third Party Opinion



Mr. Koichi Ikeda

Visiting Professor
Management School
Ritsumeikan University

As the integrated report—a report that presents financial and non-financial information (such as CSR) in an integrated fashion—becomes a pressing task for, at the very least, globally-active companies, so the search for the proper way to accomplish this continues across the world.

With their second integrated report this year, NGK has masterfully shown through their NGK Report 2017 how to best accomplish this task. Indeed this report gets to the point and in a succinct way. The NGK Report 2017 (pamphlet) not only carefully selects the high priority issues from among the voluminous and diverse events happening currently, to happen in the future and having happened along their journey from the founding of the NGK Group, but they presented this information in a clear and easy-to-understand format using wording and illustrations that are succinct and dead on their mark. It hardly needs to be said that readers can search for more information on the NGK website.

Their top commitment is a declaration to aspire for sustained growth going into the future through the cultivation of three factors: their unique strengths, such as advanced technical capacity in ceramics since their founding, their people, who are the foundation for their growth, and a sustainable future, which holds the NGK Group's business activities and the solutions for the social problems of our day to be one and the same. This declaration from the management succinctly gets to the point even more.

Moreover, the company-wide efforts towards sustained growth, such as the New/reformed manufacturing structured initiatives to improve competitive edge in the medium to long terms, and the "2017 Challenge 30" that sets new product ratios of sales to above 30%, as well as the business overviews of the three business groups (Power, Ceramic Products, Electronics) are succinctly and clearly presented. This is especially the case with the business overviews of the three business groups, where the performance trends, outlooks, main products, FY2016 business conditions, FY2017 issues and initiatives, as well as the future prospects and efforts, which are plagued by uncertainty, are laid out in a simple, yet richly appealing form.

Additionally, the fact that they present themselves to be moving full-steam ahead with the pertinent efforts (such as their human rights initiatives with the start of their human rights due diligence, their general employee HR system reform carried out in April 2017 to allow all employees—from young hires to veterans—to work with more purpose, and their continued promotion of CSR procurement in their supply chain) they have selected amidst the on-going internal and external changes in the business environment speaks to the trustworthiness of the NGK Group. In conjunction with this, they make special mention of the increased intensity of their efforts towards the environment that they have been so committed to advance up to now—specifically that they are moving on track to reach the goal of the final year of their Five-Year Environmental Action Plan with the growth rate of sales of Products contributing to environmental protection.

In the future, I have expectations that they will level and even out the report content that varies in density here and there, and attempt to compile an even more succinct and to-the-point integrated report, so that they may incisively discern and swiftly adapt to the dynamics of the global business environment and continue to keep ahead of the competition.

External Evaluation

NGK was selected for the first time in September 2016 for the Dow Jones Sustainability Asia Pacific Index in the Dow Jones Sustainability Indices, a major index for socially-responsible investment.

MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM 

Reference Guidelines

Ministry of the Environment's Environmental Reporting Guidelines (2012)
Global Reporting Initiative (GRI)
Sustainability Reporting Guidelines (Ver. 4.0)

Target Organization

Indicated along with each article and data report included in this report.

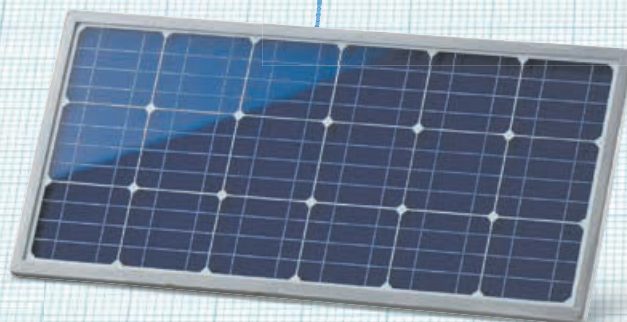
Target Period

April 1, 2016–March 31, 2017

Forward-looking statements This report includes forward-looking statements, such as business forecasts, concerning the NGK Group. Such statements are based on currently available information and reasonable assumptions and projections. However, please note that these assumptions and projections may be affected by various future factors, causing actual results to differ from the presented statements.



← Renewable energy



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