

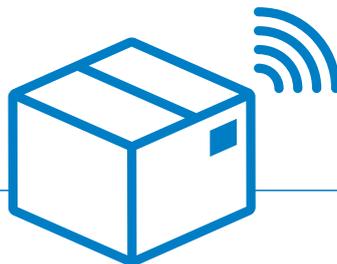
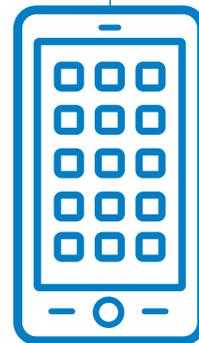
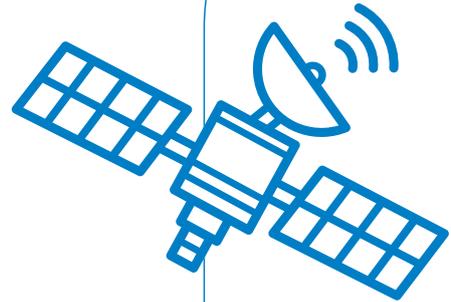
NGK Group Sustainability Website Data 2022

 **NGK INSULATORS**



CN
Carbon
Neutrality

DS
Digital
Society



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Sustainability

Message from the President

The NGK Group will contribute to a sustainable society by achieving what we want to be.



President

Shigeyu Kobayashi

Today, there are growing expectations placed on companies to deliver social value to achieve the Sustainable Development Goals by the deadline of 2030, which is fast approaching. At the same time, many stakeholders are looking for ESG Management that emphasizes environmental, social and governance. Above all, companies' response to the deepening crisis of climate change is an important issue that must be prioritized based on the worldwide trend of carbon neutrality.

With this in mind, in April 2021, the NGK Group formulated the NGK Group Environmental Vision linked to the NGK Group Vision: Road to 2050, which presents what we want to be, in order to achieve our Group philosophy of Enriching Human Life by Adding New Value to Society. This vision states that the NGK Group will contribute to the realization of society's direction toward "carbon neutrality," "a recycling-oriented society," and "harmony with nature" through its business activities. We are now working on initiatives following the four strategies of (1) development and provision of carbon neutrality-related products/services, (2) top-down enhancement of energy-saving, (3) promotion of technical innovation, and (4) expanded use of renewable energy. Furthermore, the NGK Group endorsed the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) in February 2020 and disclosed relevant information after conducting scenario analysis in April 2022.

In order to continue growing in a sustainable manner despite a business environment facing intense change and competition, it is important that the NGK Group respect the human rights of all people and provide a safe and secure work environment. The NGK Group is working to foster a dynamic and vibrant corporate culture that embraces diversity and inclusion, develop human resources focused on individual growth, and strengthen governance globally in an effort to lay the groundwork for even greater enhancement of corporate value.

The NGK Group has engaged in a form of management linked with ESG from the time of its founding a century ago that focuses on resolving social issues through products and services. This approach has remained the same and will remain unchanged going forward. I believe that we must address social needs from today's perspective. Looking ahead, we will create social value through our business while tackling the challenges of transformation using our strength in Ceramic technologies to live up to stakeholder expectations and contribute to a sustainable society.

Sustainability

ESG Management

- [Basic Approach](#) ▾
- [ESG Action System](#) ▾
- [Communication with Stakeholders](#) ▾
- [Position on SDGs](#) ▾

Basic Approach

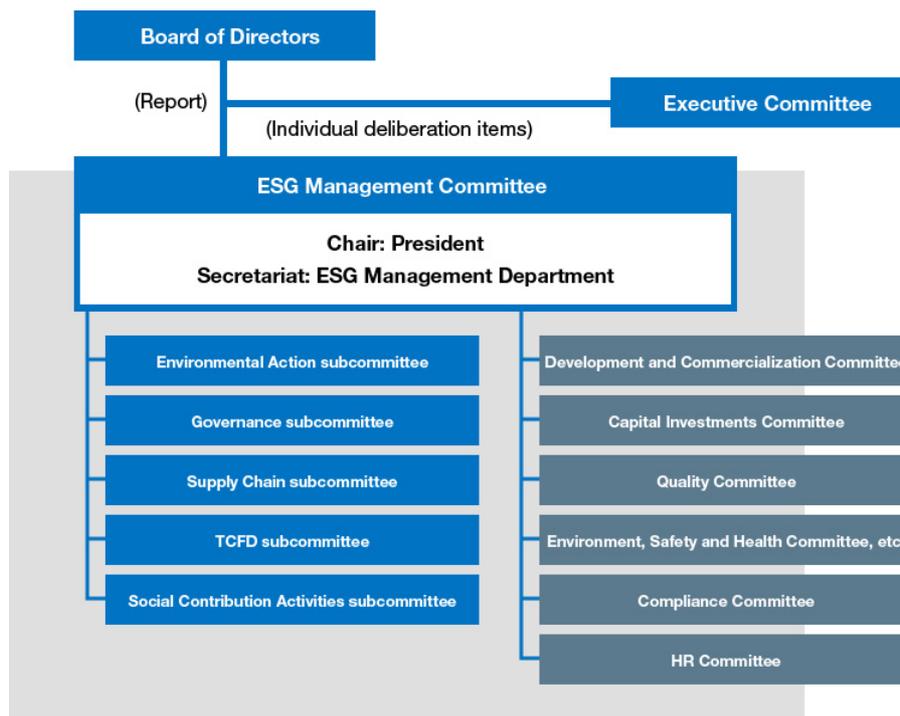
With the Sustainable Development Goals (SDGs) adopted by the United Nations in mind, the NGK Group seeks to provide new value to society with our unique ceramic technologies, thus contributing to the realization of a sustainable society and winning positive expectations and trust from society. This is NGK's basic view on sustainability. We formulated the NGK Group Vision: Road to 2050 based on the NGK Group Philosophy of enriching human life by adding new value to society. We will continue to leverage our unique ceramic technologies towards the realization of carbon neutrality and a digital society.

ESG Action System

ESG (Environmental, Social, Governance) is central to the management of the NGK Group. Amidst ongoing overseas business expansion, we seek to ensure greater managerial transparency and autonomy within an environment which cultivates within every member of the NGK Group a sense of fairness accompanied by decision-making and action in accordance with international norms.

In 2019, the ESG Committee was established as a body for information sharing, opinion exchange and policy discussion among senior management. In 2021, the ESG Management Department was established in order to handle lateral implementation of ESG-related activities across the NGK Group and to strengthen information dissemination about the activities. Furthermore, in April 2022, the ESG Committee was reorganized as the ESG Management Committee, which is chaired by the President, as an enhanced body to handle initiatives on sustainability issues that incorporate elements of ESG and the SDGs and oversee the Board of Directors.

ESG Action System



Key ESG Activity Themes in FY2022

Key themes	Main activities	Activity leader
Environmental initiatives aimed at achieving NGK Group Environmental Vision	<ul style="list-style-type: none"> Internal carbon pricing towards net zero CO₂ emissions, energy-saving, shift to non-fossil fuels, use of renewable energy Visualization of greenhouse gas emissions during the lifecycle of main products Formulation and follow-up on 5-Year Environmental Action Plan and annual plan Response to a recycling-oriented society Response to biodiversity 	Environment Action subcommittee
Climate change countermeasures	<ul style="list-style-type: none"> Specific initiatives on the four themes outlined in the TCFD recommendations: governance, strategy, risk management, and metrics and targets 	TCFD subcommittee
Initiatives on respect for human rights	<ul style="list-style-type: none"> NGK Group human rights due diligence Promotion of hiring, cultivation of human resources and improvement of labor practices Diversity and inclusion 	HR Committee Environment, Safety & Health Committee
Supply chain rollout	<ul style="list-style-type: none"> Implementation of CSR procurement (human rights, labor, environment, and fair business activities, etc.) Assessment of Scope 3 in carbon neutrality 	Supply Chain subcommittee HR Committee
Continuous review of the governance system	<ul style="list-style-type: none"> Integration of management with sustainability issues Strengthening of the supervisory function of the Board of Directors Compliance with Corporate Governance Code Ensuring of appropriate information disclosure and transparency 	Governance subcommittee
Social Contribution Activities	<ul style="list-style-type: none"> Summary and disclosure on NGK Group's social contribution activities Support for foreign nationals 	Social Contribution Activities subcommittee

FY2021 ESG Committee Achievements

Times	Date	Topics of discussion
1st	April 2021	<ul style="list-style-type: none"> Decisions on FY2021 action plans and key themes
2nd	June 2021	<ul style="list-style-type: none"> Review of the operations of the Board of Directors and Executive Committee
3rd	July 2021	<ul style="list-style-type: none"> Planning and progress of FY2021 Net Zero CO₂ Emissions project Summary of the fourth 5-Year Environmental Action Plan, and annual targets of the fifth 5-Year Environmental Action Plan
4th	October 2021	<ul style="list-style-type: none"> Planning and progress of the FY2021 Carbon Neutrality (CN) new business promotion project
5th	November 2021	<ul style="list-style-type: none"> Social Contribution Activities Compliance with the revised Corporate Governance Code
6th	December 2021	<ul style="list-style-type: none"> Report on Net Zero CO₂ Emissions project Progress report on the TCFD Task Force
7th	February 2022	<ul style="list-style-type: none"> Towards achieving ESG management (activity outline for next fiscal year)
8th	March 2022	<ul style="list-style-type: none"> Measures to improve ESG rating
9th	March 2022	<ul style="list-style-type: none"> Information disclosure based on TCFD recommendations Support for Science Based Targets (SBT) and Renewable Energy 100 (RE100)

NGK Group signs UN Global Compact

The NGK Group is a signatory to the United Nations Global Compact, which advocates for independent action on the part of companies, endorsed by the United Nations. We believe that addressing a broad range of social problems through our business activities, while measuring progress against indicators such as the Sustainable Development Goals (SDGs), is an important corporate social responsibility.



Communication with Stakeholders

In addition to promoting understanding regarding the NGK Group among customers, suppliers, shareholders, investors, regional communities, governments, international organizations, universities, research institutes, and employees, we are continuously improving our activities and initiatives through dialogue with all of our stakeholders.



Basic approach

In the NGK Group Code of Conduct, our commitment to “Disclosure of Company Information and Accountability” as a part of stakeholder communication is expressed through the following.

Disclosure of Company Information and Accountability



We will increase healthy and transparent management by active disclosure of information and discussion with stakeholders.

- We will accurately and promptly disclose information required by society.
- We will take seriously the voices of our stakeholders and fulfill our obligation of accountability.

[NGK Group Code of Conduct](#) >

Stakeholder Engagement

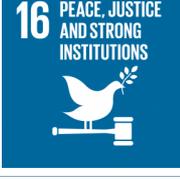
Stakeholders	Approach	Communication (objectives)	Communication (methods)
Customers	To earn and maintain the trust of customers, we engage in the creation of new value through the provision of products and services realizing global environmental conservation and social safety and peace of mind from a long-term and global perspective.	<ul style="list-style-type: none"> • Enhancement of customer satisfaction • Quality improvement 	<ul style="list-style-type: none"> • Official website • Contact desk • Participation in exhibitions • Open innovation
Procurement Partners	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.	<ul style="list-style-type: none"> • Realize fair, free, and transparent transactions • Exchange information with suppliers • Establish better supply chain 	<ul style="list-style-type: none"> • Financial results presentations • Supplier helpline • Individual visits to suppliers in Japan and overseas
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.	<ul style="list-style-type: none"> • Enhancement of corporate value 	<ul style="list-style-type: none"> • General Meeting of Shareholders • Information sessions • Individual visits and interviews • Participation in IR events • Responding to ESG investment • Official website
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.	<ul style="list-style-type: none"> • Respect for the human rights of employees • Development of safe and comfortable workplace environments • Conducting of surveys on workplace environment and employee satisfaction • Penetration of corporate philosophy and policies 	<ul style="list-style-type: none"> • Company newsletter • Global MIZUHO English-version company newsletter • In-house video newsletter • Intranet • Labor-Management Advisory Board meetings, regular Labor-Management Council meetings • Survey on workplace vitality • CRS (Corporate Risk Survey) • Helpline • Hotline
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.	<ul style="list-style-type: none"> • Contribution to regional communities as a trusted corporate citizen 	<ul style="list-style-type: none"> • Collaborative activities with NPOs, etc. • Volunteer activities by employees • Social contribution activities in cooperation with labor unions • Invitation to plant tours and events
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 issues.	<ul style="list-style-type: none"> • Promotion of initiatives to resolve social issues 	<ul style="list-style-type: none"> • Participation in international initiatives
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 resolving social issues.	<ul style="list-style-type: none"> • Development of scientific technologies • Development of technologies that will contribute to solving social issues 	<ul style="list-style-type: none"> • Joint research

Position on SDGs

Ever since its foundation, the NGK Group has pursued business in the energy, ecology, and electronics sectors in an effort to keep nature's air and water clean and thus help people live a comfortable, healthy life. Many of our technologies and products contribute to the SDGs, and we will continue to provide new value by leveraging our unique ceramic technologies towards the realization of a sustainable society.



	Goals	Value provided by the NGK Group
	End poverty in all its forms everywhere	<ul style="list-style-type: none"> - Creating appropriate employment helps to end poverty - The NGK Group's climate change countermeasures help mitigate natural disasters
	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	<ul style="list-style-type: none"> - The social infrastructure created by the NGK Group's products helps secure equal access to work opportunities
	Ensure healthy lives and promote well-being for all at all ages	<ul style="list-style-type: none"> - High-output, high-efficiency semiconductor lasers using gallium nitride (GaN) wafers are a substitute for ultra-high-pressure mercury lamps, thus contributing to reduced use of mercury - Micro-lenses are increasingly used instead of mercury in UV LED light sources for applications such as the sterilization of water and air, thus contributing to reduced use of mercury - Ceramics for purifying automobile exhaust make exhaust gas clean
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	<ul style="list-style-type: none"> - Creating appropriate employment gives people the chance to have equal access to education
	Achieve gender equality and empower all women and girls	<ul style="list-style-type: none"> - The social infrastructure created by the NGK Group's products helps provide more opportunities for women to enhance their abilities - Securing equal opportunities for women to participate and be leaders in society
	Ensure availability and sustainable management of water and sanitation for all	<ul style="list-style-type: none"> - Ceramic membrane filters provide highly safe water - Ceramic membrane filters purify wastewater
	Ensure access to affordable, reliable, sustainable, and modern energy for all	<ul style="list-style-type: none"> - Insulators are indispensable to stable power supply - NAS batteries allow stable supply of renewable energy - Ceramics for purifying automobile exhaust make exhaust gas clean, thus enabling clean usage of fossil fuels
	Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all	<ul style="list-style-type: none"> - Creating appropriate employment and providing employees with a satisfying work environment contributes to economic growth

	Goals	Value provided by the NGK Group
	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	<ul style="list-style-type: none"> Thin lithium-ion rechargeable batteries provide power for the new IoT generation Ceramics used in electronics make ICT cheap and ubiquitous Ceramics for semiconductor manufacturing equipment let the semiconductor industry be the foundation for modern daily life Metal-related products are widely used in mobile phones, automobiles, industrial equipment, and other devices that undergird modern life
	Reduce inequality within and among countries	<ul style="list-style-type: none"> We prevent discrimination and take prompt and appropriate action when violations occur
	Make cities and human settlements inclusive, safe, resilient, and sustainable	<ul style="list-style-type: none"> NAS batteries enable innovation in urban energy management for the creation of sustainable cities
	Ensure sustainable consumption and production patterns	<ul style="list-style-type: none"> We efficiently use the natural resources used to make ceramics
	Take urgent action to combat climate change and its impacts	<ul style="list-style-type: none"> NAS batteries aid in the fight against climate change by allowing stable supply of renewable energy
	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	<ul style="list-style-type: none"> Ceramic membrane filters purify wastewater to prevent marine pollution
	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	<ul style="list-style-type: none"> We protect biodiversity on land owned by the NGK Group
	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels	<ul style="list-style-type: none"> We comply with the rules and regulations of the countries and regions in which we do business, and ensure respect for and strict compliance with international treaties
	Strengthen the means of implementation and revitalize the global partnership for sustainable development	<ul style="list-style-type: none"> We encourage and promote effective partnerships among governments, corporations, and society as a whole

[Sustainability](#)

NGK's Core Policy on the Environment

In April 2021, the NGK Group established the NGK Group Vision: Road to 2050 along with the NGK Group Environmental Vision. The NGK Group Environmental Vision is centered on making contributions to carbon neutrality, a recycling-oriented society, and harmony with nature. In April of the same year, we revised NGK's Core Policy on the Environment based on the NGK Group Environmental Vision. On the basis of the revised policy, the NGK Group works to reduce the environmental impact of business activities, and actively strives to help protect the environment by developing products and technologies to that end by following the Guidelines for Environmental Action.

[NGK Group Vision](#)[NGK Group Environmental Vision](#)

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 in order to bring its corporate activities into harmony with the environment. Based on the NGK Group Environmental Vision announced in April 2021, we will promote initiatives to contribute to carbon neutrality, a recycling-oriented society, and harmony with nature. On the basis of this policy, the NGK Group works to reduce the environmental impact of business activities, and actively strives to help protect the environment by developing products and technologies to that end.

* Revised in April 2021

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 and expand the use of renewable energy 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.
 - Manage the risks of water resources and strive to make effective use of water in our business activities.
 - 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.

Scope of Application

All NGK Group Sites

- NGK: Head Office, Nagoya Site, Chita Site, Komaki Site, Ishikawa Plant, Tokyo Main Office, Osaka Branch, and six other sales offices
- Group companies: 45 consolidated subsidiaries

Use of Green Bonds*

In December 2021, the NGK Group issued its inaugural green bond (unsecured corporate bond), which aims to achieve its goals of NGK Group Vision: Road to 2050 and NGK Group Environmental Vision. The proceeds of the green bonds will be used to finance carbon-neutral R&D and the Group's decarbonization projects, all designed to put the vision into practice. NGK's green bond framework has received the highest rating of Green 1 (F) in the JCR Green Finance Framework Evaluation of Japan Credit Rating Agency, Ltd. (JCR), a third-party agency.

* Green bonds: Bonds issued with limits on the use of proceeds, which is specifically for projects that improve the environment

Sustainable Finance



Sustainability

NGK Group Environmental Vision

To help realize the Sustainable Development Goals (SDGs) adopted by the United Nations, the NGK Group seeks to provide new value to society with our unique technology, thus contributing to the realization of a sustainable society and earning positive expectations and trust from society. The NGK Group Vision: Road to 2050 announced in April 2021 outlines the entity that NGK strives to become by 2050 and requires management to address Environmental, Social, Governance (ESG) issues. Based on the NGK Group Vision and to respond to such expectations and trust, in April 2021 we formulated the NGK Group Environmental Vision.

NGK Group Environmental Vision

The NGK Group will contribute to the realization of society's direction toward carbon neutrality, a recycling-oriented society, and harmony with nature through its business activities.

Toward carbon neutrality

We will develop and provide products and services that contribute to the realization of a carbon-neutral society and apply them to our own business activities in order to achieve our goal of net zero CO₂ emissions by 2050.

Toward a recycling-oriented society

We will contribute to the realization of a recycling-oriented society by reducing our natural resource consumption and developing and providing resource-efficient products.

Toward harmony with nature

We will minimize our environmental impact on ecosystems and raise stakeholder awareness through educational activities in order to achieve harmony with nature.

Carbon Neutrality Strategic Roadmap

The NGK Group has drawn up its Carbon Neutrality Strategic Roadmap comprising four strategies as a guide to realizing the goals of the NGK Group Environmental Vision.

We have established a Group-wide target of net zero CO₂ emissions by 2050, with milestone targets along the way of 550,000 metric tons by FY2025 (25% reduction compared with the FY2013 base year) and 370,000 metric tons by FY2030 (50% reduction). In the future, we will consider advancing our efforts to achieve net zero ahead of schedule by promoting the development of related technologies such as hydrogen, CCU and CCS (carbon capture, use and storage).

Four Strategies of the Carbon Neutrality Strategic Roadmap

Strategy 1: Development and provision of carbon neutrality (CN)-related products/services

In addition to our existing carbon neutrality (CN)-related products, we will also work to commercialize new products under development as well as offer society NAS battery-driven renewable energy supply business and other relevant services.

Strategy 2: Top-down enhancement of energy-saving

We will work to further enhance our existing energy conservation activities, as well as introduce high efficiency equipment and facilities and more energy-efficient operations.

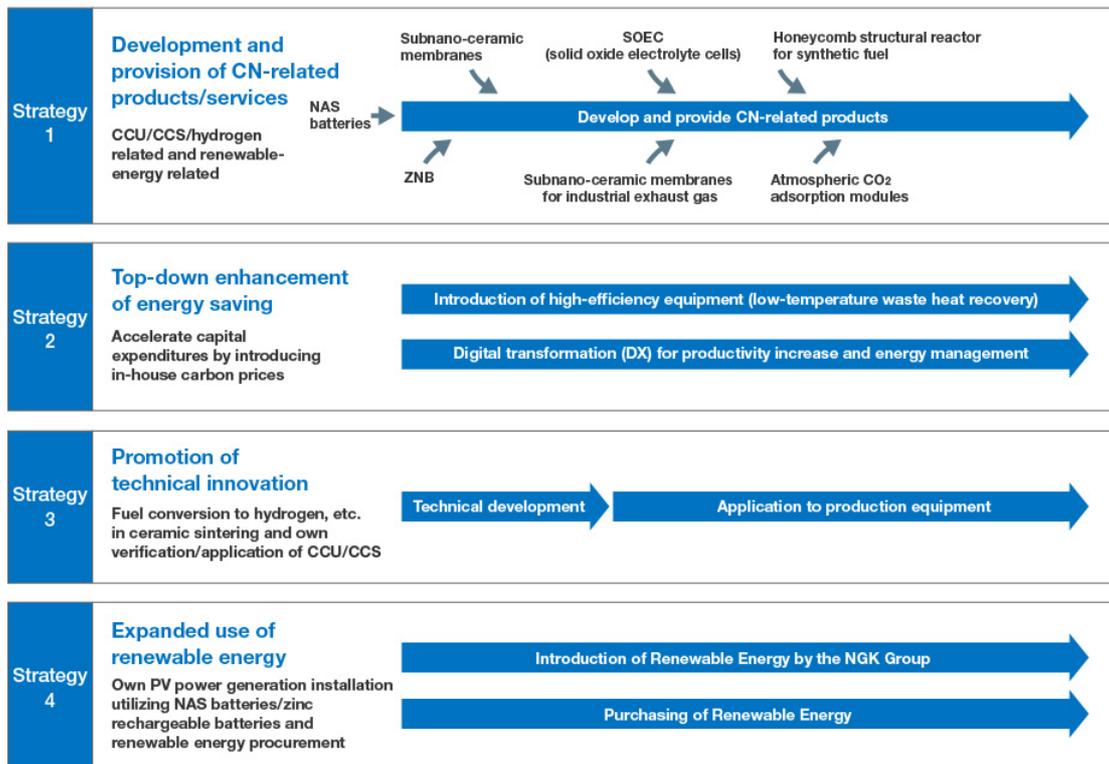
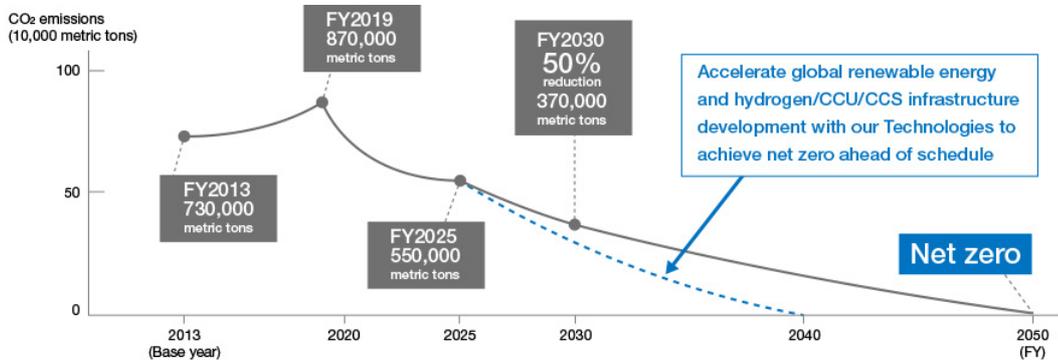
Strategy 3: Promotion of technical innovation

Although the ceramics firing process requires fossil fuel which is responsible for CO₂ emissions, we will work to switch over to hydrogen, ammonia and other fuels that will allow us to become fossil fuel-free.

Strategy 4: Expanded use of renewable energy

In addition to promoting various renewable energy procurement strategies both within Japan and overseas, we will install photovoltaic (PV) power generation systems at manufacturing sites within the NGK Group, and use them in conjunction with NAS batteries and zinc rechargeable batteries, to achieve demand control. We will use this as a model case in NGK Group's renewable energy business, and work towards the goal of enabling all energy demand within the NGK Group to be met through renewable energy.

Carbon Neutrality Strategic Roadmap



Sustainability

5-Year Environmental Action Plan

The NGK Group formulates five-year action plans for the environment. To achieve the goals of the 5-year targets, we are promoting environmental activities and setting annual targets.

Outline of the Fifth 5-Year Environmental Action Plan (FY2021–2025)

In FY2021, we established the Fifth 5-Year Environmental Action Plan, which encompasses our environmental action targets through FY2025. This is the first 5-year plan aimed at realizing the NGK Group Environmental Vision announced in April 2021, which targets net zero CO₂ emissions by 2050. The Environmental Vision's key themes are "carbon neutrality," "a recycling-oriented society," and "harmony with nature."

Reference Year, Target Year, Control Scope

- Reference Year: FY2013 (for some, FY2019)
- Target Year: FY2025
- Control Scope: Consolidated (for some, Japan)

Targets of the Fifth 5-Year Environmental Action Plan

The plan pursues environmental action centered on the three themes of "carbon neutrality," "a recycling-oriented society," and "harmony with nature," all of which are aimed at realization of the NGK Group Environmental Vision.

With regard to initiatives toward carbon neutrality, the KPI used for CO₂ has been changed to CO₂ emissions volume from basic unit per net sales. The intent of this change is to link the KPI to our NGK Group Environmental Vision target, and make it easier to gauge our progress towards our milestone target of a 50% reduction (370,000* metric tons) in CO₂ emissions by FY2030 compared with the reference year of FY2013 and net zero CO₂ emissions by 2050. Also, in order to facilitate action aimed at expanding the use of renewable energy, we have established a target for the rate of renewable energy to total energy usage for the entire Group. Achieving this target will not only bring the NGK Group closer to achieving net zero carbon emissions but also help promote more widespread adoption of renewable energy in society.

In terms of recycling of resources, similar to the Fourth 5-Year Plan, we have set targets for continuous improvement using the reduction of waste generated per unit of sales, reduction rate against business as usual (BAU), and the recycling rate as management indicators.

Further, along with climate change, we also recognize that water resources represent an area of significant environmental concern, and it has been our ongoing practice to evaluate water resource risks and take appropriate action in response. Under the current plan, we have changed to quantitative indicators from qualitative indicators that will help us take more substantive action in addressing these risks.

From the perspective of connecting with society, we are focused on contributions to environmental society and promotion of environmental communication. In terms of contributions to environmental society, we have traditionally used the growth rate in sales of products contributing to environmental protection as a target; however, in order to bring this more in line with the NGK Group Environmental Vision, we have set a target to increase the number of carbon-neutrality-related products and services registered. With regard to CSR procurement, we are seeking to assess environmental data from our suppliers, including CO₂ emissions.

* The calculation standards for emissions have been revised to match the market standards stipulated by the GHG Protocol. Specifically, the power emission factor (coefficient for converting power consumption into CO₂) has been changed from the conventional fixed value to the actual value of the power company every year. This will reflect the renewable energy utilization rate.

Results of the Fifth 5-Year Environmental Action Plan in FY2021 (first year)

Below are the targets and results for FY2021, targets for FY2022, and targets for the final year of the current 5-year action plan, in FY2025.

While there were signs of recovery as response to the COVID-19 pandemic progressed, the global economy remains uncertain due to disruption in the supply chain as a result of semiconductor shortages, soaring prices of raw materials, and the tense situation in Ukraine in the second half of FY2021.

Despite this, the NGK Group still saw an increase in volume mainly in automotive related products and semiconductor manufacturing equipment thanks to the improved operating rates of high efficiency equipment that we invested in a few years ago, which led to an improvement in the basic units of the above product series. In addition, through our expanded efforts to increase renewable energy use since FY2021, we reduced CO₂ emissions by approximately 200,000 metric tons.

As a result, we achieved CO₂ emissions of 620,000 metric tons against the target of 700,000 metric tons, as well as 25% of the target for rate of renewable energy use. The Fifth 5-Year Environmental Action Plan and the NGK Group Environmental Vision are off to a good start as we have also reached all other quantitative targets, including for other emissions and water consumption.

Results in FY2021 were as follows.

Category	Item	KPI	FY2021			FY2022 Target	FY2025 Target	Related SDGs
			Target	Result	Self-evaluation ^{*1}			
 Initiatives toward carbon neutrality	Reduce CO ₂ emitted by manufacturing activities	CO ₂ emissions (consolidated)	700,000 metric tons (Reduce by 4% from FY2013)	620,000 metric tons (Reduced by 15% from FY2013)	○	600,000 metric tons (Reduce by 18% from FY2013)	550,000 metric tons (Reduce by 25% from FY2013)	
		Rate of renewable energy usage (consolidated) ^{*2}	25%	25%	○	25%	50%	
	Reduce CO ₂ emissions across value chain	Plan progress	Initiate life-cycle assessment (LCA) of major products	Calculated with NAS battery and HONEYCERAM	○	<ul style="list-style-type: none"> •Scope 3 consolidated disclosure •Expand scope of LCA calculation 	<ul style="list-style-type: none"> •Expand scope of Scope 3 calculation •Life-cycle assessment (LCA) of major products 	
 Initiatives for a recycling-oriented society	Reduce waste emitted from manufacturing	Basic unit per net sales of waste emitted (consolidated)	Reduce by 44% from FY2013	Reduced by 44% from FY2013	○	Reduce by 46% from FY2013	Reduce by 50% from FY2013	
		Reduction rate against BAU for waste emitted (consolidated)	Reduce by 25% from FY2013	Reduced by 26% from FY2013	○	Reduce by 27% from FY2013	Reduce by 30% from FY2013	
	Promote resource recycling	Recycling rate (Japan)	At least 99%	99.5%	○	At least 99%	Maintain at least 99%	
	Manage and respond to water resource risks	Basic unit per net sales of water consumption (consolidated)	FY2019 level	Maintained FY2019 level	○	FY2019 level	Maintain FY2019 levels	
 Initiatives toward harmony with nature	Promote biodiversity conservation	Plan progress	Research on Japan and overseas trends	Participated in the Keldanren Committee on Nature Conservation	○	Research on Japan and overseas trends	Expand and enhance actions aimed at Post-2020 Global Biodiversity Framework targets	
 Contributions to environmental society	Develop and distribute products/services contributing to environmental protection	Number of registered products	Increase number of registered products	No change in registered products	○	Increase registered products	Increase number of CN-related products/services registered	
	Promote CSR procurement	Plan progress	Review details of survey on suppliers	Implemented supplier survey in Japan	○	Specific response to suppliers	Ascertain environmental data of suppliers	
 Promotion of environmental communication	Contribute to local communities	Plan progress	Collaboration with Aichi Sustina Research Institute and EPOC	Collaborated with Aichi Sustina Research Institute and EPOC	○	Collaboration with EPOC and Aichi Mirai Forum	Continually enhance actions partnering with local communities	
	Increase environmental awareness	Plan progress	Publicize NGK Group Environmental Vision	Video streaming of briefing	○	Publicize NGK Group Environmental Vision	Continually enhance environmental training and information disclosure	

*1 Self-evaluation standards for achievement level of fiscal year target: ○: Target achieved; ×: Target not achieved

*2 Ratio of electricity from renewable energy to total electricity consumption

Sustainability

Environmental Performance

Environmental Performance Overview

The following shows the inputs (raw materials and energy) and outputs (products, services, and substance emissions to the water and air) which are related to the business activities of all NGK Group locations in Japan and overseas.

NGK Group Material Balance (inputs and outputs)

Category	Substance	Unit	FY2019		FY2020		FY2021	
			Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated
INPUT	Electric power	TWh	0.95	0.25	0.88	0.22	0.98	0.23
	Gas (natural gas conversion)	Million Nm ³	137	19	116	17	137	16
	Oil (light oil conversion)	Million L	1.74	0.30	1.65	0.31	1.64	0.29
	Raw materials	10 ⁴ metric tons	15	3	14	3	16	2
	Recycled materials	10 ⁴ metric tons	0.4	0.4	0.4	0.4	0.4	0.4
	PRTR	Metric tons	589	236	506	188	447	186
	Water withdrawal	Million m ³	4.33	1.55	3.78	1.45	4.37	1.41
OUTPUT	Energy-origin CO ₂	10 ⁴ metric tons of CO ₂	87	16	76	13	63	12 [□]
	Energy-origin CO ₂ (including effects of CN LNG) ^{*1}	10 ⁴ metric tons of CO ₂	-	-	-	-	62	10
	Other greenhouse gases	10 ⁴ metric tons of CO ₂	1	0	0	0	0	0

Category	Substance	Unit	FY2019		FY2020		FY2021	
			Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated
	CO ₂ (non-energy origin CO ₂)	10 ⁴ metric tons of CO ₂	0	0	0	0	0	0
	CH ₄	10 ⁴ metric tons of CO ₂	0	0	0	0	0	0
	N ₂ O	10 ⁴ metric tons of CO ₂	0	0	0	0	0	0
	HFC	10 ⁴ metric tons of CO ₂	0	0	0	0	0	0
	PFC	10 ⁴ metric tons of CO ₂	0	0	0	0	0	0
	SF ₆	10 ⁴ metric tons of CO ₂	0	0	0	0	0	0
	VOC	Metric tons	68	0	83	0	77	1
	PRTR-listed substances (emissions into atmosphere)	Metric tons	76	3	89	3	84	2
	Discarded materials	10 ⁴ metric tons	5	1	5	1	5	1
	Recycled	10 ⁴ metric tons	4	1	4	1	4	1
	Disposed of externally	10 ⁴ metric tons	1	0	1	0	1	0
	Water discharge	Million m ³	3.14	1.40	2.53	1.09	2.74	1.03
	PRTR-listed substances (discharge into bodies of water)	Metric tons	1	1	0	0	1	1

Category	Substance	Unit	FY2019		FY2020		FY2021	
			Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated
	Scope 1 (energy-origin CO ₂)	10 ⁴ metric tons of CO ₂	31	4	26	4	31	4 [☑]
	Scope 1 (including effects of CN LNG) ^{*1}	10 ⁴ metric tons of CO ₂	-	-	-	-	29	2
	Scope 2 (energy-origin CO ₂)	10 ⁴ metric tons of CO ₂	56	11	49	10	33	9 [☑]

☑ Value subject to third-party assurance by Deloitte Tohmatsu Sustainability Co., Ltd.

Note: The figures indicating environmental performance in this table have been rounded off for convenience, so the total may not equal the sum of the individual figures.

Note: Discarded materials indicates the sum total of industrial waste and valuable resources.

Note: The figures in the non-consolidated column are the data for NGK production locations (Head Office/Nagoya Site, Chita Site, Komaki Site, Ishikawa Plant).

Note: As with the non-consolidated values, the emission factor for electricity in the consolidated values of Outputs/Energy-origin CO₂ (including effects of CN LNG) and Scope 2 (energy-origin CO₂), has been changed from a fixed value to the actual value from the power company for each fiscal year, beginning in FY2020.

*1 CN LNG (Carbon Neutral Liquid Natural Gas) is LNG that is offset with CO₂ credits, and thus considered to have no CO₂ emissions. However, we show it as a separate category because it does not qualify for credits under current energy conservation laws.

Water Withdrawal, Water Discharge, and Recycling Rate

Water Withdrawal by Source, Water Discharge by Destination, Volume Recycled, and Recycling Rate

Item name	Unit	FY2019		FY2020		FY2021		
		Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	
Water withdrawal	Tap water/industrial water	Million m ³	3.710	1.080	3.135	0.949	3.720	0.982
	Groundwater	Million m ³	0.620	0.470	0.640	0.497	0.614	0.391
	Rainwater	Million m ³	0.001	0.000	0.002	0.000	0.002	0.000
	Total	Million m ³	4.331	1.550	3.777	1.445	4.336	1.373
Water discharge	Rivers	Million m ³	0.828	0.354	0.734	0.296	0.733	0.301
	Lakes	Million m ³	0.000	0.000	0.000	0.000	0.000	0.000
	Sea	Million m ³	1.618	0.847	1.201	0.630	1.218	0.529
	Sewerage	Million m ³	0.419	0.195	0.376	0.165	0.458	0.164

Item name		Unit	FY2019		FY2020		FY2021	
			Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated
	Factory complex processing	Million m ³	0.241	0.000	0.207	0.000	0.238	0.000
	Other	Million m ³	0.013	0.0	0.017	0.000	0.057	0.000
	Total	Million m ³	3.140	1.400	2.534	1.092	2.704	0.994
Volume recycled		Million m ³	0.090	0.000	0.066	0.000	0.063	0.000
Recycling rate		%	2.0	0.0	1.7	0.0	1.5	0.0

INPUT

1. Energy

Electric power: electric power consumption

Gas: consumption volume of each type of fuel gas converted into natural gas volume
 = Σ (Consumption volume of each fuel gas \times Unit heating value of each fuel gas \div Unit heating value of natural gas)
 <Unit heating value of fuel gas>

Natural gas: 43.5 MJ/Nm³, but in China from FY2021: 38.9 MJ/Nm³

City gas: 45.0 MJ/Nm³, but from FY2021 city gas other than for NGK alone: 44.8 MJ/Nm³,

LPG: 50.8 MJ/kg, LNG: 54.6 MJ/kg

Oil: consumption volume of each type of fuel converted into light oil volume

= Σ (Consumption volume of each fuel \times Unit heating value of each fuel \div Unit heating value of light oil)
 <Unit heating value of fuel gas>

Light oil: 37.7 MJ/L, Heavy oil A: 39.1 MJ/L, Kerosene: 36.7 MJ/L, Gasoline: 34.6 MJ/L

2. Water withdrawal

Total tap water, industrial water, groundwater, and rainwater

3. PRTR-listed substances

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

4. Raw materials

Total amount of raw materials used to manufacture products

OUTPUT

5. Energy-origin CO₂ emission volume

Energy-origin CO₂ emission volume = Σ (Consumption of each type of energy \times CO₂ conversion factor of each type of energy)

<CO₂ conversion factor of energy>

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

Electric power: Japan: Emission coefficient for each electric utility adjusted in Japan based on the Act on Promotion of Global Warming Countermeasures

US (other than NMC, FMI California, NL): Green-e value; US (NMC, FMI California, NL): Green-e value / value published by electric company*

Belgium, France: AIB value

Australia: Australian National Greenhouse Accounts value, Poland: AIB value / Poland National Centre for Emission

Management* value, China: IEA value / Ministry of Ecology and Environment of the Republic of China value*, IEA values for other countries

Fuel: Natural gas in China (Nm³) 2.22/2.16*, Natural gas outside China (Nm³) 2.22, City gas for NGK alone(Nm³) 2.244/2.29*, City gas other than for NGK alone (Nm³) 2.23, LPG (kg) 3.00, LNG (kg) 2.70, Light oil (L) 2.58, Heavy oil A (L) 2.71, Kerosene (L) 2.49, Gasoline (L) 2.32, Industrial steam (MJ) 0.06

* Data to left of "/" is for FY2019 and FY2020, data to right is for FY2021

6. Emission volume of other greenhouse gases

Emission volume of other greenhouse gases (tCO₂) = volume of activity × emission coefficient × Global warming potential
<Global warming potential>

CO₂: 1, CH₄: 25, N₂O: 298, HFC: differs depending on type, PFC: differs depending on type, SF₆: 22800, NF₃: 17200

7. Water discharge

Total volume of water discharged. However, this does not include the rainwater discharge volume.

8. PRTR-listed substances

Discharge into bodies of water: Total amount of Japan's PRTR Type 1 listed substances discharged into public bodies of water

Emissions into atmosphere: Total amount of Japan's PRTR Type 1 listed substances emitted into the 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

10. Scope 1 through 3

Scope 1: Direct emissions of greenhouse gases by the reporting company (generated from industrial processes or the burning of fuel)

Scope 2: Indirect emissions of greenhouse gases by the reporting company resulting from the use of electricity, steam, or heat purchased from other companies

Scope 3: All other indirect emissions of greenhouse gases (not included in Scope 1 or 2) that occur in the reporting company's value chain

Scope 3 GHG Emissions

Because it has become necessary to ascertain the CO₂ emissions of supply chains in recent years, since FY2017 NGK has calculated its non-consolidated upstream emissions for Scope 3 (from category 1 through category 8). Starting in FY2021 the entire NGK Group began calculating Scope 3 emissions for all categories (category 1 through category 15, excluding those which do not apply to NGK), and in FY2021 they totaled 3.449 million metric tons.

This is the first calculation for the entire NGK Group, and we were able to see the outline and scope for each category. Hereafter we will determine the important categories and consider what kind of efforts we can make towards reductions. In addition, in April 2022, NGK submitted a commitment letter to the SBTi (Science Based Targets initiative), the certification organization for Science Based Targets (SBT). Going forward, we will formulate a reduction plan for Scope 3 in addition to Scope 1 and 2. Once our science based targets (SBT) have been approved, we will actively encourage our suppliers to pursue CO₂ emissions reductions.

Scope 3 GHG Emissions

Category	Division	Unit	FY2019	FY2020	FY2021
			Non-consolidated	Non-consolidated	Consolidated
1	Purchased products and services	10 ⁴ metric tons of CO ₂	84.2	77.0	178.8
2	Capital goods (capital investment)	10 ⁴ metric tons of CO ₂	9.9	9.0	13.4
3	Energy	10 ⁴ metric tons of CO ₂	1.6	1.5	8.6

Category	Division	Unit	FY2019	FY2020	FY2021
			Non-consolidated	Non-consolidated	Consolidated
4	Transport (upstream)	10 ⁴ metric tons of CO ₂	1.4	1.3	18.8
5	Waste	10 ⁴ metric tons of CO ₂	0.2	0.2	1.2
6	Business trips	10 ⁴ metric tons of CO ₂	0.1	0.1	0.3
7	Employee commutes	10 ⁴ metric tons of CO ₂	0.2	0.2	0.9
8	Leased assets (upstream)	10 ⁴ metric tons of CO ₂	—	—	—
9	Transport (downstream)	10 ⁴ metric tons of CO ₂	—	—	—
10	Processing of sold products	10 ⁴ metric tons of CO ₂	—	—	—
11	Use of sold products	10 ⁴ metric tons of CO ₂	—	—	122.6
12	Disposal of sold products	10 ⁴ metric tons of CO ₂	—	—	0.4
13	Leased assets (downstream)	10 ⁴ metric tons of CO ₂	—	—	—
14	Franchises	10 ⁴ metric tons of CO ₂	—	—	—
15	Investment	10 ⁴ metric tons of CO ₂	—	—	—
Total		10 ⁴ metric tons of CO ₂	97.7	89.3	344.9

Sustainability

Initiatives Toward Carbon Neutrality

Preventing Global Warming

Initiatives to Reduce CO₂ Emissions

The NGK Group has been making steady progress toward achieving the CO₂ emissions reduction targets of our Fifth 5-Year Environmental Action Plan, by creating and implementing annual improvement plans in line with the business plans of each of our manufacturing sites both within Japan and overseas. In FY2021, the first year of the NGK Group's Fifth Five-Year Environmental Action Plan, we saw an increase in production volume in Environment Business Group and Digital Society Business Group amid the recovery from the COVID-19 pandemic. Given this, we have focused on a variety of initiatives following the NGK Group Environmental Vision which clearly stipulates the goal to achieve net zero CO₂ emissions in 2050.

In FY2021, NGK launched the Net Zero CO₂ Emissions Project as a cross-functional organization in effort to develop an organization dedicated to net zero. With the Senior Vice President responsible for Corporate Manufacturing Engineering serving as the project leader, working groups have been launched based on the four strategies for carbon neutrality to implement initiatives on various themes including improving energy conservation efforts, implementing internal carbon pricing, developing fuel conversion technology, and installing photovoltaic power generation systems.

To visualize energy consumption, we started collecting monthly energy data and sharing this data on an internal platform.

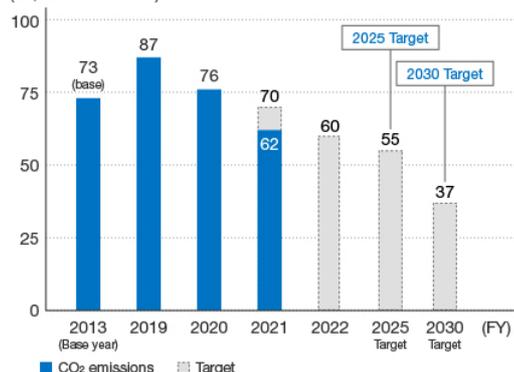
As a result of energy conservation efforts in FY2021, CO₂ emissions were reduced by 69,000 metric tons, including 12,000 metric tons in improvement per basic unit. Furthermore, in terms of the procurement of renewable energy, sites in Japan including Nagoya, Chita and Komaki, as well as NGK Ceramic Device headquarters have completely switched to carbon neutral LNG*, while renewable energy use is also expanding at overseas Group companies. As a result of these efforts, our CO₂ emissions in FY2021 totaled 620,000 metric tons, achieving the target for FY2021.

Starting in FY2022, we will further strengthen data-driven analysis to improve energy conservation activities. In an effort to expand the use of renewable energy, we have already installed photovoltaic power generation systems at production sites in Japan and overseas, with the plan to begin operation at NGK Ceramic Device Tajimi in FY2022. Reflecting these efforts, we have set our target CO₂ emissions for FY2022 at 600,000 metric tons. Meanwhile, we have started ceramic firing tests using hydrogen burner furnaces to promote hydrogen use aimed at further encouraging technical innovation that will help us achieve our net-zero CO₂ emissions target from 2030 onwards. At the same time, we are also planning to test carbon capture and storage (CCS) for storing the CO₂ we release.

* Carbon neutral LNG is a type of LNG considered to have no CO₂ emissions because they can be offset with CO₂ credits.

CO₂ Emissions (all NGK Group production sites)

(10,000 metric tons)

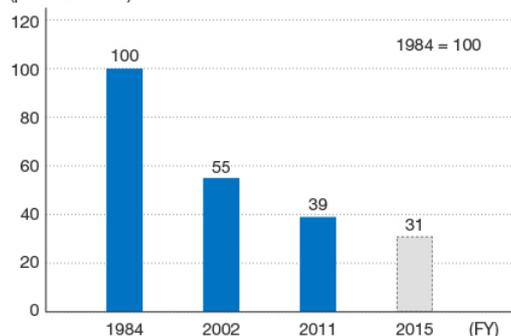


Adoption of Environmentally Friendly Production Processes

The NGK Group makes efforts to reduce environmental impacts resulting from production through the introduction of highly energy efficient equipment and the promotion of the recovery and use of exhaust heat and improved production efficiency. We are committed to creating even more advanced eco-processes, aimed at enhancing competitiveness.

Comparison of CO₂ Emissions from Continuous Kilns by Year of Introduction

(per unit of CO₂)



* Change in per unit of CO₂ Emissions from continuous kilns, a typical production facility

Measures to Reduce CO₂ Emissions and Effects

As we strive to reduce CO₂ emissions of the Group as a whole, we have focused on developing company-wide organizations, sharing of basic unit targets and CO₂ reduction targets, collecting monthly energy data, and visualizing our efforts with the launch of an internal platform, which are steadily showing results. Our main initiatives and their effects are as follows.

Main Initiatives Aimed at Reducing CO₂ Emissions

Category	Measures	Effects (FY2021)
Enhance energy conservation promotion structure	Develop a Group-wide organization for energy conservation Collect monthly energy data and visualize efforts through internal platform commentary	CO ₂ reduction effect Reduction from energy conservation activities: 12,000 metric tons Establishment of higher efficiency plants and streamlined operations from improved management: 57,000 metric tons
Increase efficiency of manufacturing processes	Main production efficiency initiatives at overseas sites <ul style="list-style-type: none"> — Introduction of innovative production processes — Facility improvements — Operational improvements 	
Energy conservation support for Group companies	Promoting energy conservation at overseas sites <ul style="list-style-type: none"> — Created an English version of the voluntary energy conservation guidelines and a best practice brochure and distributed to overseas sites — Head Office staff visited overseas sites and conducted activities with local employees 	
Energy conservation activities for general equipment	Main improvements deployed across the Group <ul style="list-style-type: none"> — Replaced boilers with higher efficiency models — Prevented air and steam leaks and rationalized usage — Switched to LED lighting — Renewed air-conditioning equipment and rationalized air conditioning settings 	

Energy Conservation of General Equipment and Buildings

The NGK Group has been actively promoting energy conservation activities in relation to general equipment, such as lighting, air conditioners, boilers, and compressors. The Head Office plays a central role in this by sharing know-how among different manufacturing locations, thereby achieving more efficient activities. Whenever our buildings are built or altered, we ensure that large-scale energy-saving measures and ZEB principles are incorporated.

(1) Head Office Engineering supporting energy-saving activities at overseas production sites

The Head Office provides support for energy conservation measures on general equipment (compressors, boilers, air conditioners, etc.) at overseas production sites. These efforts have produced solid results at overseas Group companies, including NGK Adrec, which manufactures fire refractories, and

NGK Ceramic Device, which manufactures electronics parts. Our initiatives include 1) energy conservation patrols (identifying leaks or waste and implementing measures) and 2) visualization of data (establishing appropriate values for energy intensity and conducting management). All of these initiatives are conducted jointly with local members and contribute to the increased energy conservation of manufacturing facilities and dramatic reduction in energy costs.

(2) Creating and distributing a printed version of the energy conservation brochure and guidelines

We have created a digital version (Japanese and English) of our energy conservation guidelines and brochure of best practices for distribution within the Group. We also distribute a printed version to each manufacturing site inside and outside of Japan to be kept on hand at worksites for quick reference. This is expected to help enhance voluntary activities and further reduce CO₂ emissions.



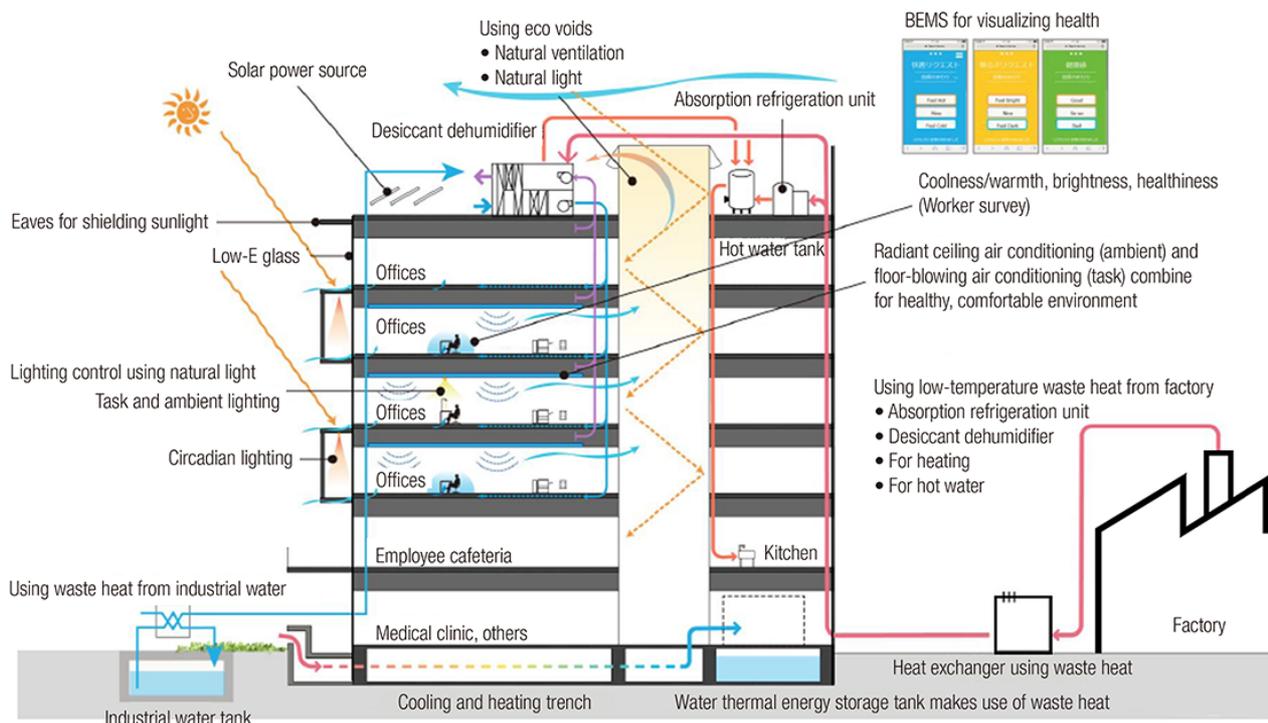
(3) Efforts to conserve energy of buildings

Whenever there is an opportunity to build or renovate a building, we actively endeavor to utilize high-efficiency equipment and introduce renewable energy, and carefully consider each location so as to effectively utilize any natural advantages, such as low-temperature waste heat from our adjacent factories and natural ventilation/lighting, to achieve significant energy savings. Efforts like these allowed the new administration/welfare wing, which was completed in Mizuho, Nagoya in January 2020, to be a zero energy building (ZEB)-oriented office facility whose CO₂ emissions are less than half of the official standard. This construction project has been lauded for its pioneering CO₂ reduction technology, and it was adopted as a Leading Sustainable Building Project (CO₂ Reduction) by Japan's Ministry of Land, Infrastructure, Transport and Tourism.

We have many more construction and renovation projects lined up as part of our plans to restructure and update old buildings, all of which will include energy saving and ZEB measures.



New administration/welfare wing



Global Warming Countermeasures by Group Companies

NGK Stanger, Energy Support, and Hokuriku Energys

We collect and recycle gas-filled switches that are disposed of by customers. These units contain sulfur hexafluoride (SF₆) for insulation purposes. As it has a very high global warming potential, the companies collect all SF₆ when disassembling the unit without allowing it to be released into the atmosphere. The total amount of SF₆ recovered in FY2021 was 730 kg, which is the equivalent of approximately 17,000 metric tons of CO₂.



NGK Ceramics Polska

Since 2011, NGK Ceramics Polska has been focusing on improving processes for manufacturing SiC-based diesel particulate filters (DPFs), its main product.

Target areas include particularly energy-intensive sintering and drying processes, for which we have carried out various measures to reduce CO₂ emissions. To further improve our performance, we will introduce new measures, including technologies provided by the Nagoya Site.



NGK Metals

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

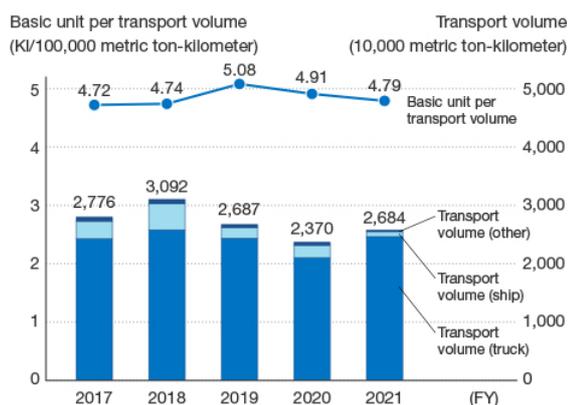


Calculation of CO₂ Emissions in Life Cycle Assessment

Life cycle assessment (LCA) is a quantitative evaluation method for environmental impacts of products and services throughout their lifecycle (raw material extraction-raw material production-product manufacturing-distribution/consumption-disposal/recycling). In order to promote carbon neutrality, it is important to not only ascertain our company's emissions in Scope 1 and Scope 2, but also assess the CO₂ emissions within the supply chain and implement reduction initiatives through working collaboratively with suppliers and customers. On top of Scope 3 calculations relevant to the entire company, the first step of our initiatives should be to understand CO₂ emissions from the LCA of our own products. Expanding Scope 3 calculation range and conducting life cycle assessment of major products are listed as targets in the NGK Group's Fifth Five-Year Environmental Action Plan. In FY2021, we performed calculations of two major products (NAS battery and HONEYCERAM) based on ISO 14040. We will expand the target products and strive to achieve reductions within the LCA of each product going forward.

Reduction of CO₂ in Logistics Processes

NGK has worked to reduce CO₂ emissions from logistics with measures including improving loading efficiency and promoting a modal shift. In recent years, the basic unit per transport volume has been deteriorating due to a decline in the volume of goods transported by sea on account of a change in the product mix. In FY2021, we achieved an improvement in CO₂ emissions with a 2.4% reduction year-on-year.



Introduction of Renewable Energy

We need to expand the use of renewable energy to achieve the goal of net zero in 2050 under the NGK Group Environmental Vision. Within the NGK Group's internal Net Zero CO₂ Emissions Project, we are systematically promoting installation of photovoltaic power generation systems and procurement of renewable energy while being cognizant of the associated costs. In FY2021, we procured 100% of electricity from renewable energy sources at all manufacturing sites in Europe (NGK Ceramics Polska, NGK Ceramics Europe, and NGK Berylco France). Specifically, fuel was procured from renewable energy sources at NGK Berylco France, which became the first manufacturing site within the NGK Group to use 100% renewable energy. As for North America, NGK-Locke. has switched over to using 100% renewable energy. Meanwhile, in Japan, in addition to the purchase of green certificates to offset emissions, three NGK sites (Nagoya, Chita, Komaki) and NGK Ceramic Device headquarters have switched to LNG, which is completely carbon neutral. The expanded use of renewable energy is equivalent to a CO₂ emissions reduction of 185,000 metric tons in FY2021. Starting in FY2022, we will continue to expand the procurement of renewable energy as well as fully launch the installation of photovoltaic power generation systems. Going forward, we will continue to expand the use of renewable energy.



Introduction of Internal Carbon Pricing

Internal carbon pricing (ICP) refers to the establishment and use of in-house carbon pricing for the purpose of promoting decarbonization-focused investment and policies. Starting in FY2022, NGK has introduced an ICP of US\$130/metric ton-CO₂ to incentivize investment in high-efficiency equipment and facilities and renewable energy-related infrastructure that will realize the NGK Group Environmental Vision target of net zero CO₂ emissions by 2050. We are also evaluating the possibility of introducing equipment. Moreover, we are also considering the use of ICP as a factor for making business expansion decisions.

Sustainability

Initiatives for a Recycling-Oriented Society

Effective Use of Resources

The NGK Group is working to increase yield by improving our manufacturing processes, and to curtail waste generation through efforts such as the reuse of raw materials. At the same time, we are focused on promoting resource recycling reducing the final amount externally disposed.

Reducing Discarded Materials in Manufacturing

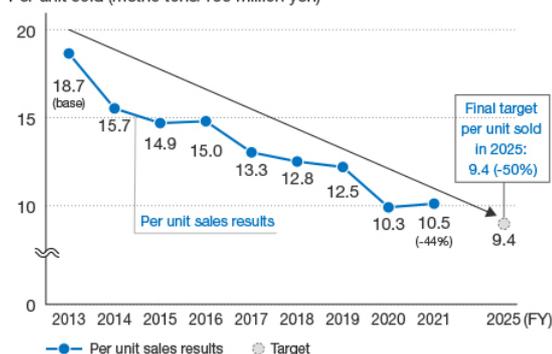
To meet our 5-year target for reduction of discarded materials, the NGK Group has formulated and is implementing an annual improvement plan, similar to that for CO₂ emissions, aimed at reducing the generation of discarded materials.

We achieved our target with a reduction rate of 44% per unit sold in FY2021 compared to FY2013. This is the result of continual improvement activities by the manufacturing division, including improving yield and raw material utilization rate, as well as reusing resources within processes.

In addition, our reduction rate against BAU, which indicates the improvement per unit manufactured over FY2013, was 26%. So, we have achieved 25% of our target. We aim to make further improvements in order to achieve our targets for the final fiscal year.

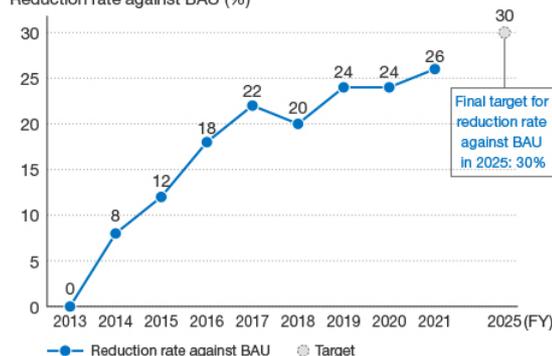
Waste Emissions (all NGK Group production sites)

Per unit sold (metric tons/100 million yen)



Reduction rate against BAU (all NGK Group production sites)

Reduction rate against BAU (%)



Promoting Resource Recycling

The NGK Group is striving to promote resource recycling by thoroughly sorting materials and looking for methods to recover resources from discarded materials.

Since FY2017, we have shared methods to recover resources from discarded materials and information about disposal companies with all of our production sites in Japan. We are promoting efficient resource recovery while selecting reliable disposal companies.

These continuing efforts have allowed us to maintain a continual domestic recycling rate of 99% or higher from FY2013 onward, as stated among the goals of our 5-year action plan.

Because conditions vary by region outside of Japan, we are setting targets which take into account the actual state of affairs in each country. We maintain an average recycling rate of more than 90% for our 21 overseas Group companies that are engaged in manufacturing (excluding the three companies for which recycling is difficult).

Handling and Risk Management of Water Resources

The NGK Group strives for efficient utilization of water and management of risks related to water resources from the perspective of sustainability. Our Fifth 5-Year Environmental Action Plan, which started in FY2021, establishes water consumption per unit sold for the entire NGK Group as a key indicator. We first aimed to maintain the level of 1,000 m³/100 million yen set in FY2019, when there was no decrease in production due to the impact of COVID-19. We achieved this target in FY2021 at 850 m³/100 million yen. In addition, the unexpected cessation of water withdrawal from the Meiji Irrigation Weir (Toyota, Aichi Prefecture) in May 2022 impacted our Chita Site, prompting us to push to further strengthen risk management with regards to water sources.

Evaluation of Water Risks

With regards to water risks at all production sites both inside and outside Japan, we have used simple methods to assess the degree of water shortage at each site based on the amount of water supplied by rivers in the region where it is located. Meanwhile, we have commissioned a detailed third-party analysis focusing on our overseas sites. In its assessment of water supply and demand risks, this detailed analysis forecasts future water supply by evaluating aquifers, seasonal variations, and the water storage capacity of dams, in addition to the amount of water supplied by rivers. Aside from this, it also analyzes water disaster risks (floods and landslides) and water quality risks (sanitation and ecology), to provide a comprehensive risk assessment. These efforts have enabled us to ascertain the water risks at all overseas production sites, and share this information with each site. None of the sites currently faces serious water risks, but we continue to keep an eye on regulatory trends, and are working to improve water utilization efficiency as necessary.

Number of Overseas Production Sites in Regions with Latent Water Risks

Region	No. of sites	Water supply and demand		Water disasters	Vulnerability to water pollution	
		Current	2040		Public health	Ecosystems
North and Central America	5	0	1	0	0	0
Europe and other regions	5	2	0	0	2	3
China	3	0	0	0	0	0
Asia and Australia	7	0	5	0	1	1

Efficiency of Water Utilization at Group Companies

We created guidelines aimed at optimizing water use (implementation status checklist), and have conducted current situation surveys for efficient water utilization at all production sites inside and outside of Japan since FY2015. Hereafter, we will work to flesh out these guidelines through case research at each Group site, as well as other companies, and promote efforts to optimize water use at our sites. In this way, we are preparing against future deterioration in water supply and demand.

Utilization of Reclaimed Water at NGK Ceramic Device (NCDK) Komaki Plant

The production process for SAW bonded wafers, which are products of our Digital Society Business Group, consumes large quantities of water. So we installed a system which uses ceramic membrane filters to reclaim this water, and began using it in April 2022. Adoption of this system is expected to supply 16,000 m³ of reclaimed water, out of the 100,000 m³ of water used annually. Meanwhile, we have introduced an even higher capacity system at the NCDK Fujiyoshida Plant, which uses the same process. So, we are promoting more efficient water use even in Japan, where water supply and demand risks are small.



Water reclamation system in operation at NCDK Fujiyoshida Plant

Cooperation with Suppliers

The NGK Group views handling water supply resources as a challenge for our entire supply chain. Through our Supply-Chain CSR Guideline we also ask our suppliers to manage risks related to water supply resources, and to use water more efficiently.

In FY2021, for the first time, NGK asked our domestic suppliers to complete a Self-Assessment Questionnaire (SAQ) in the format stipulated by the Global Compact Network Japan (GCNJ). We asked 729 companies to answer questions about the environment, corporate governance, human rights, labor, quality, and other areas. We received responses from 705 companies. From here, we plan to analyze the responses, revise the content of the questions, and expand implementation to our overseas suppliers.

We asked our suppliers in Japan for their understanding and cooperation, and received consent from 99.6% of them in FY2021.

Approach to a Circular Economy

The European Commission announced its Circular Economy Package in 2015. The package signaled a new policy for resource recycling, with requirements such as maintaining the value of products, materials, and resources for as long as possible and minimizing the generation of waste. Moving forward, we expect related regulations to be enacted in accordance with this policy. The NGK Group will investigate these types of trends related to a circular economy, and take appropriate action. We will also collect and disclose examples of resource recycling at Group businesses, and consider policies aimed at achieving the recycling-oriented society set out in our NGK Group Environmental Vision by 2050.

Sustainability

Initiatives for Harmony with Nature

Approach to Protecting Biodiversity

As the NGK Group strives toward the realization of a sustainable society, we see our approach to protecting biodiversity as an important issue, and are carrying out the following initiatives.

Efforts to Support Post-2020 Global Biodiversity Framework Targets (Aichi Targets)

Our NGK Group Environmental Vision, makes it clear that our goal is to help achieve coexistence with nature. To this end, we strive to live in harmony with nature by minimizing the environmental burden on ecosystems, and by raising the awareness of each employee through awareness-raising activities. Our Fifth 5-Year Environmental Action Plan is also organized around the theme of promoting the conservation of biodiversity. In our FY2025 goal, we pledge to expand and enhance actions aimed at Aichi Targets, and we have begun to take action towards this goal.

In FY2021, we examined domestic and international trends to gain insight into post-2020 state of progress, as well as get an overview of TNFD (Taskforce for Nature-related Financial Disclosures) and SBT-N (Science Based Targets for Nature). Hereafter, we plan to lay out a roadmap and policies toward 2050.

Encouraging Participation in My Action Declaration

In FY2017 we began promoting participation in the My Action Declaration spearheaded by Keidanren and the Ministry of the Environment. These activities treat biodiversity as something dear to each and every citizen, and their goal is to inspire action to protect biodiversity. The goal was to get 1 million declarations by 2020.

NGK used these activities as an opportunity to raise awareness among employees. We expanded them laterally to NGK Group companies in Japan, and when the activities finished in October 2021, had gathered roughly 6,800 declarations from NGK and all domestic Group companies.

Participating in Related Initiatives

In January 2022, NGK endorsed the Keidanren Declaration on Biodiversity.



Cooperation with Suppliers

We added items for initiatives related to water resources and initiatives to protect biodiversity to our Supply-Chain CSR Guideline and obtained agreement from 99.6% of our domestic suppliers.

In FY2021, for the first time, NGK asked our domestic suppliers to complete a Self-Assessment Questionnaire (SAQ) in the format stipulated by the Global Compact Network Japan (GCNJ). We asked 729 companies to answer questions about the environment, corporate governance, human rights, labor, quality, and other areas, and received responses from 705 companies. From here, we plan to analyze the responses, revise the content of the questions, and expand implementation to our domestic and overseas suppliers.

Survey of Organisms on Land Owned by NGK

At our recreational facility in the suburbs of Nagoya, we conduct periodic biological surveys of birds, vegetation, and insects in the summer and winter. We have been able to find a diverse array of organisms, and have not discovered any invasive species that would require swift action. This confirms that the land is being managed appropriately. We have also posted the survey results on a panel displayed on-site so that users of the facility will be aware of its biodiversity.



Biological survey

Volunteer Activities by Employees

Each site carries out social contribution activities in cooperation with local governments and NPOs. Some of these activities help to protect biodiversity. For instance, NGK Okhotsk (in Abashiri, Hokkaido Prefecture) cooperates with the Lake Abashiri Mizu-to-Midori-no-kai (Water and Greenery Association), which works to protect the natural habitat of Asian skunk cabbage, by maintaining this habitat. We have carried out these activities every spring and summer since 2009, in an effort to preserve the local environment.

The NGK Ishikawa Plant and NGK Ceramic Device Ishikawa Plant have also teamed up with local resident to clean up the Neagari coastline in Nomi, Ishikawa Prefecture. Lately, environmental pollution from oceanic plastic waste has become an international concern. Not only is it an eyesore on coastlines, but its impact on ecosystems has become a grave problem. Against the backdrop of such problems, every year we participate in Ishikawa Prefecture's coastal protection initiative "Clean Beach Ishikawa."

Group companies outside Japan are also actively engaging with such initiatives. NGK Electronics Devices Malaysia (in Penang) cooperated with afforestation activities by the Forestry Department Peninsular Malaysia (FDPM) to plant mangroves in the forest reserve in Nibong Tebal, Penang. These activities aim to raise the awareness of employees about the importance of protecting nature and maintaining biodiversity.



Conservation of Asian skunk cabbage habitat
(NGK Okhotsk)



Coastal cleanup
(NGK Ishikawa Plant and NGK Ceramic Device Ishikawa Plant)



Mangrove planting
(NGK Electronics Devices Malaysia)

Sustainability

Environmental/Social Contributions Through Our Products and Services

The NGK Group regards contributing to society through our business activities to be one of our most important missions. We leverage the technology we have cultivated during roughly a century in business, to develop and provide products and technologies that contribute to the global environment.

Developing and Distributing Products Contributing to Environmental Protection and Services

The Fifth 5-Year Environmental Action Plan, which began in FY2021, establishes a goal of increasing the registration of carbon neutral products and services among our products contributing to environmental protection. In FY2021, Chubu Electric Power Miraiz, NGK, and the city of Ena jointly established Ena Electric Power in Ena, Gifu, to provide the region with a renewable electric power service. This was registered as a service contributing to environmental protection related to carbon neutrality. Moreover, in April 2022, we established Abashiri Electric Power, which plans to provide regional services in the same way as Ena Electric Power. Hereafter, we plan to register Abashiri Electric Power as a service contributing to environmental protection as well. We now offer a lineup of nine products contributing to environmental protection and services. Three of these products contributing to environmental protection and services are related to carbon neutrality. Going forward, we plan to follow up on our NAS batteries by focusing on developing new carbon neutral products and providing services, such as Zinc rechargeable battery, and CO₂ separation membranes which are expected to contribute to Carbon Capture and Utilization/Carbon Capture and Storage (CCU/CCS).

FY2021 Products Contributing to Environmental Protection

Sales ratio: **59%**

Our Definition of Products Contributing to Environmental Protection and Services

- 1) Items recognized or certified by third party organizations
- 2) Items that help limit or reduce the impact on the Earth's environment
- 3) Items that help reduce the impact on the local environment

NGK Group Products Contributing to Environmental Protection and Services

HONEYCERAM

HONEYCERAM are ceramic substrates for automotive catalytic converters for purifying automobile exhaust gases of hazardous constituents. They have a catalyst which detoxifies hazardous substances through a chemical reaction, and a honeycomb structure that improves their purifying abilities by increasing the contact area with exhaust gases.

Since mass production began in 1976, we have shipped a cumulative total of 1.5 billion units. These ceramic products have become indispensable to the purification of automotive exhaust gases.

The HONEYCERAM manufactured by NGK can reduce nitrogen oxide (NO_x)^{*1} emissions by 4 million metric tons per year. This is equivalent to roughly double the annual amount of NO_x^{*2} emissions in Japan.

*1 Assuming new cars not equipped with exhaust gas systems are equipped with the same systems

*2 Source: OECD Environment Statistics (2012)



NO_x reduction of **400 million tons/year**

Diesel Particulate Filters (DPFs)

DPFs are porous ceramic filters fitted to the exhaust systems of diesel vehicles. Using micropores to securely capture particulate matter (PM) purifies the exhaust gas of diesel vehicles and greatly contributes to reducing atmospheric pollution. NGK is the only manufacturer who mass produces two types, cordierite and silicon carbide. And we are further developing our ceramic technologies for diesel vehicles.



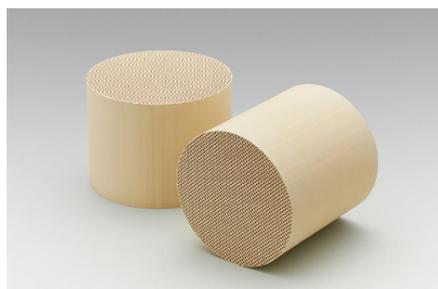
Removes
up to **99%** of PM

Gasoline Particulate Filters (GPFs)

GPFs are ceramic filters that remove the particulate matter emitted by gasoline engines.

We have succeeded in developing GPFs based on the technology behind particulate matter (PM) removal filters for diesel engines (DPFs). We combined this technology with proprietary micropore creation and control technologies to achieve both high PM capture efficiency and low pressure loss (low fuel consumption and high power output). In 2012, we became the first in the world to put GPFs into practical use, and we began full-scale mass production in 2016.

Going forward, we expect demand for GPFs to increase as automotive emissions regulations are strengthened worldwide. We are also strengthening our manufacturing system to boost production capacity in response to increased demand.



In-Vehicle High-Precision NOx Sensors

The world's first in-vehicle sensor that can precisely measure nitrogen oxide (NOx) concentration in exhaust gases in real time. It measures the concentration of NOx in exhaust gasses at a ppm (parts per million) level, catching even minute amounts of NOx. It precisely controls the exhaust gas purification equipment in diesel vehicles to reduce the amount of NOx emitted, and promote the spread of clean diesel vehicles.



NAS Batteries

(CN-related products)

The widespread adoption of renewable energy sources that do not use fossil fuels or emit carbon dioxide (CO₂) is underway. Sodium Sulfur (NAS) Batteries can help stabilize the grid by charging and discharging to absorb the fluctuations in power output from wind and solar power generation due to natural phenomena.

In addition, as renewable energy use increases, it becomes more challenging to balance electrical supply with demand due to factors such as excess electrical power at different times or seasons. NAS batteries can use their large capacity to balance supply and demand by storing excess power, helping to support the expansion of renewable energy.



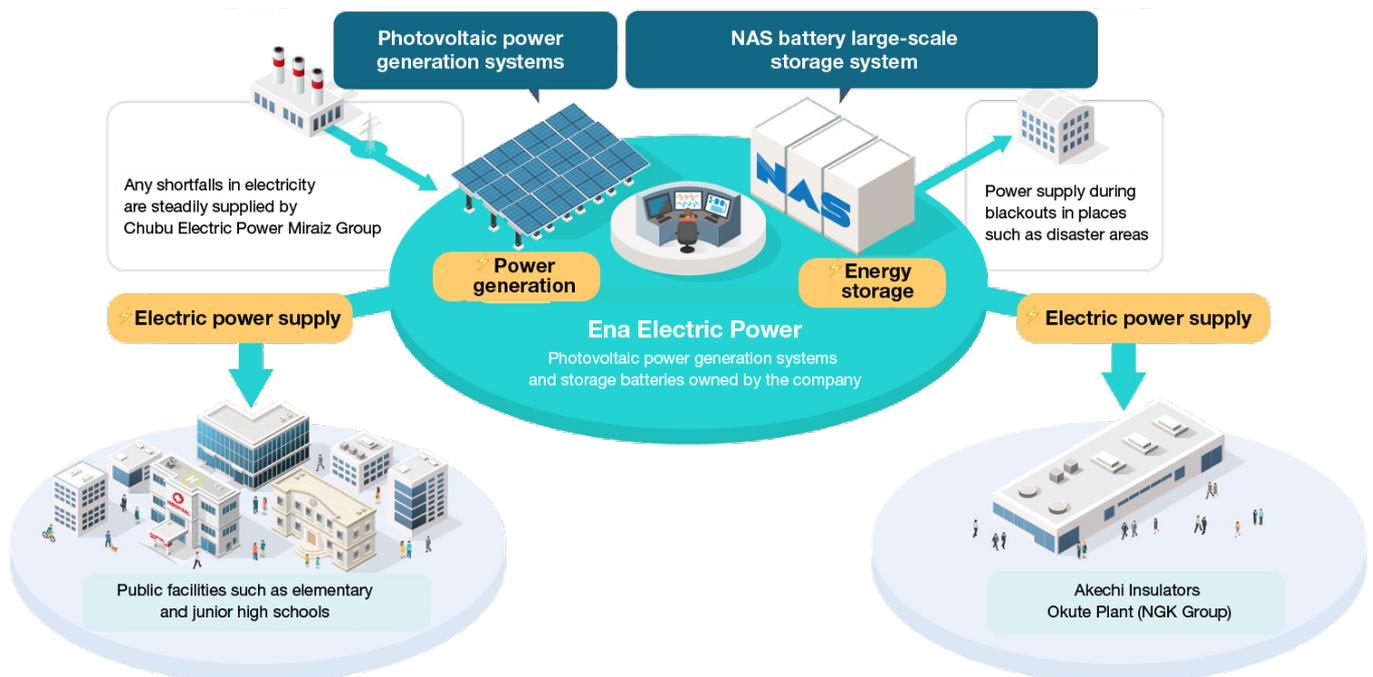
Output: **700 MW** Discharge capacity: **4900 MWh** Operational record: more than **250** locations

Local Renewable Energy Electric Power Supply Service by Ena Electric Power

(CN-related services)

In April 2021, the city of Ena, Chubu Electric Power Miraiz, and NGK established Ena Electric Power.

Ena Electric Power installed photovoltaic power generation systems and NAS batteries in empty lots and the rooftops of public facilities in Ena. By supplying electricity to public facilities and Akechi Insulators of the NGK Group, the systems are contributing to the energy independence and carbon neutrality of Ena.



Low-Level Radioactive Waste Treatment Systems

NGK produces various equipment that employs our proprietary processing technology and exhaust gas dust removal technology, using high performance filters, to safely process low-level radioactive waste generated by nuclear power facilities. We have delivered these to nuclear power stations and related research facilities all around Japan.

Our broad engineering capabilities span design, manufacturing, and construction. These combined with long-term maintenance support, allow us to achieve stable, advanced radiation removal that contributes to the safe operation of nuclear facilities.

We are also working to develop systems for processing the various new waste generated as aging nuclear reactors are shut down and dismantled.



Importance of treating radioactive waste

When it comes to treating and disposing of the waste generated in the radiation control areas of nuclear power plants and the like, preventing the release or leakage of radioactive material is of the highest importance. It must be treated and disposed of in a different manner to general waste.

Wavelength Control Drying System

(CN-related services)

Our wavelength control drying system uses an original heating unit developed by NGK to accelerate solvent drying.

This system uses the selective irradiation of specific infrared wavelengths effective for evaporation to dry materials in 1/2 to 1/3 the time required by conventional drying methods which use heat. Electricity consumption is also cut by 30 to 50%. Binder segregation, which indicates deviations in density due to the drying of the internal components of the coatings, is also curtailed by 30 to 40%.



Micro-Lenses for Ultraviolet LEDs

Micro-lenses for ultraviolet LEDs are quartz glass lenses which NGK has developed for use with the ultraviolet LEDs intended to replace mercury lamps.

Ultraviolet light sources are seeing widespread use in applications such as sterilization of water and air. Currently, such applications use mercury lamps. But in light of new laws and regulations based on the Minamata Convention on Mercury, their use may be banned in the future. This is driving interest in ultraviolet LEDs, which do not use mercury. Our micro-lenses for ultraviolet LEDs feature a cavity (space) to hold the ultraviolet LED chip. This increases the efficiency of the ultraviolet LED while reducing its cost.



| Environmental Labeling and Declarations

Since many of the products handled by the NGK Group are B2B products, they are not subject to environmental labelling. However, we support the requirements of each customer.

Sustainability

Environmental Education and Communication

Participating in Local Environmental Education

In NGK's Core Policy on the Environment, we have set action guidelines for education and public relations activities, and conduct ongoing environmental education and awareness 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 conduct environmental events and provide information to a wide range of stakeholders, including on-site classes at elementary schools, to increase environmental awareness.

Offering Guest Lectures at Elementary Schools and Children's Centers

NGK sends instructors to participate in lectures and workshops for young people that are hosted each year by EPOC (Environmental Partnership Organizing Club)*. Our instructors offer classes on water resources and usage in which children can experience how soil can purify water. So far, a cumulative total of 2,300 people have participated in these guest lectures and other environmental education programs held outside of the company.

Our guest lecture activities were suspended in FY2021 in an effort to prevent the spread of COVID-19, but we moved forward with preparations for new lectures.

* EPOC (Environmental Partnership Organizing Club): A voluntary organization consisting mainly of companies in the Chubu region of Japan, which was established in 2000. Its purpose is to spread information regarding the environment with the aim of building a recycling-oriented sustainable society. NGK has been involved in the planning and management of this organization since its establishment. EPOC currently has approximately 260 members.



Sharing Information with Other Companies

The EPOC subcommittee led by NGK organizes seminars and field trips several times a year under the theme of corporate environmental management (low carbon, resource recycling, biodiversity, water resources, environment-related laws, etc.) and sends out information to members. In FY2021 we held three online seminars.

Supporting the "Kagayake Aichi Sustainability Research Institute" Research Team

Following on from FY2020, NGK took part in the "Kagayake Aichi Sustainability Research Institute" project launched by Aichi Prefecture and aimed at university students, who represent the future of Aichi.

This project is being directed by Aichi Governor Hideaki Omura and is focused on achieving sustainable eco-action by globally minded university students on environmental challenges put forward by companies.

In FY2021, 8 companies in Aichi Prefecture took part in this project. The challenge we put forward was to work with NGK in developing a global environmental education program that gets people thinking about a sustainable future. The five-member team of university students who took part in this challenge was proactive about engaging in discussion and collaboration with NGK employees, even in the face of severe restrictions on face-to-face meetings, plant tours, and other interactions due to the COVID-19 pandemic. And they went on to claim the award for excellence.



Conducting Third-Party Evaluation of Tokai National Higher Education and Research System Environmental Report

NGK was responsible for evaluating the 2021 Tokai National Higher Education and Research System Environmental Report. Up until 2020, Gifu University and Nagoya University each created their own environmental reports. This time, for the first time, they published a combined report as the Tokai National Higher Education and Research System, and NGK evaluated the contents of this report. It is a highly original report which creatively compiles the combined activities of the two universities as well as the separate activities carried out by each. Through our third-party evaluation, we got to encounter student activities and a University environmental approach which differs from the corporate point of view.

Employee Environmental Training and Skills Development

Environmental Education inside the Company

We conduct position-based training related to environmental management systems to familiarize employees with the aims and content of our environmental policies. We also provide specialized environmental training courses for personnel who will be directly involved in environmental management, as well as special environmental training for the entire workforce. We conduct training related to ESG when employees join the company, are appointed to a new role, or are promoted into managerial positions. This ensures they are aware of the issues to be addressed by each position, and provides guidance on how to make the most of their work.

Environmental Expert Training

In FY2021, to strengthen compliance, we created training materials which could be accessed on-demand. We created five training materials covering topics such as the Air Pollution Control Act and Water Pollution Prevention Act, and plan to commence training from FY2022.

Special Environmental Training

Every year, we invite outside experts to introduce our employees to examples of corporate initiatives which address carbon neutrality, resource recycling, and living in harmony with nature.

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. We provide support in each department for the acquisition of environment-related legal qualifications targeting managers engaged in pollution prevention required for the management of each site.

We systematically educate Qualified Energy Managers in the Engineering Department, and 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, 2022 (NGK)

Pollution Control Managers			Qualified Energy Managers	Special Controlled Industrial Waste Managers	Waste Disposal Facility Technical Managers
Air	Water	Noise/Vibration			
114	94	21	21	18	12

Support for Acquisition of Eco Test Certification

With the aim of ensuring that each employee acquires a strong environmental awareness and a wide range of knowledge with respect to the environment, NGK supports employees in sitting the Eco Test* by lending them reference materials and subsidizing test-related expenses.

To date, a total of 826 people—approx. 20% of all NGK employees—have 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.

Eco Test Certification

Fiscal Year	2017	2018	2019	2020	2021
Number of successful examinees	125	90	37	73	44

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 FY2016.

Donation of NGK Eco Points

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) and plant (Ishikawa), and top scorers are commended every year. For earned points, employees 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.



Mayor Ide of Nomi City, Ishikawa Prefecture with NGK employees

Sustainability

External Recognition of Environmental Performance and Participation in Environmental Initiatives

External Recognition of Environmental Performance

NGK has received the following external recognition related to environmental performance.

Continuing from FY2020, we maintained rank B for CDP-Climate Change and CDP-Water Security in FY2021. Our rank for CDP Supplier Engagement in FY2021 was A.



Evaluation

Scope of report	Survey year				
	2017	2018	2019	2020	2021
CDP-Climate Change	B	B	A-	B	B
CDP-Water Security	B	B-	B-	B	B
CDP SUPPLIER ENGAGEMENT	B	B	B	B	A
Nikkei Environmental Management Survey	50th	62nd	—	—	—

For other external ESG evaluations, see [External Recognition](#) under Basic ESG Information.

Participation in Initiatives

Under the NGK Group Environmental Vision, we will help society to achieve the demands of carbon neutrality, a recycling-oriented society, and harmony with nature.

With regard to carbon neutrality, we are actively participating in initiatives that support independent and original efforts aimed at net zero CO₂ emissions by 2050.

Primary Initiatives

Initiative	Approach
Science Based Targets (SBT)	Issued target-setting commitment letter in April 2022
Renewable Energy 100 (RE100)	Applied to participate in April 2022
Task Force on Climate-Related Financial Disclosures (TCFD)	In April 2022 we disclosed information Based on TCFD Recommendations > Information Disclosure Based on TCFD Recommendations
Japan Climate Leaders' Partnership (JCLP)	Joined in 2017
Keidanren Initiative for Biodiversity Conservation	Joined in January 2022

Sustainability

Environmental Management System

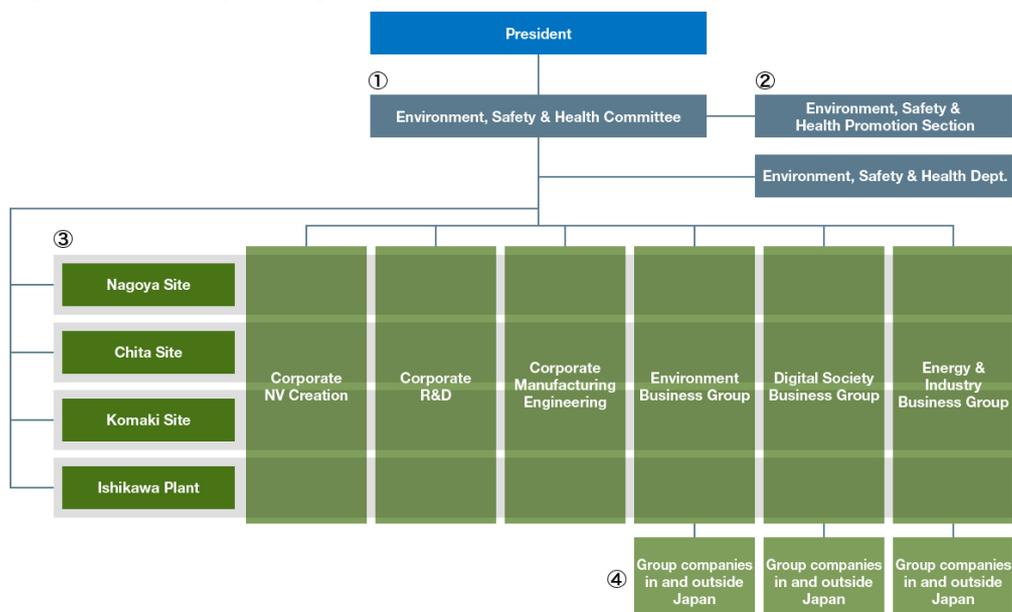
Environmental Management System

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.

Environmental Management Promotion System

In addition to NGK's environmental management systems at each site of Nagoya (headquarters, Atsuta/Mizuho), Chita, Komaki, and the Ishikawa Plant, we are promoting environmental management under the leadership of each Business Group to control environmental activities at all Group companies in and outside Japan. The decisions of the Environment, Safety and Health Committee are shared across the entire Group via the Business Groups so they can be incorporated into the business activities of each Group company. Annual liaison meetings are held for Group companies in Japan to promote unified environmental management for the entire Group. Meanwhile, personnel and Business Groups at headquarters cooperate to audit Group companies inside and outside Japan on a regular basis. Thus, we create interactive discussion and support opportunities to address issues facing each company.

Environmental Management Promotion System Diagram



(1) Environment, Safety & Health Committee

This committee is led by the chair and meets twice each year. Other meetings are held at the discretion of the chair.

Governing Structure

Chair	President appoints the chair in light of Executive Committee deliberations
Vice Chair	Appointed by Committee Chair In principle, this is the General Manager of the Environment, Industrial Safety & Health Dept.
Members	Executive Vice President, Administrators, staff with jurisdiction, and personnel in-charge*, General Managers, Director of each site (General Manager of Pollution Control, General Safety and Health Manager), General Manager of Environment, Industrial Safety & Health Dept., General Manager of Corporate Communications, General Manager of Corporate Planning Office, General Manager of Human Resources Dept., General Manager of Group Compliance Dept., General Manager of Finance & Accounting Dept., General Manager of Legal Dept., General Manager of General Affairs Dept., General Manager of Construction & Maintenance Dept., General Manager of Global Engineering Center, and others designated by the Committee Chair

* When the head of the affiliated department is a committee member

(2) Environment, Safety & Health Promotion Section

Governing Structure

Committee Chair	General Manager of Environment, Industrial Safety & Health Dept.
Vice Chair	General Manager of Construction & Maintenance Dept.
Members	General Manager of Environment Business Group Safety, Quality & Environment Dept.; General Manager of Digital Society Business Group Safety, Quality & Environment Dept.; General Manager of Energy & Industry Business Group Safety, Quality & Environment Dept.; General Manager of ESG Promotion Dept.; others designated by the Committee Chair

(3) Environmental Committees at Each NGK Site

In principle, committees of each NGK site (Nagoya Site [headquarters, Atsuta/Mizuho], Chita Site, Komaki Site, Ishikawa Plant) meet twice per year in each area. They thoroughly convey matters determined by the Environment, Safety & Health Committee, and communicate and discuss issues and topics in each area.

(4) Environmental Management at Group Companies In and Outside Japan

Business divisions of NGK, including those at Group companies in and outside Japan, have environmental management systems aimed at realizing NGK's Core Policy on the Environment. The NGK headquarters surveys environmental performance at Group companies and conducts audits to monitor their conformance to environmental laws. If problems are discovered, the causes and remedies are determined and disseminated throughout the NGK Group. Moreover, at Group companies in Japan involved in manufacturing, annual liaison meetings are held in order to convey environmental policy and to share information on matters such as companies' environmental management status and effective environmental initiatives.

Acquisition of Environmental Management System

The NGK Group encourages the acquisition of ISO 14001 or third-party certifications (such as Eco Stage 2 or Eco Action 21 in Japan) that meet this standard to systematically and continuously develop its environmental conservation activities in line with NGK's Core Policy on the Environment. Under this initiative, all Group companies, including those outside Japan, as well as the Nagoya, Chita, Komaki sites and Ishikawa plant, have received third party certification of their environmental management systems. One of these locations was newly certified in FY2021.

Certification of Environmental Management System

As of June 2022

Category		Number of manufacturing sites	Number of sites certified
NGK		4	4
Domestic Group Company	Environment Business Group	1	1
	Digital Society Business Group	9	9
	Energy & Industry Business Group	9	9
Overseas Group Company	Environment Business Group	10	10
	Digital Society Business Group	4	4
	Energy & Industry Business Group	7	7

New production sites operating for less than two years are not covered

Environmental Audits

NGK conducts internal audits and external audits (renewal audits) of the environmental management system at the Nagoya, Chita, and Komaki sites, as well as the Ishikawa Plant. Each Group company also conducts these same internal and external audits of their environmental management systems.

In FYFY2021, there were no significant findings. In the event of a significant finding, the relevant division and Environment, Industrial Safety & Health Dept. work together to review and implement countermeasures, as well as inform the Environment, Safety & Health Committee in each area in an attempt to horizontally deploy these measures.

Fiscal Year	2017	2018	2019	2020	2021
Significant findings	0	0	0	0	0

Environmental Risk Management

At the NGK Group, each manufacturing site has individually established environmental management systems, and strives to preserve the environment and reduce environmental risks.

The Business Group which oversees Group companies joins together with the Environmental Management Department at NGK headquarters to conduct yearly environmental audits of Group company manufacturing sites and help improve the level of environmental management of the NGK Group as a whole. In FY2021, due to travel restrictions in place to prevent the spread of COVID-19, audits were conducted remotely.

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 Japan to keep responsible persons updated on related topics, thereby enhancing our capabilities to prevent environmental pollution. Moreover, in FY2021, there were no major violations of environment-related laws.

Fiscal Year	2017	2018	2019	2020	2021
Major violations	0	0	0	0	0

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 FY2021, environmental patrols were conducted at the Nagoya, Chita, and Komaki sites and the Ishikawa Plant to prevent atmospheric 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.

Activities Conducted in FY2021

		Air	Water	Noise/Vibration	Chemical substances
Environmental patrols	Nagoya	4	4	4	2
Emergency response drills		18	2	-	2
Environmental patrols	Chita	1	3	1	1
Emergency response drills		7	4	-	-
Environmental patrols	Komaki	1	2	1	1
Emergency response drills		8	10	-	-
Environmental patrols	Ishikawa	2	2	2	2
Emergency response drills		5	2	-	2

Note: "-" indicates emergency response drills were considered of low importance and not conducted.

Sustainability

Global Environmental Management

Strengthening Global Environmental Management

The NGK Group promotes corporate activities that are in harmony with the environment. We are also building and implementing an environmental management system from a global perspective in order to actively fulfill our responsibility to address various societal challenges. As we continue our efforts aimed at lessening the environmental impact of our business activities, we are also preparing a system for complying with environmental laws and regulations, and increasing our level of global environmental management.

Efforts to Mitigate Environmental Risks Throughout the Group

All NGK Group manufacturing bases in and outside Japan have completed acquisition of ISO 14001 or third-party certifications meeting this standard, and are implementing environmental management in accordance with our environmental management system. NGK also shares information regarding changes in domestic environmental laws and regulations with Group companies and has created and implemented a structure to ascertain the status of responses to these changes. 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 overseas Group companies are located.

Strengthening Environmental Management Linked to Business Planning

The NGK Group aims to enhance our environmental management system to support the implementation of our business plan and to cope with changes in the environment.

We are strengthening the company-wide environmental management system by establishing the Environment, Safety & Health Promotion Meeting under the Environment, Safety and Health Committee. It provides a space for cooperation and discussion with the Environmental Management divisions of each Business Group. Going forward, we will continue to strengthen management integration and promote corporate activities that are in harmony with the environment, in order to actively fulfill our responsibility to address the various challenges facing society.

Sustainability

Chemical Management

NGK abides by laws, guidelines, and other rules on chemical substances by maintaining a proper level of management for chemicals, and constantly striving to improve this level. Before new chemicals are used by each department, the Chemical Substances Safety Committee determines the pros and cons of using these chemicals and provides confirmation and guidance concerning what precautions must be taken for their usage and disposal. For chemicals that have already been used in the department, the site's chemical substances committee and chemical substances patrol team determine and confirm the state of chemical management and provide necessary guidance. We also follow information regarding changes in chemical substance-related regulations and share this within the group to ensure proper chemical substance management policies are implemented.

Group companies inside and outside Japan survey and understand regional rules and regulations so that chemical substances can be properly managed.

Chemical Management Flowchart

Department	Department using chemicals	Division checking (Safety and Health, Environment, Construction and Maintenance)	Purchasing Department	Department using chemicals
Management details	Confirm SDS (safety data sheet) of intended substance and apply for permission to use	Review of new chemical substances Guidance for departments using chemicals (use, storage, disposal, etc.)	Register purchasing information	Appropriate control at departments (Implementation of guidance items, inventory control)
Tools and methods	 Application process	 Chemical Substances Safety Committee Substances contained, relevant regulations, abatement equipment, disposal method, etc.	 Purchasing system Registration of substances, regulations, and storage facilities	 Chemical substances inventory control system

Commitment Concerning Hazardous Substances

The NGK Group aims to reduce the amount of hazardous substances used, in accordance with our [Guidelines for Environmental Action](#). Regarding raw materials, we present our suppliers with a hazardous materials list, and require that they comply with the hazardous substances management stipulated by the [NGK Group's Supply-Chain CSR Guideline](#) and [NGK Group's Green Procurement Standard](#).

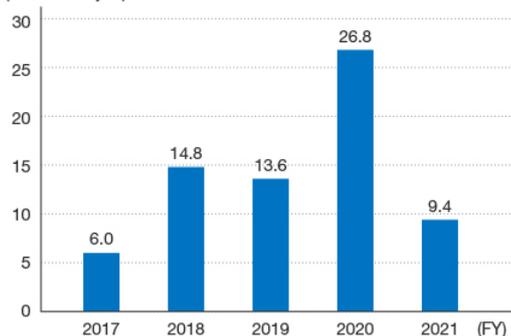
Sustainability

Environmental Accounting

The NGK Group discloses our environmental accounting results in accordance with guidelines published by the Ministry of the Environment. We tally the environmental conservation costs (capital investment, expenses), economic benefits, and cost effectiveness for NGK and our Group companies in Japan, and manage information on the environmental efficiency of CO₂ and discarded materials as indicators.

(1) Capital Investment (NGK and Group companies in Japan)

(100 million yen)



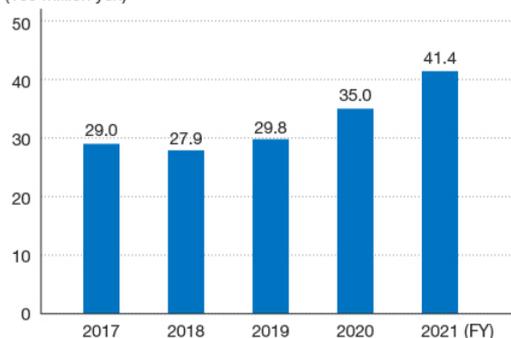
FY2021 Capital investment Breakdown

(100 million yen)

Pollution prevention	Global environment	Resource recycling	Upstream/downstream	Administration	Research & development	Social activity	Environmental remediation	Total
4.6	3.7	0.4	0.0	0.0	0.7	0.0	-	9.4

(2) Expenditures(NGK and Group companies in Japan)

(100 million yen)



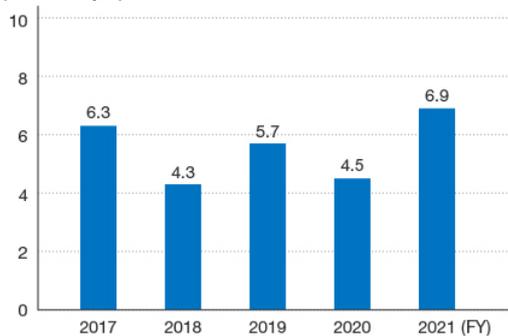
FY2021 Expenditures Breakdown

(100 million yen)

Pollution prevention	Global environment	Resource recycling	Upstream/downstream	Administration	Research & development	Social activity	Environmental remediation	Total
8.1	6.2	9.2	0.1	4.0	1.6	2.2	9.9	41.4

(3) Economic Benefits(NGK and Group companies in Japan)

(100 million yen)

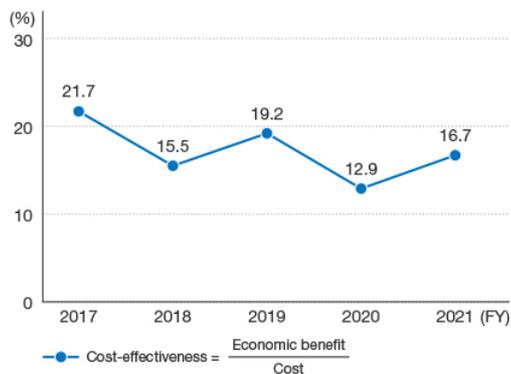


FY2021 Economic Benefits Breakdown

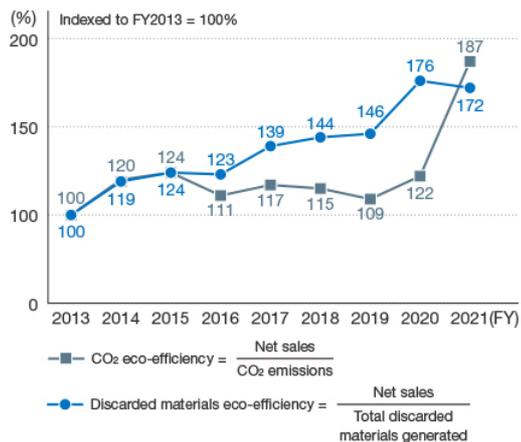
(100 million yen)

Energy savings	Resource conservation (water)	Resource conservation (raw materials)	Resource conservation (packaging)	Discarded materials (disposal decrease)	Discarded materials (gain on sale)	Total
1.6	0.0	0.0	0.0	1.7	3.5	6.9

(4) Cost-Effectiveness(NGK and Group companies in Japan)



(5) Environmental Efficiency(consolidated)



* Note: The above charts do not include data for NGK Electronics Devices, Inc. and some other manufacturing subsidiaries prior to FY2015.

Sustainability

Information Disclosure Based on TCFD Recommendations

In February 2020, the NGK Group announced our support for recommendations issued by the Task Force on Climate-Related Financial Disclosures (TCFD) created by the Financial Stability Board (FSB). Since then, we have evaluated how to apply the TCFD framework towards resolving issues facing our Group operations, such as the risks and opportunities posed by climate change, and towards necessary information disclosure.

Below, we disclose information related to scenario-specific analyses conducted based on the four themes outlined in the TCFD recommendations: governance, strategy, risk management, and metrics and targets.

We will continue to expand analysis work and enhance information disclosure as part of our commitment to communicating with our stakeholders. We will accurately identify climate change-related influences on Group operations and implement response measures to promote sustainable growth for our business.



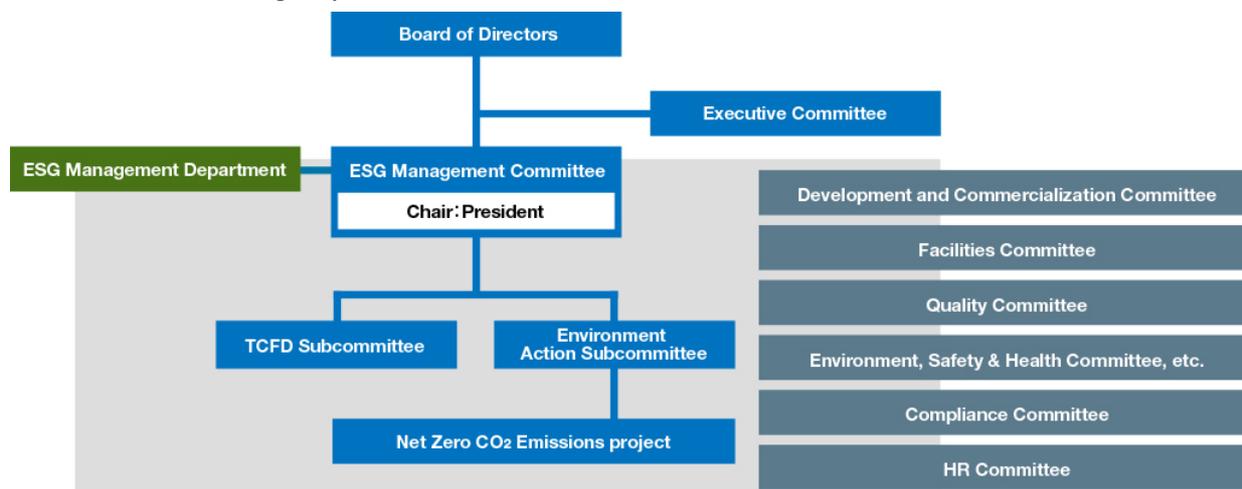
* Note: The Task Force on Climate-Related Financial Disclosures (TCFD) was established by the Financial Stability Board (FSB). Many Japanese companies chose the G20 Osaka Summit in June 2016 as an opportunity to express support for the task force (758 companies and organization as of (March 2022)).

Governance

In April 2021, we announced the NGK Group Vision: Road to 2050. In this Group Vision, we position responding to ESG issues as a core management theme and outline the goal of being a company that contributes to carbon neutrality and the digital society using our ceramic technologies. Recognizing climate change response as one of the highest-priority issues to achieving sustainability for our planet, we drafted the NGK Group Environmental Vision as an extension of the NGK Group Vision. In this Environmental Vision, we outline achieving net zero CO₂ emissions for our business activities by 2050. Specific activities include setting management metrics and goals for each fiscal year of our 5-Year Environmental Action Plan. Our ESG Management Committee deliberates on these metrics and goals, and issues reports to our Board of Directors (at least once per year). We also have incentivized CO₂ emissions reduction by adding achievement benchmarks to the performance-linked bonus evaluation criteria for directors and executive officers. We established a TCFD subcommittee within the ESG Management Committee. This subcommittee includes members from relevant divisions who gather to evaluate measures for information disclosure based on TCFD recommendations. The subcommittee's results are then deliberated by the ESG Management Committee before being reported to the Board of Directors. We also established an Environmental Action subcommittee within the ESG Management Committee. This subcommittee is focused on achieving carbon neutral business activities by no later than 2050, one of the goals outlined in our Action Plan. The subcommittee works towards this goal by promoting measures such as energy conservation and furnace fuel conversion. The ESG Management Committee submits reports on its deliberations, including ESG issues such as our disclosure response for the CDP, to the Board of Directors (at least once per year).

[NGK Group Vision](#)[NGK Group Environmental Vision](#)

Framework related to climate change response



Strategy

General Strategy

In April 2021, we announced the NGK Group Vision: Road to 2050, which outlines our vision through 2050. At the core of this Vision is how we define what we want to be: A company that contributes to carbon neutrality and the digital society using our ceramic technologies. We are shifting our business structure so that carbon neutral products and products related to the formation of a digital society comprise 80% of our sales.

Along with the NGK Group Vision, we also drafted the NGK Group Environmental Vision. In line with this Vision, we will develop and offer products and services that contribute to the realization of a carbon neutral society. At the same time, we will apply the policies of this Vision towards Group business activities to aim for net zero CO₂ emissions by 2050. As part of this initiative, we drafted our Fifth 5-Year Environmental Action Plan. This plan outlines targets for the environmental activities we will conduct between FY2021 and FY2025.

Climate Change Risks and Opportunities

We applied the risk and opportunity themes outlined in TCFD recommendations to analyze the risks, opportunities, and potential impact of climate change as it relates to NGK Group business.

Assumptions

(1) Timeframes

We set short-term, medium-term, and long-term timeframes.

Timeframe		Reason for setting
Short-term	FY2025	Final fiscal year of the Fifth 5-Year Environmental Action Plan
Medium-term	FY2030	Interim goal year of the NGK Group Environmental Vision
Long-term	FY2050	Goal year of the NGK Group Vision and the NGK Group Environmental Vision

(2) Scenarios

We set 1.5°C and 4°C scenarios.

Scenarios	Summary	Main external scenarios used as reference
1.5°C Scenarios	Rapid changes in policy, regulatory systems, and markets to aim for carbon neutral by 2050 and limit the average global temperature increase to 1.5°C compared to pre-industrial revolution temperatures.	International Energy Association (IEA) Net Zero by 2050 scenario SSP1-2.6 scenario, etc.

Scenarios	Summary	Main external scenarios used as reference
4°C Scenarios	Lack of progress in government policy, regulatory systems, or social initiatives result in an average global temperature increase of 4°C compared to pre-industrial revolution temperatures. Massive impact from disasters and other events caused by climate change.	SSP5-8.5 scenario, etc.

(3) Important risks and opportunities

We conducted qualitative assessments while referencing the risk assessment criteria for all Group companies.

Furthermore, this analysis is a method of evaluating our responses to climate change-related risks and opportunities. This analysis may differ from the future vision we outline in the NGK Group Vision.

Particularly important risks and opportunities

(1) Carbon Neutral Society Transition Risks (1.5°C scenario)

Category	Summary of assumed scenario	Business risks & opportunities		Details of risks & opportunities	Timeframe	Response strategy
Policy/ Legal	<ul style="list-style-type: none"> Rapid reduction in emissions required to achieve carbon neutral by 2050. Adoption of carbon pricing against CO₂ emissions of our company or our supply chain. 2030: 130\$/t- CO₂ 2050: 250\$/t- CO₂ 	Increased cost of responses to further reduce greenhouse gas emissions	Risks	Incurring response costs related to equipment replacement and upgrades for energy conservation, renewable energy procurement, electrification of energy sources, and energy conversion from natural gas as a furnace fuel to fuels sources such as hydrogen or ammonia.	Short- to long-term	<ul style="list-style-type: none"> Trend and prediction monitoring for the regulations and carbon pricing systems of various countries Promote enhanced energy conservation, technological innovation, and initiatives towards expanding the use of renewable energy in line with the NGK Group Environmental Vision and Carbon Neutrality Strategic Roadmap Monitor supply status of fuels with low greenhouse gas emissions Promote greenhouse gas emissions reductions in accordance with Supply-Chain CSR Guideline Expand Scope 3 calculations and range of disclosure, conduct life cycle assessments (LCA) for major products to identify reduction targets
		Increased costs due to adoption of carbon pricing	Risks	Costs increase due to adoption of carbon pricing on company emissions and emissions along the upstream of our supply chain		
Technology	<p>Growing battery demand leading to decline in prices for rechargeable lithium-ion and other batteries. Also seeing the emergence and adoption of new battery technology with high added value.</p> <p>Rapid growth in CO₂ capture volume in various sectors, including fuel production, power generation, and industry.</p>	Risks and opportunities associated with battery technology innovation and the emergence /adoption of new technology	Opportunities	<ul style="list-style-type: none"> Increased competitiveness by advancing proprietary technology development Increased storage battery needs 	Medium- to long-term	<ul style="list-style-type: none"> Monitoring of trends in technology innovation R&D advancement
			Risks	Competitiveness of our technologies will decline as competitors advance proprietary technology development		
Market	<ul style="list-style-type: none"> In the short-term, vehicle emissions restrictions will be stricter, increasing demand for improved fuel economy. In the medium- to long term, the proportion of electric vehicles (EVs) and fuel cell vehicles (FCVs) in automobile sales will rise rapidly, and the proportion of internal combustion engine vehicles will decline. 	Changes in demand for automotive parts	Opportunities	<ul style="list-style-type: none"> In the short term, demand for catalyst substrates for controlling automotive emissions and NOx sensors will increase due to stricter exhaust gas regulations. In the medium- to long-term, demand for gallium nitride (GaN) wafers, DCB and AMB substrates, and beryllium copper alloy for EVs will increase. 	Short- to long-term	<ul style="list-style-type: none"> Monitoring of regulatory, market, and demand trends Plan and implement production and capital expenditures in response to the plans of automobile manufacturers Cover decline in demand for internal combustion engine vehicles due to tougher exhaust gas regulations by increasing the number of new products and high-performance products Expand adoption of gallium nitride (GaN) wafers, beryllium copper alloy, and DCB and AMB substrates for EVs and plug-in hybrid vehicles (PHEVs) Develop and offer products for heat management in EVs, new products for synthetic fuels, etc.
			Risks	Demand for products for internal combustion engine vehicles will decline over the medium- to long-term		
		The capacity of power storage batteries and demand for lithium-ion rechargeable batteries for EVs will rapidly expand.	Increased storage battery demand	Opportunities	<ul style="list-style-type: none"> Increased demand for NAS batteries and Zinc Rechargeable Batteries Increased business opportunities in the heating and refractory business for lithium-ion rechargeable batteries 	Short- to long-term
	Demand for semiconductors will increase with electrification in various fields such as industry and transportation.	Growth in demand for semiconductor-related products	Opportunities	Increased demand for parts for semiconductor manufacturing equipment and electronic parts / metals in the electronics business	Short- to long-term	<ul style="list-style-type: none"> Monitoring of demand trends Enhance production systems in response to growing demand Partner with semiconductor manufacturing equipment manufacturers, increase facility capacity, personnel, facility systems, etc. as necessary
Reputation	<ul style="list-style-type: none"> Regular and growing trend of investors and financial institutions factoring climate change risk into investment decisions and requiring lenders to set SBT*. Customers are increasingly demanding renewable energy adoption and reductions in CO₂ emissions. 	Improving assessments by contributing to carbon neutrality	Opportunities	Assessments by stakeholders can be improved by proactively responding to climate change and providing products and services that contribute to carbon neutrality.	Short- to long-term	<ul style="list-style-type: none"> Business structure conversion, one of the goals outlined in the NGK Group Vision Promote measures to reduce greenhouse gas emissions Conduct information disclosure in line with the TCFD framework Ascertain customer demands and implement responses accordingly
		Decline in trust from stakeholders due to delays in responding to climate change	Risks	Delays in climate change measures will have a negative impact on brand, capital procurement, transactions, etc.		

(2) Physical Risks associated with advancing climate change (mainly 4°C scenario)

Category	Summary of assumed scenario	Business risks & opportunities		Details of risks & opportunities	Timeframe	Response strategy
Acute	<ul style="list-style-type: none"> Frequency of flooding increasing in regions such as Japan and Asia. The frequency of violent typhoons increasing. 	Impact of wind and flood damage on factories and supply chains	Risks	<ul style="list-style-type: none"> Increasing impact of factors such as property damage to facilities and machinery caused by wind and flooding, profit losses due to the suspension of business, and difficulty in employees coming to work. Supply chain disruption due to increased wind and flood damage 	Short- to long-term	<ul style="list-style-type: none"> Flood risk assessments for major sites including future climate Create and promote BCP (Business Continuity Plan), including for supply chains Create a structure that enables global substitutions by decentralizing sites Prepare for supply chain disruption by evaluating alternative procurement methods in advance (focus on production areas with high disaster risks) Evaluate the flood risk assessments of major suppliers
Chronic	Sea levels continue to rise.	Impact of storm surge on coastal factories	Risks	<ul style="list-style-type: none"> Increased storm surge risk, increased property damage and profit losses due to flood damage Costs incurred for measures such as height elevation and barriers and relocation 	Medium- to long-term	

* Short for Science-based Targets, an initiative demanding that companies establish CO₂ emission reduction goals that are based on scientific data.

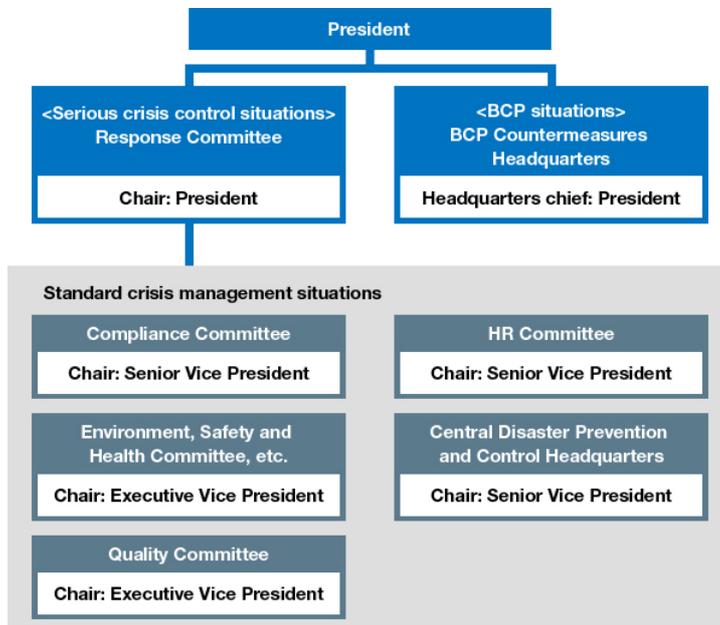
[Particularly important risks and opportunities \(PDF: 698 KB\)](#)

- > [Subnano-ceramic membranes](#)
- > [Gallium Nitride \(GaN\) Wafer](#)
- > [DCB and AMB Substrates](#)
- > [Zinc Rechargeable Batteries](#)

Risk Management

The NGK Group manages the day-to-day risks that impact our Group, including risks related to climate change, based on a related-position system and in accordance with our Basic Rules of Crisis Management. Furthermore, we work to avoid and prevent serious risks through the activities of the various committees established within the company. In cases of particularly serious risks, the Corporate Planning Office Executive Officer may decide to convene a response committee, which includes participation by the Company president, to address said risks.

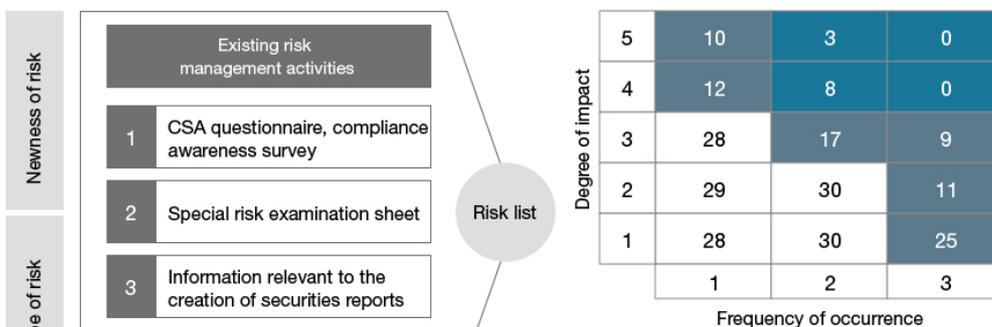
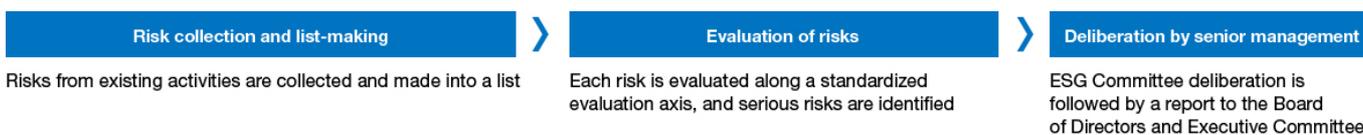
Risk Management Framework



Risk Management Process

All risks with the potential to impact the operations or financial status of the NGK Group are organized and re-evaluated to identify serious risks. Those risks are deliberated by the ESG Management Committee before submitting a final report to the Board of Directors on Group risks requiring management. For risks related to climate change, the TCFD subcommittee within the ESG Management Committee creates scenarios and conducts a scenario analysis to identify serious risks. Through this process, we extract risks and opportunities, and draft response strategies. These results are deliberated by the ESG Management Committee and then a report is submitted to the Board of Directors.

Risk Identification Process

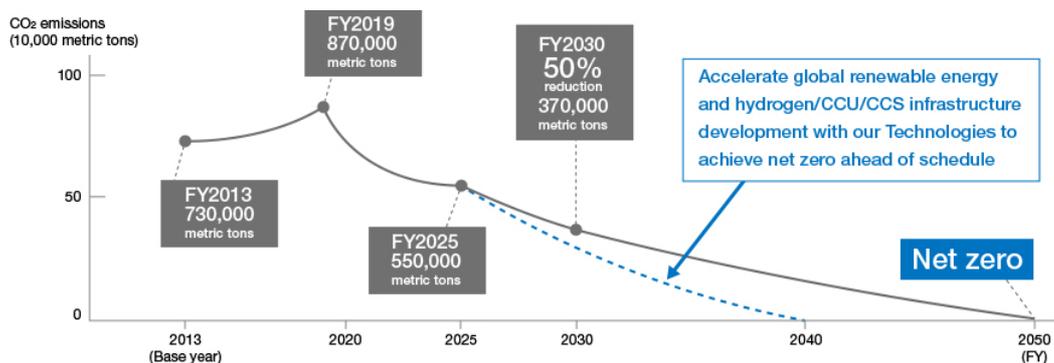


(as of March 2022)

The NGK Group uses the above results to create a risk heat map

Metrics and Targets

We drafted the Carbon Neutrality Strategic Roadmap to promote goal achievement that will enable us to realize the NGK Group Environmental Vision. We set milestone targets ahead of our 2050 goal of net zero CO₂ emissions for the entire Group. These milestone targets call for a 550,000 ton reduction in emissions by 2025 (25% reduction compared to 2013 (reference year)) and a 370,000 ton reduction by 2030 (50% reduction compared to 2013).



[NGK Group Environmental Vision >](#)

We drafted our Fifth 5-Year Environmental Action Plan to help realize the NGK Group Environmental Vision. This plan outlines targets for the environmental activities we will conduct between FY2021 and FY2025.

The objective of this Plan is to make it easy to understand our progress towards net zero by 2050 and our 2030 milestone target of a 50% reduction compared to 2013. As part of our initiatives to expand our use of renewable energy, we set new targets for renewable energy utilization rates that we apply to electricity consumption for the entire Group. We also set targets to increase the number of products registered as carbon neutral-related products.

[> Fifth 5-Year Environmental Action Plan](#)

[> CO₂ emissions Scope 1 · 2](#)

[> CO₂ emissions Scope 3](#)

The TCFD recommends disclosing the ratio of assets and businesses vulnerable to physical risks as a benchmark. In response, we assessed the depths of floods caused by river floods and storm surge at the NGK Group manufacturing sites around the world. Using simulations based on the Climate Score Global (CSG) model developed by Jupiter Intelligence in America, we conducted assessments, including for future climate, of manufacturing site locations at a resolution of 90m.

From these assessments, we learned that, in a 4°C scenario (SSP5-8.5), there are regions where the risk of water incursion from flooding or high tide with a likelihood of occurring once every 100 years will be higher in 2050 compared to 2020. The NGK Group is already implementing measures from the perspective of advancing our BCP and we will continue to evaluate and implement necessary measures.

(Disclosed in April 2022)

Sustainability

Initiatives for Human Rights

Basic Approach

Concerning respect for human rights within NGK Group business activities, our relationship with employees has been governed by the [NGK Group Code of Conduct](#), and our relationship with suppliers has been governed by our [Supply-Chain CSR Guideline](#). In April 2021 we established the NGK Group Human Rights Policy as a separate policy on human rights. This not only clarifies our messaging both inside and outside of the company, but accelerates our efforts to respect human rights.

NGK Group Human Rights Policy

The NGK Group hereby establishes this "NGK Group Human Rights Policy" (this "Policy") based on the "United Nations Guiding Principles on Business and Human Rights" and will promote initiatives to respect human rights to prevent violation or abuse of human rights of anyone impacted by the NGK Group's business operations.

1. Basic Approach to Human Rights

The NGK Group supports and respects the "International Bill of Human Rights" adopted by the United Nations (consisting of the Universal Declaration of Human Rights and the International Covenants on Human Rights), the "ILO Declaration on Fundamental Principles and Rights at Work", the "OECD Guidelines for Multinational Enterprises" and other international norms.

With NGK INSULATORS, LTD. ("NGK") signed up to the United Nations Global Compact, the NGK Group supports and respects the Ten Principles of the United Nations Global Compact.

2. Applicable Laws

The NGK Group conforms with all laws and regulations of the countries and territories in which it conducts business. When a law or regulation conflicts with internationally accepted principles of human rights, every effort is made to conform with the latter.

3. Scope of Application

This Policy applies to all directors, officers and employees of the NGK Group (the "Directors and Employees"). The NGK Group expects that its suppliers will also comply with this Policy.

4. Education and Training

The NGK Group will provide the Directors and Employees with appropriate education and training to effectively implement this Policy throughout its group-wide business operations.

5. Main Focus of the Group's Commitment to Human Rights

The NGK Group will:

- Comply with international norms on human rights and respect diversity of people;
- Respect human rights and undertake business activities without the use of forced labor or child labor; Provide young workers with fair working conditions that strictly comply with the Legislation of each country and region.
- Respect the individuality and independence of each employee and not engage in discrimination on the basis of race, citizenship, gender, age, religion, belief, existence of handicaps, sexual diversity or any other aspect; and
- Prevent the occurrence of harassment in the workplace and take prompt and appropriate action in the case where it occurs.

The NGK Group will:

- Strictly comply with the Legislation of each country and region relating to safety and sanitation, provide a safe and enjoyable work environment that is comfortable for everyone to work in for all;
- Strictly comply with the Legislation of each country and region relating to labor, safety and sanitation, we provide fair working conditions such as working hours, holidays, vacations, wages, and welfare programs.

- Respect employees' right of freedom of association and of collective bargaining in accordance with the Legislation of each of countries and regions where it operates.
- Aim to harmonize work and life, and support a variety of working styles;
- Build up a relationship of trust through sincere debate and discussion with employees;
- Give educational opportunities to employees and provide opportunities to stretch their motivation and abilities; and
- Encourage free and open discussions and aim to create a corporate culture conducive to active communication.

6. Human Rights Due Diligence

The NGK Group will establish a system of human rights due diligence, and will implement processes to identify, prevent and mitigate adverse human rights impacts that the NGK Group's business operations may cause.

7. Remedy

If it is revealed or suspected that the NGK Group has caused adverse human rights impacts (whether directly through its business operations, or through its suppliers), the NGK Group will endeavor to deliver appropriate and effective remedy through good-faith dialogue with related parties.

8. Dialogues and Discussions

In the process of implementation of this Policy, the NGK Group will earnestly engage in dialogue and discussions with stakeholders, acquiring and drawing on independent external expertise on human rights.

9. Information Disclosure

NGK will disclose the status and results of implementation of this Policy on its website and integrated reports or through other channels.

10. Administrative Authority

NGK will designate the director in charge of the personnel division as the director responsible for the implementation of this Policy. The Board of Directors will oversee the status of implementation of this Policy by having the director regularly report the implementation status to the Board of Directors.

This Policy has been approved by NGK's Board of Directors and signed by NGK's Representative Director and President.

NGK Insulators, Ltd. President *Shigeru Kobayashi*

Related Policies and Approaches

Statement on the UK Modern Slavery Act

We have disclosed our UK Modern Slavery Act Statement based on the Modern Slavery Act passed by the United Kingdom in 2015.

[UK Modern Slavery Act Statement](#) >

Respect for the Human Rights of Children

The NGK Group is aware that there are a variety of impacts that corporations can have on children. In addition to signing the UN Global Compact, we support the Children's Rights and Business Principles, respect the rights of children through our business activities, and engage in social contribution activities and other efforts to promote children's rights.

[Social Contribution Activities](#) >

Management System

In April 2020, we established the HR Committee as a cross-sectoral, deliberative body chaired by the executive in charge of the HR Department and tasked with ensuring that corporate activities have a stronger focus on human rights and that important personnel issues are addressed by the NGK Group as a whole.

The HR committee coordinates and cooperates with related committees and departments on initiatives for ensuring respect for human rights, according to their content and importance. At the same time, the managing director of the HR department regularly reports to the Board of Directors concerning the status of their implementation, and the Board of Directors oversees the status of implementation.

FY2021 Activities

In FY2021, we focused on the following human rights initiatives.

April 2021	Disclosed NGK Group Human Rights Policy
August 2021	Revised NGK Group Human Rights Policy
November 2021	Newly formulated and disclosed Statement on the UK Modern Slavery Act
October 2021	Conducted investigations into human rights-related grievances at Group companies in and outside Japan during the first half of FY 2021 (human rights related grievances at NGK headquarters are investigated and recorded on a case by case basis)
December 2021 to March 2022	Conducted a Human Rights Due Diligence survey of NGK headquarters, and all group companies in and outside Japan

Specific Initiatives

Initiatives for Due Diligence Processes, Assessment, and Rectification

The NGK Group is making a variety of efforts to identify, prevent and mitigate practices within the NGK's business operations that negatively impact human rights. The HR Committee has verified this approach and reported to the Board of Directors.

Self-Assessment by Each Group Company

NGK and a total of 39 Group companies in and outside of Japan, conduct a 55 question self-assessment survey based on the RBA* Code of Conduct which looks at the three categories of labor, safety and health, and ethics.

As a result, no violations of the laws or regulations of each country were found. On the other hand, there were some issues identified which do not comply with the RBA Code of Conduct.

We have already made improvements to address some of these minor matters (such as providing health and safety information in a language employees can understand). For matters like hiring procedures and working hours, we are aware that these are issues and are considering how to address them in light of the laws, norms, and customs of each country.

* Responsible Business Alliance: Focusing primarily on the electronic equipment industry, the RBA establishes standards and conducts audits with the aim of promoting safe working environments, worker protection, and environmental responsibility.

Human Rights Risks to Employees

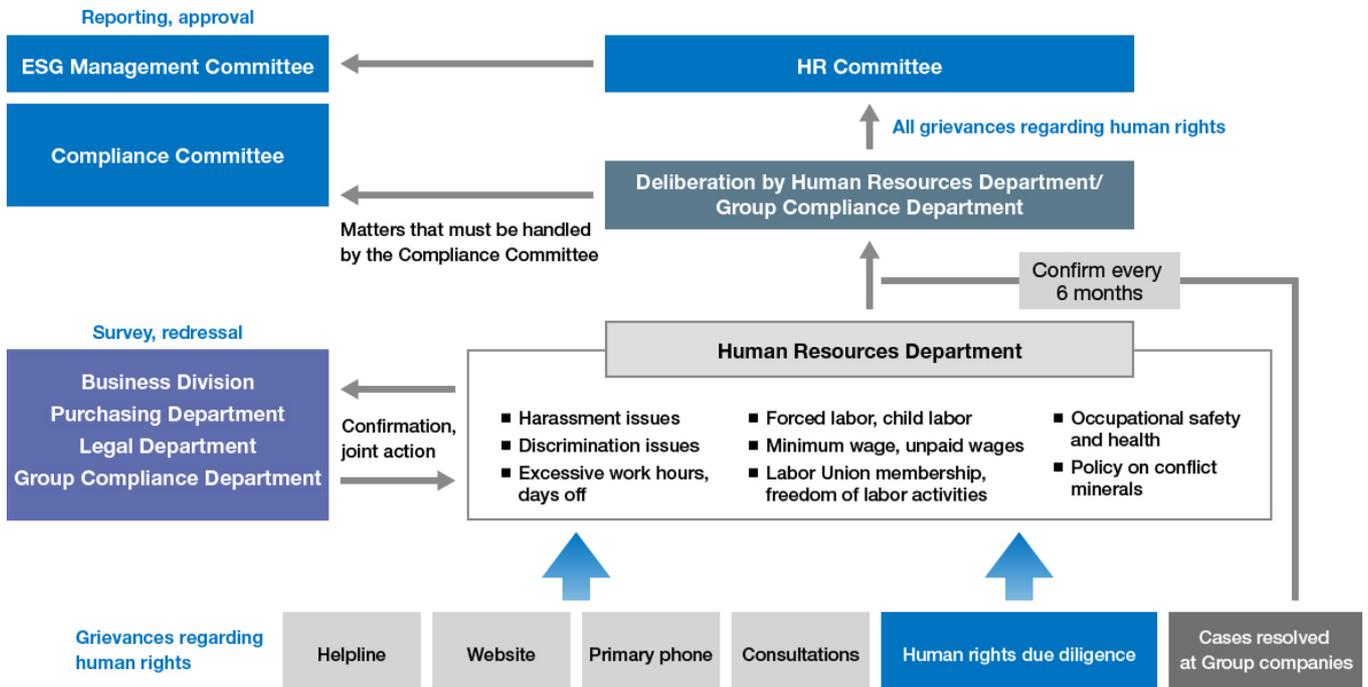
Concerning human rights risks to employees, we collect information through our internal whistleblowing system, and receive reports from Group companies once every 6 months through the Human Rights Grievance Survey. In FY2021, we received 52 reports related to human rights (harassment, labor-related, etc.) from the entire NGK Group. We are handling these with fact-finding investigations, rectification, instruction, and warnings. Once every two years we also conduct a Corporate Risk Survey (CRS) to identify latent risks.

Risks to Supply Chain

For our supply chain, every year we ask all suppliers, including new suppliers, to submit a written agreement to comply with our Supply-Chain CSR Guideline. Moreover, in FY2021 we conducted a self-assessment survey to ascertain the level of understanding of, and status of activities related to, CSR procurement at our approximately 700 suppliers in Japan.



Grievance Mechanisms and Remediation / Remedy Framework



Education Concerning Human Rights

NGK conducts various types of training, through seminars and e-learning, for executives and all employees, with the goal of improving their level of understanding for respecting human rights in our corporate activities.

- Business and Human Rights — Initiatives for Respecting Human Rights (held June 2022)
Conducted e-learning about the responsibility of companies to respect human rights, risks related to human rights, the NGK Group Human Rights Policy, and our own human rights initiatives.
 - Introduction to LGBT — Aiming for a worker-friendly workplace — (held March 2021)
Conducted e-learning on basic knowledge about LGBT as well as our own initiatives.
 - Training related to harassment (held FY2021)
We conducted training related to harassment whenever an employee was promoted. It defined both sexual harassment and harassment from a position of power, explained how to handle them in accordance with workplace regulations, and promoted understanding through case studies.
- [> Compliance Education](#)

Sustainability

Supply Chain Management

Basic Approach

Our basic policy centers on the three principles of open and fair, partnership, and relationship with society. In line with this, the NGK Group has established a Basic Purchasing Policy to promote fair and honest business transactions and help ensure prosperous relationships with the procurement partners in our supply chain.

In 2021 we submitted a Declaration of Partnership Building as advanced by the Cabinet Office Small and Medium Enterprise Agency. We continue to promote partnership with our suppliers as well as fair and honest dealing.

Basic Purchasing Policy

Openness and Fairness

- Open, fair, and honest procurement
- Pursuit of competition principles and profitability

Partnership

- Mutual prosperity based on mutual trust with suppliers

Relationship with Society

- Compliance with laws
- Preservation of the global environment



Supply Chain Management System

At NGK, the Purchasing Department is responsible for managing tier 1 suppliers. It also manages suppliers in tier 2 and beyond who provide critical items such as raw materials. All supplier management is done in line with NGK's Supplier Management Regulations.

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 intimately related to compliance in activities with external and financial connections. In light of this, we created the Purchasing Handbook to summarize internal rules for purchasing engagement and issued the first edition of it in FY2007. The Handbook has since been reviewed every year, and efforts have been made to better familiarize personnel with the tool.

It has been made available on the company intranet, and its significant objectives are discussed in company training programs, particularly for new managers.

Introduction of General Indirect Materials Purchasing System

Typically, each division has performed general indirect materials purchasing, using an offline, piecemeal approach. However, in June 2021 we introduced a global transaction network system to centrally integrate indirect materials spending and make it more transparent.

In addition to an expenditure check conducted by the Purchasing Department, we review the supplier, specification, and other details for large-scale expenses based on the available data. In FY2021, we were able to save 160 million yen through cost reductions.

In FY2022, we expanded the scope of this review to the outsourcing of highly specialized work, and are working to further strengthen management and purchasing.

Promoting CSR Procurement

The NGK Group promotes CSR procurement as a response to rising social expectations for CSR-oriented supply chain management. We preferentially select CSR-conscious companies and purchase CSR-sensitive raw-materials and services.

Supply-Chain CSR Guideline

The NGK Group created the NGK Group's Supply-Chain CSR Guideline in FY2010 as a guide to promote CSR procurement across the Group.

The Guideline specifically describes our obligations as a socially responsible buyer as well as our requirements for socially responsible suppliers, such as specifying environmental obligations like greenhouse gas emissions reductions.

In 2013, the Guideline was expanded by being integrated with the previous Green Procurement Guideline, which sets forth rules for preferential purchase of environmentally friendly products and services. Thereafter, they were revised based on changes in social conditions and new global challenges. New points of compliance are being added as well.

Every year we ask all suppliers to submit a written agreement to comply with this guideline, and when we start working with a new supplier, we ask them to comply with the guideline.

The Supply-Chain CSR Guideline is publicly available on our website in multiple languages (Japanese, English, and Chinese).

Supply-Chain CSR Guideline adoption rate for business partners

99.6%

[NGK Group's Supply-Chain CSR Guideline and Supplemental Materials](#) >

Supply Chain Evaluation

Within NGK, raw materials and molding molds for main production items* are considered critical items, and of the suppliers who supply these items to NGK, 38 companies (22 Tier 1 companies, 16 Tier 2 companies) are considered critical suppliers from the standpoint of transaction volume (accounting for 80% or more of raw materials and molds supply for main production items), and BCP (single company supply ratio of 70% or more).

In order to identify sustainability-related risks in the supply chain, which includes these suppliers, we perform partner maintenance and selection based on the Supply-Chain CSR Guideline, as well as visit suppliers to identify who are our high-risk procurement partners.

* Main production items: Ceramics for purifying automobile exhaust, insulators and related devices for electric power, ceramics for electronic and electrical devices and ceramics for semiconductor manufacturing equipment

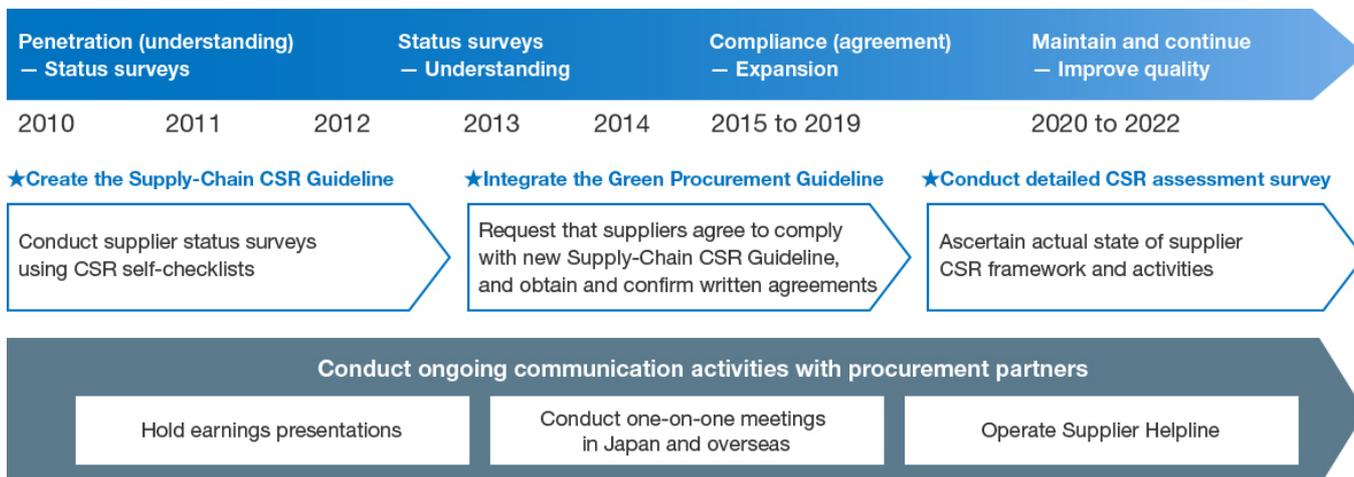
Expanding CSR Procurement

At the NGK Group, we engage in activities which deepen understanding to promote CSR procurement, such as visiting individual suppliers and conducting on-site inspections.

Not only do we ask suppliers to sign an agreement to comply with our existing Supply-Chain CSR Guideline, but in 2021 we conducted a fact-finding survey to perform a detailed CSR assessment. It contained 114 questions on nine topics, including human rights, labor, and the environment.

In FY2022 we are providing improvement support to suppliers according to their importance and business conditions. Our group companies are also moving forward incrementally with a Self Assessment Questionnaire (SAQ) for all major suppliers both in and outside of Japan.

Ongoing Promotion of CSR Procurement



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*) with the potential to cause social issues such as human rights violations and poverty, and takes steps to avoid using such materials. Additionally, in response to requests from customers, we investigate suppliers regarding their responsible procurement of resources and raw materials.

* Minerals including tin, tantalum, tungsten, and gold produced in the Democratic Republic of the Congo and surrounding countries, and used as a source of funding for armed conflict in the area.

Enhancement of Group-Wide Cooperation and Procurement Capabilities

Within the NGK Group, we work to strengthen the procurement capabilities and ensure good governance for the Group as a whole through a number of approaches, including sharing information among Group companies and undertaking joint initiatives aimed at various procurement matters. Based on each company's purchasing system and transaction situation, we clarify issues and provide support and reinforcement, such as collective purchasing of common materials, sharing cost and supplier information, and introducing domestic supplier management methods to Group companies.

We will continue expanding the use of collective purchasing, standardizing supplier management methods, and developing other approaches that will contribute to improved procurement functions Group-wide, both in terms of cost and governance.



NGK Group Purchasing Liaison Meeting

Communication Activities with Procurement Partners

Explanation of Earnings to Suppliers

Because of the risks posed by the COVID-19 pandemic, NGK's annual earnings presentation for suppliers was conducted online, just as it was last year. We explained our earnings and materials procurement policy to 175 supplier companies. We also asked for their continued compliance with CSR procurement, and shared information and goals meant to facilitate the continuation and expansion of business throughout our entire supply chain.

Ongoing Operation of the Supplier Helpline

In 2008, NGK established the supplier helpline system. Upon receiving consultation via e-mail, fax, and telephone, we make an effort to respond with solutions quickly.

Supplier Helpline >

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 and evaluate their QCD (quality, cost, and delivery) performance in a fair and equitable manner. In FY2021, we visited 27 existing suppliers, with some visits being carried out online due to the COVID-19 pandemic. We also conducted audits at 15 of these suppliers.

Not only did we provide feedback and assessments during these audits, but we also used visits for other objectives such as surveying plants and adjusting delivery times as opportunities to listen to a wide variety of feedback concerning suppliers' QCD management frameworks, CSR approach, and the state of their organization. In addition to this kind of direct communication with suppliers, we communicate through the web as well to build and strengthen better relationships of mutual trust.

Supplier Training-Driven Support Efforts

The NGK Safety Cooperation Conference hosts meetings for facilities and equipment construction-related supplier members. These meetings are used as opportunities to share accident and disaster case studies, as well as to provide safety-related lectures.

The FY2021 meeting was attended by around 20 people from NGK and 69 people from 53 conference member companies. The keynote address was on the topic of communication focused on on-site accident prevention.

Monitoring Activities Aimed at Suppliers Outside Japan

We systematically undertake quality audits of our suppliers outside Japan.

Sustainability

Quality Activities

Basic Approach

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 attempting to create quality from the customer's perspective.

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 Code of Conduct.

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 Objectives 2022

A focus on Organizational Self Discipline is required to improve our "Quality of Operation".

Results of Initiatives in FY2021

NGK has been implementing quality of operation^{*1} improvement initiatives since FY2018.

In FY2021, we established an activity framework for each business group and conducted study sessions and patrols to collect opinions from the workplace.

The goal of these efforts was to have each person in the workplace strive autonomously to improve the quality of their work. While we were able to put this framework in order, worksites and Group companies did point out problems related to the activities, and we confirmed that there were gaps in understanding.

* 1 Quality of operation: Level of operational systems that are in place to ensure that promises made to customers are fulfilled.

Initiatives Planned for FY2022

In FY2022 we continue working to put autonomous activities in the workplace on track. To that end, we maintain the same quality objectives as last year. We are promoting activities to ensure communication between organizations so that all members at worksites and Group companies can understand quality compliance.

Concerning product quality, we continue to promote QRE-P^{*2} and are working to eliminate quality risks in the market. And we are particularly focused on initiatives that get business groups to analyze their own problems and revise their work.

* 2 QRE-P (Quality Risk Elimination Process): An operational protocol intended to more effectively eliminate quality-related risks at every stage when bringing products to market, from product planning to mass production.

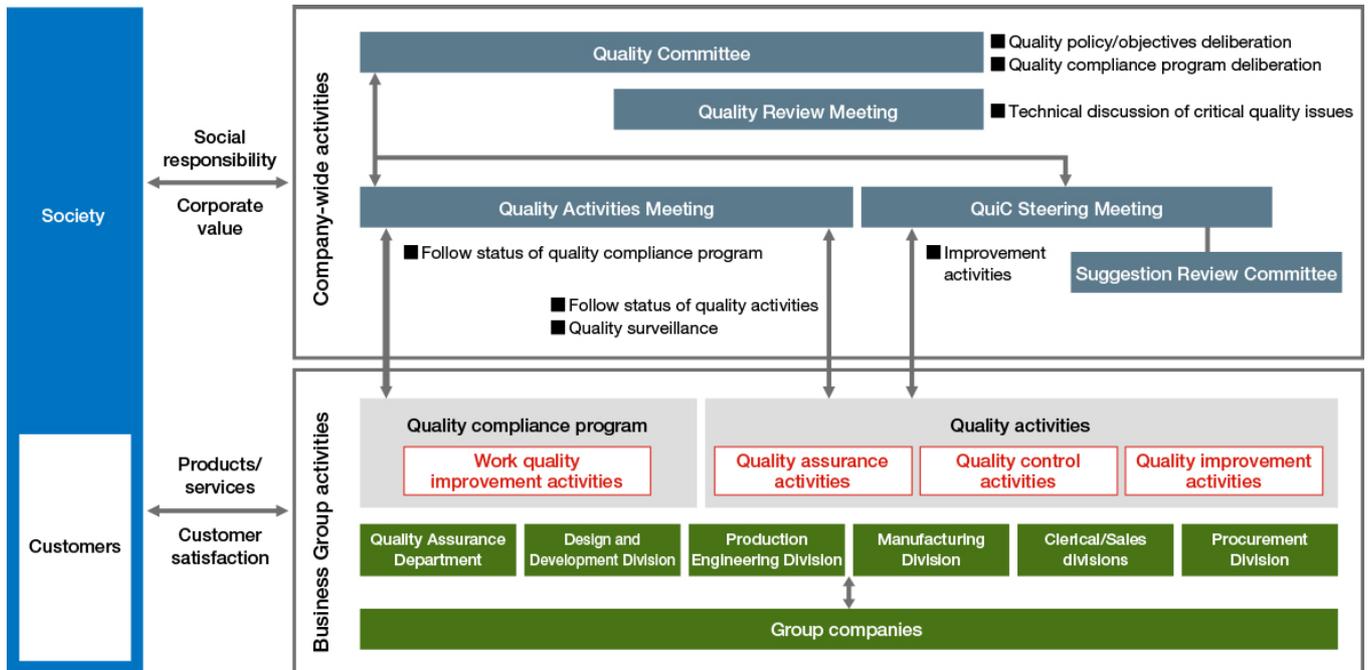
Quality Activity System

The NGK quality activity system consists of a company-wide system, led by the Quality Committee Chair, and business group internal activity systems, led by the heads of each business group. In terms of company-wide activities, the Quality Committee was established to function as a deliberative body assisting the Quality Committee Chair, while business group internal activity systems were put in place for each business division, creating appropriate quality systems for each. Quality assurance, quality control, quality improvements, and quality education activities are promoted by the acquisition of ISO 9001 or IATF 16949 certification.

Each Business Group maintains a point of contact with customers, and works to further increase customer satisfaction by reflecting customer demands and things learned from quality problems in the market in our products and services.

In FY2021, we began quality management training for those working in sales and engineering jobs that bring them into contact with customers. This training conveyed the importance of quality of operation in honoring our contracts with customers. We also promote lively communication with partners and are actively collecting information on issues faced by partners as we provide guidance on quality improvements.

Quality Activity System



Acquisition of ISO 9001 or IATF 16949 Certification

	FY2017	FY2018	FY2019	FY2020	FY2021
Percentage of ISO 9001 or IATF 16949 certified sites (% , Group)	97	97	97	100	100

NGK and the all Business Group production sites, supporting functions, and locations at Group companies in and outside Japan have acquired ISO9001 or IATF 16949 certification.

Quality Risk Management

Four Rules for Quality Activities

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.

We have formulated these quality activity rules particularly to enhance the elimination of quality risks in the market, and are promoting their adoption and improved effectiveness.

Quality confirmation rule

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

Design Review (DR) function strengthening rule

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

Rule for handling major customer complaints

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.

Seeking Greater Effectiveness from Quality Activities and Innovation in Operational Procedures

We have been promoting Quality Risk Elimination Process (QRE-P) activities throughout the NGK Group. Through these activities, we can identify procedural innovations in product realization in order to eliminate risk while improving quality. Since the start of QRE-P activities in FY2017, we have worked to incorporate the QRE-P concept into quality system in each business group, and also have provided practical training so that the person in charge can put QRE-P in practice, using development projects as examples.

In FY2021, we focused on weaknesses in the quality system in each business group and began efforts to incorporate the QRE-P concept into each business group's quality system in order to more effectively promote attempts to achieve autonomous operation begun in FY2020. Particularly when problems occurred in the market, instead of merely implementing technical countermeasures, we got together with the business group and analyzed what parts of the work process were lacking. We then focused on incorporating improvements into our system to prevent issues before they occur.

In FY2022, we plan to focus on weaknesses in the quality system in each business group, promote greater incorporation of the QRE-P concept into the quality system of each business group, and strengthen our expansion of the implementation of QRE-P activities to Group companies.

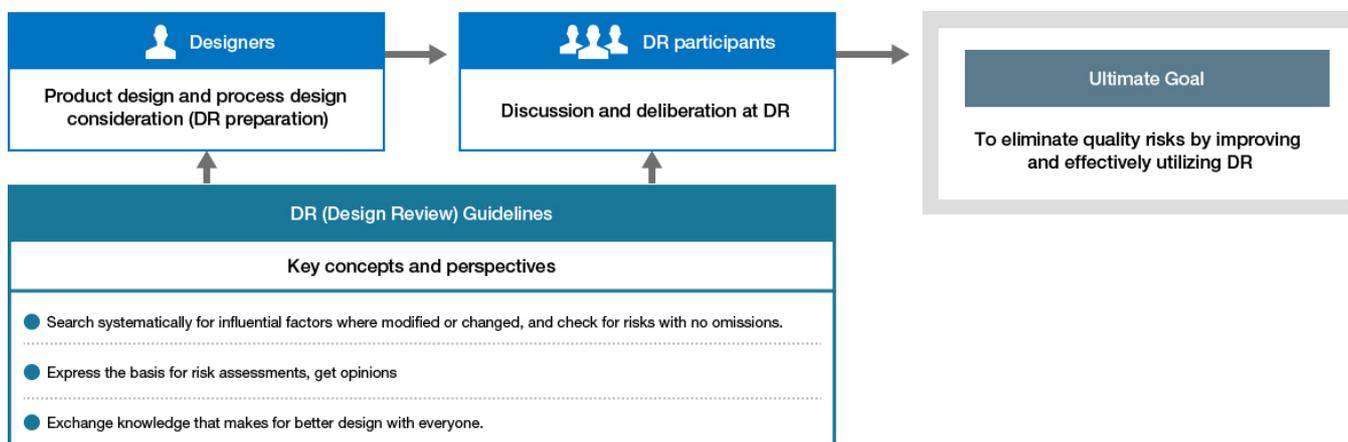
Activities to Strengthen DR Functions

The increasing and diversifying quality demands from customers call for the integration of knowledge among various members throughout the development process, not only from the design division but also from the manufacturing and production engineering divisions. For this reason, the NGK 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 quality risks.

The DR Guidelines were created to promote DR discussions and to thoroughly eliminate quality risks. We are constantly enhancing the effectiveness of DRs through efforts to spread these guidelines company-wide, including awareness and review of each DR.

Furthermore, NGK organizes a company-wide DR (quality review meeting) for quality issues that are difficult to solve by one division. At this meeting, relevant engineers and experts from across the company discuss broad aspects of issues related to the reliability and safety of products.

We are also deploying the above-mentioned QRE-P approach to facilitate improvement of design level at the pre-DR period as well as to ensure the more effective utilization of organizational knowledge and experience from DRs.



Quality Activities at Production Bases Outside Japan

From their inception, production bases outside Japan have created quality systems appropriate to their situations and acquired ISO 9001 or IATF 16949 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 distributed group-wide in an attempt to develop and enhance quality activities.

[> Acquisition of ISO 9001 or IATF 16949 Certification](#)

QuiC Activities to Improve Quality with Full Employee Participation

Since 2003, the NGK Group has held QuiC (Quality up innovation Challenge) quality improvement activities in which all employees participate. These activities consist of quality improvement activities by small groups or individuals and suggestions that strive to enhance the quality of production; best practices are then 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 August of FY2021, we held the Company-wide QuiC Activities Contest. Due to the COVID-19 pandemic, this was our first time in two years to hold the event, and we held both physical and online versions concurrently. In November we held the NGK-BOX/Surprising Challenges! best practices presentation. NGK-BOX/Surprising Challenges! provides a company-wide forum for laterally sharing reform examples and model initiatives in order to boost employee motivation and invigorate the workplace. This was our second time to hold the event, following its inaugural run last fiscal year.

In FY2022, two events will be held; one is a company-wide contest focused on sharing manufacturing division best practices in July, and another is an NGK-BOX/Surprising Challenges! event to share innovations and best practices implemented within the NGK Group in October.

Suggestion Activity Participation Rate

	FY2019	FY2020	FY2021
Manufacturing Division	98%	93%	82%
Non-manufacturing divisions	85%	83%	71%
Clerical divisions	60%	50%	25%
Number of suggestions	Approx. 29,000	Approx. 19,000	Approx. 16,400



Company-wide QuiC Activities Contest



NGK-BOX/Surprising Challenges! best practices presentation held online

Sending Award Recipients and Outstanding Proposal Commendation Recipients to Training in and outside Japan

Training at a Group Companies Outside Japan

Normally, Outstanding Proposal Commendation recipients and Grand Prize recipients visit Group companies outside Japan at the end of October through early November. However, in FY2021, as in FY2020, this overseas visit was canceled due to the COVID-19 pandemic.

We intend to resume these best practice overseas promotion activities once the COVID-19 pandemic has been contained.

Training in Japan

Every year, in late December, the Outstanding Proposal Commendation recipients and QuiC Excellence Award and Special Award recipients visited Okinawa to attend a nationwide QC Circle Conference and participate in discussion sessions about various topics, such as differences between NGK and other companies. However, in FY2021 this was again canceled due to the COVID-19 pandemic, as it was the year before.

We intend to resume these best practice promotion activities in Japan once the COVID-19 pandemic has been contained.

Strengthening Quality-Related Education

The NGK Group aims to provide customers with product quality that exceeds expectations. Hence, we are continually working to improve the quality-related education that is given to all employees in order to ensure they are equipped with quality-related skills and greater quality-related awareness.

We place the greatest emphasis on practical training tied directly to each employee's job duties and Quality Management System (QMS) training aimed at promoting systemic improvement in operations. So, we conduct long-term individual training which lasts for six months. Due to the continuing COVID-19 pandemic, the following training was able to be provided via online delivery and video streaming, COVID-safe classroom instruction, or some combination thereof.

Quality-Related Education in FY2021

Training name	Number of participants	Objectives and key characteristics
Quality Control Training (young NGK employees)	Lecture: 192 participants Individual instruction: 185 participants	<ul style="list-style-type: none"> Understand the basics of problem solving and quality control Skills development through individual instruction on the theme of operational challenges Support in conjunction with participants' supervisor
SQC (Statistical Quality Control) Methods Training (those interested/including NGK Group)	A total of 452 participants	<ul style="list-style-type: none"> Learn SQC methods Changed traditional face-to-face sessions to e-learning for each method Comprised a total of 14 lectures, with two lectures added for frequently asked about methods All lectures were open and free to attend
Reliability Basics Training (those interested/including NGK Group)	Reliability Basics Training 1: 94 participants	<ul style="list-style-type: none"> Learn about design reliability, the physics of failure, and methods of analyzing reliability data
	Reliability Basics Training 2: 134 participants	<ul style="list-style-type: none"> Learn methods of prevention, QFD, FTA, FMEA, and Design Review (DR) Skills development through discovering problems lurking in points of change and problem solving discussion Understand NGK's DR and QRE-P
Study of Failure and Methodology of Creation (those interested/including NGK Group)	Lecture: 30 participants Seminar: 9 participants Shared failure example analysis session: 42 participants	<ul style="list-style-type: none"> Improve analytical and developmental skills through lectures and seminars Expand shared analysis of failure examples company-wide
QMS Training (those interested/including NGK Group)	ISO/IATF standards interpretation: 740 participants	<ul style="list-style-type: none"> Understand the intent and requirements of standards Session demand accommodated via face-to-face + online (simultaneous streaming) sessions
	ISO/IATF Internal Quality Auditor training: 119 participants	<ul style="list-style-type: none"> Internal quality auditor training and accreditation
	Auditing Skills Development: 18 participants	<ul style="list-style-type: none"> Understand relationship between process auditing-based QMS effectiveness enhancement and quality compliance Practical training exercises performed within a seminar setting
	VDA 6.3 Process Auditing Seminar: 52 participants	<ul style="list-style-type: none"> Understand process auditing requirements for VDA standards

92 Employees Pass Self-Maintenance Expert Test (Grade 1: 32 Employees, Grade 2: 60 Employees)

With the aim of achieving a higher standard for maintenance activities and of improving productivity, a number of NGK Group employees in FY2021 took on the challenge of the Self-Maintenance Expert Test (Japan Institute of Plant Maintenance). This qualification is given to those who possess a broad range of necessary knowledge and skills concerning quality management, safety, and machinery maintenance, and are recognized as having the ability to plan and implement voluntary maintenance activities and provide instruction.

The NGK Group will continue encouraging employees to take the Self-Maintenance Expert Test as well as cultivate voluntary maintenance activities and stimulate greater employee motivation.

Number of Employees Who Passed

Company name	No. of Level 1 examinees	No. of employees who passed Level 1 (pass rate)	No. of Level 2 examinees	No. of employees who passed Level 2 (pass rate)
NGK	34	22 (65%)	34	27 (79%)
NGK Ceramic Device	6	6 (100%)	46	33 (72%)
NGK Electronics Devices	8	4 (50%)	-	-

Sustainability

Customer Satisfaction

Basic Approach

One of the focuses of the NGK Group Code of Conduct is to contribute to the “Realization of a Sustainable Society” through the products and services that we supply, and towards that end we have resolved to do the following.

Realization of a Sustainable Society



We will create new value through the provision of products and services that contribute to society, protect the world environment, and strive to realize a sustainable society.

- By providing high quality products and services in which safety is properly considered and which comply with environmental rules, we can respond to the trust of customers and society.
- We will sincerely consider new needs and the desire for improvements from customers and society and undertake product and service development and upgrades.

Customer Satisfaction Survey

In order to reflect customer feedback in our products and services, each of NGK’s business groups independently develops and conducts surveys aimed at facilitating greater customer satisfaction.

Results of the Environment Business Group’s* Customer Satisfaction Survey

2017	2018	2019	2020	2021
91%	94%	100%	100%	100%

* Renamed from the Ceramic Products Business Group in April 2022

Note: Calculation method

Participants were asked to respond to survey questions by providing a rating from one to ten, with responses of six or higher counted as “Satisfied.”

Sustainability

Labor Practices

[Basic Approach](#) ▾[Basic Information Related to Employees](#) ▾[Work-Life Balance](#) ▾[Labor-Management Initiatives](#) ▾

Basic Approach

The NGK Group strives to create a safe and comfortable workplace environment with respect for employee humanity. We implement a human resource system which enables every employee to perform at their full potential under fair treatment.

In the NGK Group Code of Conduct, our relationship with employees is based on the ideas of “Respect for Human Rights” and “Providing a Safe and Enjoyable Work Environment.” These are defined as follows.

Respect for Human Rights



We will strictly comply with international standards of human rights and respect the diversity of all people.

- We will respect human rights and undertake business activities without the use of forced labor or child labor.
- We will respect the individuality and independence of each employee and not engage in discrimination on the basis of race, citizenship, gender, age, religion, belief, existence of handicaps, sexual diversity or any other aspect.
- We will prevent the occurrence of harassment in the workplace and take prompt and appropriate action in the case where it occurs.

Provide a Safe and Enjoyable Work Environment



We will provide a safe and enjoyable work environment that is comfortable for everyone to work in for all.

- We will strictly comply with laws and regulations of each country and region relating to labor, safety and sanitation.
- We will aim to harmonize work and life, and support a variety of working styles.
- We will build up a relationship of trust through sincere debate and discussion with employees.
- We will give educational opportunities to employees and provide opportunities to stretch their motivation and abilities.

Human Resource System for Group S/M/J Employees

In April 2017, NGK revised its human resource system for Group S/M/J 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 middle-level employees who will take on future key roles and encourage them to demonstrate their full potential. The revised system aims to create an environment that makes these possible.

Key Points of the Revised System

Qualifications

- Developing a mechanism whereby all employees can take on the challenge to qualify for a higher job grade
- Clarifying the definition of each qualification

Evaluation

- Shifting from age-based evaluation to effort- and result-based evaluation

Retirement at age 65

- Maintaining the same level of salary after age 60

Qualification Definitions

In order to ensure that educational background and age are not limiting factors for employees' careers, NGK maintains a merit-based system for job promotion and grade transfer. Also, because qualification-specific role differences are made clear, employees are aware of what is required for higher level qualifications and can more readily attempt higher level job duties. The aim of this system is to reward the efforts of those with the will and ambition to move to a higher grade, as well as to facilitate each employee's journey along his or her career path.

NGK Qualification Definitions

Key personnel:	Employees in managerial positions
Group S:	Key personnel candidates and advanced specialists
Group M:	Operational and on-site leaders
Group J:	Personnel who seek to actualize, and be utilized to, their full potential

Basic Information Related to Employees

Scope of Application

For reporting in the Social section of this website, scope of application differs on a case-by-case basis and is therefore specified for each article and data report.

However, basic data for employees is shown below.

Number of Employees

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of Employees ¹	NGK		4,142	4,119	4,224	4,316	4,382
	NGK Group		18,783	20,115	20,000	19,695	20,099
Number of employees by gender	NGK ²	Total	4,136	4,355	4,529	4,650	4,745
		Male	3,621	3,807	3,951	4,046	4,132
		Female	515	548	578	604	613
	NGK Group	Total	19,406	20,578	20,409	20,195	20,656
		Male	15,013	16,167	16,010	15,920	16,393
		Female	4,393	4,411	4,399	4,275	4,263
Number of employees by employment type	NGK	Full-time employee	4,136	4,355	4,529	4,650	4,745
		Contract employee	398	507	464	287	272
		Temporary employee	392	389	395	302	372

¹ Includes employees from outside companies who have been temporarily assigned to the NGK Group, but excludes employees from the NGK Group who have been temporarily assigned to outside companies.

² Excludes employees from NGK Group companies or outside companies who have been temporarily assigned to NGK, but includes employees from NGK who have been temporarily assigned to NGK Group companies or outside companies.

Employee Status

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Average age (year)	NGK	Total	38.7	38.7	38.8	39.2	40.0
		Male	38.7	38.7	38.9	39.3	40.1
		Female	38.6	38.4	38.6	38.6	39.6
Average length of service (years)	NGK	Total	13.7	13.5	13.7	14.3	15.6
		Male	13.6	13.4	13.7	14.3	15.6
		Female	14.6	14.1	14.1	14.1	15.6
Average salary (yen)	NGK		7,852,010	7,888,094	7,770,318	7,635,830	7,696,997

Retention Rate of New Hires After 3 Years

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Retention rate of new hires after 3 years (%)	NGK	Total	94.6	92.6	93.5	92.8	90.3
		Male	94.8	97.6	95.2	92.7	91.0
		Female	80.0	83.9	85.1	93.3	87.9

Turnover Rate

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Turnover rate (%) (Full-time employees only, excluding retiring employees)	NGK	Total	0.8	1.4	1.5	1.3	1.3
		Male	0.7	1.2	1.3	1.2	1.1
		Female	1.9	2.9	2.8	1.7	2.0

Voluntary Resignation Rate

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Voluntary resignation rate (%) (Full-time employees only, excluding retiring employees)	NGK	Total	0.8	1.2	1.5	1.2	1.2
		Male	0.6	1.0	1.3	1.1	1.0
		Female	1.7	2.5	2.6	1.6	2.0

* The figures for voluntary resignation rate are calculated from the number of people resigning due to personal circumstances in one year / total number of employees.

Work-Life Balance

Approach to Work-Life Balance

NGK strives to promote a work-life balance and reduce long working hours.

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.

8 rules for promoting work-life balance

1. No more than 70 hours of overtime work per month
2. Overtime work exceeding 45 hours per month limited to six months each year
3. The target for annual paid leave is 10 days, and employees are obligated to take at least six days a year
4. No more than 300 hours of overtime work per six months
5. 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
6. 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
7. Written applications must be submitted when requesting employees to work on holidays or late at night
8. There must be an interval period of at least 10 hours between shifts of late-night work

Activities for Promoting Work-Life Balance

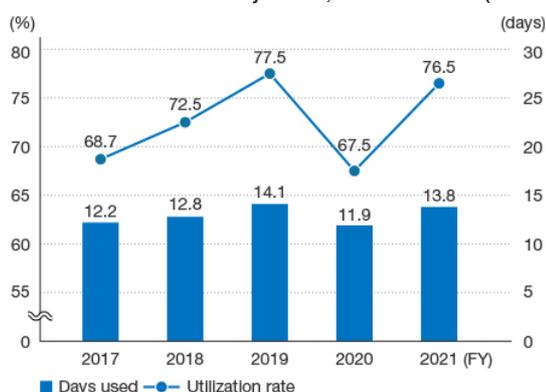
Initiatives to Shorten Total Hours Worked

[> Health Management: Initiatives to Shorten Total Hours Worked](#)

Initiatives to Promote Use of Paid Leave

In FY2021 we set the target number of paid leave days to take at 10, and worked to improve the ratio and number of paid leave days taken. Hereafter, we will continually implement initiatives to promote a good work-life balance.

Paid Leave: Number of Days Used, Utilization Rate (NGK Union members; excluding outside employees temporarily assigned to NGK)



Enhancing Systems for Supporting Work-Life Balance

NGK offers flexible systems to help employees maintain a balance between work and family life. 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. And in consideration of the working environment, we offer support via a shortened working hour system. Further, we continue to enhance the soft infrastructure NGK has in place to support these employees. For employees seeking to balance their career with childcare, we offer pre-maternity leave interviews, pre-reinstatement interviews during the childcare leave period, career consultations, and other consultation resources. For employees undertaking nursing care, we offer nursing care-related information sessions and distribute nursing care handbooks, as well as facilitate consultation services which make use of outside specialist organizations.

Enhancement of Work-Life Balance Systems

In 2010, NGK made a major revision to its human resource system, and we have since been continuously enhancing our support measures by identifying employees' needs.

In FY2017, we established an early reinstatement lump-sum system for employees who return to work early from their childcare leave (within 11 months of the start of their childcare leave). We also established a non-registered daycare subsidy system to help subsidize employees who put their children in non-registered daycares. These systems are part of the initiatives we undertake to support employees' careers after they have returned to work. Also, in addition to childcare and nursing care, we launched a system for flexible work arrangements to help employees who need to attend to a health condition of their own that requires repeated and ongoing treatment, thereby finding a balance between work and medical care.

In FY2018, we investigated how to improve the efficiency and productivity of workplaces by offering employees greater flexibility in terms of work style and

environment, so that they can work to their potential while maintaining a healthy work-life balance, regardless of when or where they work. It was in this context that we considered and expanded our use of telecommuting. Then, in FY2020, we formally introduced a telecommuting system to boost productivity and help address the needs of employees with children or other commitments.

In FY2019, we made it possible for male employees to accumulate more vacation days to be used for post-maternity support. We also made it easier to take childcare leave for shorter periods. This has resulted in a more-than-60% increase in male employees taking childcare leave.

In FY2022, we have established a point of contact for consultations relating to work-life balance, and are working to reduce employee concerns and create a positive workplace environment.

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 Post-maternity support leave (for male employees)	Shortened working hours Flex time system Unscheduled work exemption Overtime work exemption Late-night working hours exemption Half-day paid leave Caring for a family member (using accumulated vacation days) Caring for a child Lump-sum payment for early return
	Other systems			Childcare Concierge (for those living in the Tokyo metropolitan area)	Priority use of commuter parking lots (Nagoya area) Non-registered daycare expense subsidy
Financial support systems	Family Fund		Maternity gift		Babysitter expense subsidy Elementary school enrollment gift
	Health Insurance		Lump-sum birth allowance		
	Employment Insurance			Childcare leave benefits	
Salary			Paid 2/3 standard daily wages during time off before and after birth	Unpaid	Lump-sum payment made six months after returning to work (330,000 yen) *Applied to salary for month following the month elapsed
Bonus			Paid a bonus calculated for a 2/3 attendance rate during time off before and after birth	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

- Lump-sum payment for early return
- Increased non-registered daycare center expense subsidy
- Childcare Concierge
- Five-hour shifts
- Paid leave provided to employees who return early from parental leave
- Measures to promote the use of telecommuting

Overview of Childrearing Support Measures and Users

Systems That Exceed Legal Requirements

Item	Details	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of childcare leave takers	Until the last day of the month when the child turns 1 year old. When there are certain circumstances, such as not being able to find a daycare center, leave is available until the last day of the month in which the child turns 18 months old or the end of March after the child turns one, whichever is longer. (Legal requirement: until the child turns 18 months old)	Total	47	48	40	64	79
		Male	17	23	19	35	56
		Female	30	25	21	29	23
Ratio of employees that return to work after childcare leave		Total	100%	100%	100%	100%	99%
Shortened working hours during childrearing	6 or 7 hours per day for employees until the fiscal year when their children start 4th grade in elementary school (Legal requirement: For children under the age of 3)	Number of leave takers	51	63	64	62	79

Systems Operated Independently by NGK

Item	Details	FY2017	FY2018	FY2019	FY2020	FY2021
Lump-sum payment made 6 months after returning to work	Lump-sum payment is paid 6 months after returning to work	19	31	25	26	38
System for taking annual paid leave in hourly increments (for employees working shortened hours)	Paid leave (days' worth) can be taken in hourly increments by employees working shortened hours	36	59	62	58	73
Childcare leave for fathers using accumulated vacation days	Unused annual paid holidays can be used for childcare leave	17	19	31	54	53
Pre-maternity leave interview	Interview is attended by employee, HR, and supervisor to provide the employee with peace of mind while on maternity leave and ensures both sides have proper understanding of procedures related to systems supporting childcare and work	27	30	26	21	31
Interview before returning to work	Supports smooth transition back to work through consultation on work details and work style	30	29	27	27	32

Item	Details	FY2017	FY2018	FY2019	FY2020	FY2021
System for accompanying a spouse's overseas assignment	Enables employees to take a leave of up to 2 years and 6 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	9	10	9	8	1
Maternity gift	50,000 yen gift when a child is born	225	241	218	260	223
Babysitter expense subsidy	Provides up to 100,000 yen per year for employees who must pay for a babysitter or daycare due to working hours	9	8	11	31	28
Childcare Concierge	Support to facilitate the process of putting a child in daycare and returning to work	1	1	1	0	0
Priority parking spaces to support childcare	Priority parking spaces available at a commuter parking lot	29	32	40	40	41
Non-registered daycare subsidy system		1	0	0	0	0
Lump-sum payment for early return		3	7	5	3	4

Enhancement of Nursing Care Support System

In line with revisions made in January 2017 to the Child Care and Family Care Leave Act, we made revisions to our own system, such as enabling employees to divide their one-year nursing care leave into three blocks.

Moreover, in April 2022, we relaxed the requirements for employees with a fixed term employment contract to receive this support, so that even employees with less than a year of continuous service can claim nursing care leave. In this way, we are working to enhance our nursing care support system.

Systems to Support Nursing Care

Working hours	Time off	Financial support
1. Shortened working hours 2. Working three days a week 3. Flex time system (for employees at departments to which the regular flex time system does not apply) 4. Limitation on overtime work 5. Unscheduled work exemption 6. Late-night working hours exemption	7. Caring for a family member using accumulated vacation days 8. Unpaid days off to provide care	10. Care leave benefits 11. Care leave support fund 12. Lump-sum care allowance
	Leave of absence	
	9. Care leave	

Nursing Care Leave Usage (NGK)

Category	FY2017	FY2018	FY2019	FY2020	FY2021
Total	1	1	1	1	1
Men	1	0	1	0	0
Women	0	1	0	1	1

Establishing a Diverse Work-Style Support Website on our Company Intranet

We have a site on diverse work styles on the company intranet to widely announce our measures to support a work-life balance. This site's user-friendly features include, for example, an online handbook on childcare and nursing care.

Labor-Management Initiatives

Freedom of Association

NGK respects workers' rights, including the right to collective bargaining, and strives to build healthy labor-management relations. As of March 31, 2022, 3,912 employees belonged to the Labor Union.

Labor Union Membership Rate

(%)

FY2017	FY2018	FY2019	FY2020	FY2021
94	96	97	98	98

* Note: Number of union employees/Number of NGK employees (excluding managers)(Both figures include contract manufacturing employees)

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 issues such 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 FY2021

Regular Labor-Management Council meeting: held twice
 Labor-Management Advisory Board meeting: held twice
 Other bargaining and consultations

- Consultation on overtime work and work on days off
- Consultations on changes to the agreement based on Article 36 of the Labor Standards Act (so called "36 Agreement")

Fair and Equitable Compensation

NGK and the Labor Union have signed an agreement that sets out 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.

We also apply a system that provides the same wages for the same qualifications, irrespective of sex.

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 the 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, labor and management also proactively exchange opinions at Regular Labor-Management Council meetings.

Sustainability

Diversity and Inclusion

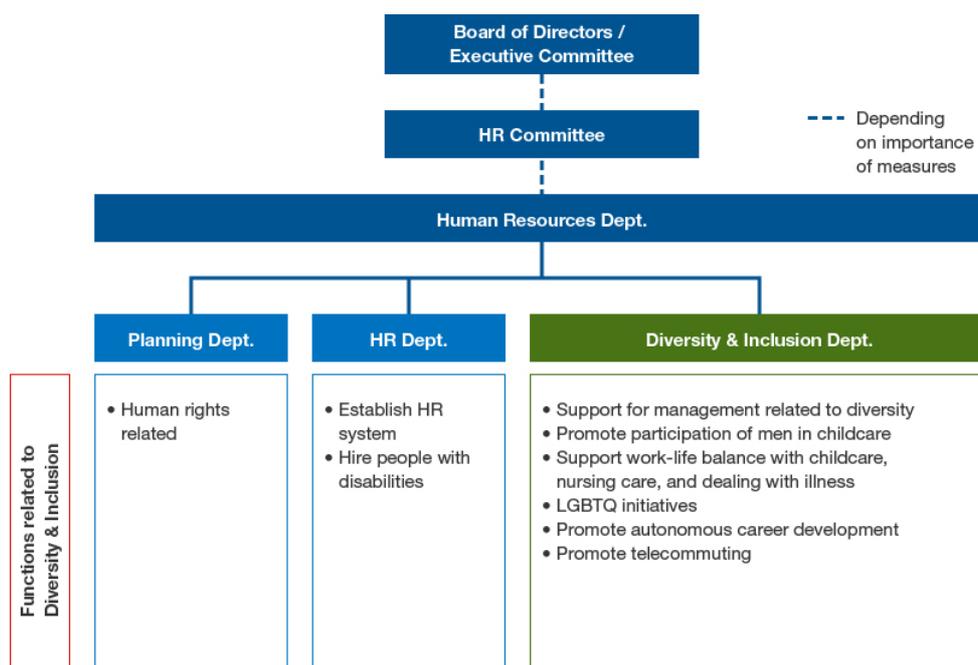
Basic Approach

The policy of the NGK Group is to provide stable and equal employment opportunities to people possessing a diverse range of attributes, regardless of race, nationality, gender, age, religion, creed, disability, and sexual diversity. We promote even greater efforts to achieve diversity through educational activities to support work-life balance, employ people with disabilities, and advance understanding of diversity. In addition to this, we also maintain an environment that enables diverse human resources to enjoy a wide range of workstyles by utilizing telecommuting, providing other flexible workstyles, and offering a wide range of career paths that each employee can pursue individually, according to personal inclination, suitability, and type of work.

Views on hiring locally

Ninety-eight percent of the roughly 13,000 employees in the NGK Group who work overseas are hired locally. We believe that it is our corporate responsibility to contribute to the development and vitality of the local economies and communities where we operate our business in each country and region, and actively hire locally at each location.

System to Promote Diversity



Basic Information Related to Diversity

Ratio of Female Employees

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021
Ratio of female employees* (%)	NGK	12.5	12.6	12.8	13.0	12.9
	NGK Group	22.6	21.4	21.6	21.2	20.6

* Ratio among all employees

New Graduate Hires

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of new graduate hires	NGK	Total	111	155	143	141	105
		Male	96	122	115	108	89
		Female	15	33	28	33	16

* Note: Excluding new graduate temp-to-perm employees

Ratio of Female Employees Among New Graduate Hires

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Ratio of female employees (%)	NGK	Total*	22	26	28	34	17
		Administrative-related; target 30%	27	42	44	52	33
		Engineering-related; target 20%	20	22	24	27	13

* Applies to regular-position employees

Mid-Career Hires

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of mid-career hires	NGK	Total	126	117	104	41	55
		Male	111	102	87	35	51
		Female	15	15	17	6	4

Key Personnel (Managers)

At NGK, we aim to increase the ratio of women in key personnel (managerial) positions, from 3.4% in FY2021 to 9% by 2030 and more than 20% by 2050.

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of key personnel (employees in managerial positions)	NGK	Total	865	890	900	969	1,028
		Male	848	870	874	940	993
		Female	17	20	26	29	35
		Dept. managers or higher	4	4	5	5	5
	Group companies outside Japan	Ratio of female employees (%)	2.0	2.2	2.9	3.0	3.4
		Ratio of female employees (%)	21.0	16.0	20.2	22.7	23.1

Female Key Personnel (Managers) as of March 31, 2022

Item	Scope	Category	NGK	Group companies in Japan	Group companies outside Japan	Total
Number of female key personnel (employees in managerial positions)	NGK	Total	1,028	305	657	1,990
		Male	993	302	505	1,800
		Female	35	3	152	190
		Ratio of female employees (%)	3.4	1.0	23.1	9.5

Female Directors

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of female directors	NGK	Total	12	12	13	9	9
		Female	1	1	1	1	1
		Ratio (%)	8.3	8.3	7.7	11.1	11.1

Employee Composition by Region

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Employee composition by region (%)	NGK Group	Japan	38	37	39	37	37
		Asia	27	25	23	22	22
		Europe	18	21	21	25	25
		North and Central America	16	16	15	15	15
		Other	1	1	1	1	1

Number and Percentage of Employees with Disabilities

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of employees with disabilities	NGK, NGK YU-Service, NGK Ceramic Device	Number of people	57	62	135	145	155
		Employment rate (%)	1.90	1.92	2.20	2.35	2.46

Average Salary (ratio men/women)

Employee level	Scope	Average salary for men	Average salary for women	Ratio (=average salary for women / average salary for men)
Manager level (basic salary only)	NGK Group	7,070,000 yen	6,630,000 yen	94%
Manager level (basic salary + other financial incentives)		11,420,000 yen	10,420,000 yen	91%
Non-manager level		3,590,000 yen	3,450,000 yen	96%

Various Systems Supporting Our Promotion of Diversity

Creating an Environment Conducive to Activities by Revising and Establishing Various Systems

NGK is promoting various measures for personnel transfer, career development, follow-up, support for early return from leave, flexible work styles, and the like, to create an environment that makes it possible for employees to take full advantage of their individuality and skills in various aspects and situations. We revised our human resource system in April 2017 with the aim of enabling employees in general employment positions who were engaged in routine tasks to take on a broader range and a higher level of work. The new human resource system helps career advancement by allowing individual employees to take on the challenge of moving up to a higher job grade.

We also introduced a telecommuting system in July 2021 with the goal of improving productivity for employees and the company, as well as promoting a good work-life balance between work duties and childcare or nursing care.

In April 2022 we established a consultation helpdesk related to work-life balance which works to reduce employee concerns about balancing work and private life and seeks to create a conducive work environment.

Human Resource Utilization Systems Aligned with Employee Individuality and Skills

To open the way for employees to take full advantage of their individuality and skills, NGK adopts an internal job application system in which open positions are announced internally and eligible applicants are appointed. There is also an FA (free agent) system that allows employees to register their personal aspirations and preference of jobs within the company.

Internal Job Application System

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Job application system	NGK	Number of jobs posted	32	28	28	9	59
		Number of recruits	50	40	37	13	86
		Number of applicants	15	7	18	15	50
		Number of successful applications	5	2	7	6	17

Promoting the Regular Employment of Fixed-Term Manufacturing Contract Employees

NGK established a system for appointing fixed-term manufacturing contract employees to become regular employees, and 18 employees were appointed in FY2021.

Transfers from Fixed-Term Contract Manufacturing Worker to Regular Employee

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of contract-to-regular employees	NGK	Number of people	20	37	41	15	18

Follow-up System to Fit Young Employees in the Workplace

We follow up on younger employees in different ways after they have been placed. We conduct surveys for career-track and production engineering employees about their jobs and work environment during their second year of employment. We then conduct interviews with all production engineering employees, and any career-track employees who so desire, and the head of each department provides feedback to those who want it.

Systems to Support Early Return from Parental Leave

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

[> Systems to Support Early Return from Parental Leave](#)

Come-Back System

Since FY2016, NGK has had its Come-Back System to rehire people who had left our company for various reasons (e.g., job change, studying abroad, job transfer of a spouse, etc.) as mid-career employees.

As of FY2021, there have been two employees rehired through the Come-Back System.

Come-Back System (Japanese) >

Initiatives to Promote Diversity

Since 2021 NGK has been implementing initiatives under our employee Career Autonomy policy.

Policy

Support autonomous career development within the company

Initiatives for Employees to Chart Their Own Career Path

In FY2021, we carried out the following initiatives.

Career Autonomy E-Learning

We conducted e-learning aimed at all employees, and more than 4,000 employees participated. They studied the following topics as the basic knowledge necessary for thinking about their own career independently.

1. Career ownership and careers in an era of 100-year life expectancy
2. How to approach your career (two types/two aspects/three factors)
3. Things that are necessary for enhancing your career (Will/Can/Must)
4. Career plan concept

Lectures

We provided lectures targeting both key personnel and general employees on the themes of "Thinking About Autonomy from the Perspectives of Four Jobs," held in October, and "How to Create an Autonomous Career," held in February. Both were attended by more than 100 people.

Career Planning Training for Third-Year Regular-Position Employees

Once employees have been with the company for three years, we ask them to reflect on their growth over the last few years and think about how they will approach internal staff rotation from their fourth year onward. Our goal has been to support them in creating a concrete action plan towards this end. This has become an opportunity for employees to think about their career going forward through group discussion with more senior employees who have experience with rotation. Once the training is complete, participants also meet with their supervisors to share their career plan.

Career Plan Seminar for Employees in their 40's and 50's

We held a new Career Plan Seminar for Employees in Their 40's and 50's targeting general employees. We ask participants to reflect on their own past and present in order to maintain motivation and work with energy. Through work and discussion, they confirm their own characteristics, abilities, and values in search of a proactive workstyle that suits them and will allow them to prepare for future changes in their environment. Participants have told us that they realized many things and were motivated to be more proactive.

Establishment of a Career Consultation Helpdesk

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

Helping Male Employees Have Greater Involvement in Childcare

Starting in FY2021, as part of our initiative to promote diversity, NGK has made a concerted effort to help male employees have greater involvement in childcare. Given the heavy burden of housework and childcare responsibilities which women bear while raising children, this initiative aims to get men more involved in childcare and, thereby, reduce the size of the burden for women, foster a change in thinking for management, promote greater work efficiency and improve motivation for work which is drawn from the support of the family.

Holding a Symposium to Consider the Balance of Work and Childcare

In recent years an increasing number of male employees have been taking childcare leave. There has also been a national movement focused on male participation in childcare in accordance with revisions to the Child Care and Family Care Leave Act. Against this backdrop, we held a symposium aimed at supporting male employees who balance child-rearing and work responsibilities. We hold symposiums every year aimed at different participants, but this is the first time we attempted one for men.

Three senior employees who have taken childcare leave took questions from participants and spoke about the necessity and fun of participating in childcare, as well as how they manage to balance it with work, based on their actual experiences. Many participants commented that the symposium was beneficial because they got to ask questions they normally would not have the opportunity to ask.

Holding Lectures to Promote Diversity

NGK Outside Director Emiko Hamada led a seminar for promoting diversity, called the “Hamada Seminar,” this year as well. This year’s theme was “Encouraging Men at NGK to Take Childcare Leave.” It began with greetings from President Shigeru Kobayashi, who remarked that, “The diversification of values with respect to workstyle within society is progressing rapidly. We also aim to take ownership of accelerating our company promotion of diversity.” Outside Director Hamada explained that, “the Child Care and Family Care Leave Act was significantly altered last year, and the changes are being implemented in-turn starting in April 2022. From April 2023, it will be mandatory for companies to disclose the percentage of male employees who take childcare leave.” She also commented that, “Having not only women, but men also, participate in childcare and take childcare leave fosters communication within the organization and increases work efficiency. So, it not only benefits the individual, but the company as well. This is why we need to discard prejudices associated with personal attributes, create a culture of communicating effectively with the persons involved, and be conscious of fostering their growth.”



Outside Director Emiko Hamada

Training for Employees Returning from Childcare Leave

Training was provided for female employees returning after the end of their designated childcare leave period, as well as for their supervisors, their spouses (if they are also NGK employees) and their spouses’ supervisors.

During this training, spouses were encouraged to take ownership of childcare so that housework and childcare would not be only the responsibility of women. Participants were also offered advice on how to orient their focus and coordinate their schedule in balancing work and family responsibilities, as well as how to go about developing a medium-to-long-term career plan. Despite being from different departments, all of the participants were alike in that they faced the challenges of balancing childrearing with work, and through their interactions with one another, they were able to share their stories, their struggles, and their advice.

Conducting E-learning to Promote the Active Participation of Women

Women’s active participation e-learning was carried out with the aim of promoting proper understanding and cooperation among all employees and not just a targeted segment of participants. Easy-to-understand videos were streamed, which featured messages aimed at female employees, supervisors, and colleagues and which sought to raise awareness about unconscious bias and other topics.

New Initiatives for Achieving Our Action Plan for Promoting Women’s Active Workplace Participation (MHLW)

In January 2019, in accordance with the Act on Promotion of Women’s Participation and Advancement in the Workplace, NGK submitted a general employer action plan to the Aichi Labor Bureau, which is overseen by the Ministry of Health, Labour and Welfare (MHLW).

Our plan was to increase the number of women in managerial positions by 1.5 times what it was when we submitted the plan. By the end of FY2021, we had achieved this goal ahead of schedule. We will keep working on the initiatives by setting a new goal to ensure we take new steps forward.

Ministry of Health, Labour and Welfare: General Employer Action Plan

Issues

- Although there is no gender gap in terms of criteria for promotion and service years, the number of women in management positions is small.

Goals

- Foster a corporate culture that promotes women's active participation.
- Increase the number of women in managerial positions by 1.5 times.

Initiative 1 Create an environment that makes it easier for women to achieve a work-life balance.

Initiative 2 Increase the ratio of women among new graduate hires and diversify career opportunities.

LGBTQ Initiatives

In order to promote understanding of sexual minorities such as LGBTQ for the sake of fostering greater diversity in workplace participation, we included special feature articles on the topic in our in-house newsletter and implemented e-learning for all employees. In FY2021, we began working to allow same-sex partners recognized by External Partner Organizations to utilize our internal service and benefit program.

Employment of People with Disabilities

NGK undertakes a variety of initiatives aimed at employing people with disabilities, such as accepting students from special-needs schools as trainees and attending employment seminars for people with disabilities. NGK did not hire any new graduates or mid-career employees with disabilities in FY2021, but three new employees were hired by our special subsidiaries. These hiring activities helped us achieve a statutory hiring rate of 2.3%. Our goal for the end of FY2022 is to achieve a 2.52% hiring rate for persons with disabilities.

Third-Party Certifications

Certified as an “L-boshi” Company for 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 (MHLW). 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. In September 2019, NGK satisfied all five criteria and received certification for level three, the highest certification level.



Ministry of Health, Labour and Welfare
Next-generation support certification logo
“Kurumin” (2012)



Ministry of Health, Labour and Welfare
“L-boshi” certification of corporate excellence in
the promotion of women's active participation
Certification level 3 (2019)

Certified as a Company Promoting Women’s Active Participation by Nagoya City*

In recognition of our efforts to create a workplace environment that encourages women’s active participation, such as revising our system for transferring to career-track positions, we were certified as a Company Promoting Women’s Active Participation by Nagoya City in January 2012 and recertified in January 2018.

* A system for certifying companies that conduct outstanding initiatives in the areas of (1) awareness improvement, (2) work-life balance, and (3) promotion of women’s active participation.



Aichi Prefecture
Certification of Aichi “Shining Women”
Companies (2016)



Nagoya City
Certification of corporate promotion of women's
active participation (2011)

Sustainability

Human Resource Development

Basic Approach

We have positioned “Embrace challenges and teamwork” as the top value in Our Values and “Enriching human life by adding new value to society” as our Mission in the NGK Group Philosophy. In addition to providing educational programs, we also work with superiors and create a workplace environment that enables employees to take the initiative in their own growth. The goal of this is to enable employees to contribute to the business in the environment in which they work.

Skills development for employees

NGK undertakes systematic human resource development, including Group companies in Japan, which encompasses every job category from employment to every promotion milestone in their career.

The education and training that we provide employees across the NGK Group, in conjunction with their departments and with the aim of putting the Group Philosophy into practice, is divided into three areas: “Human Skills” needed to tenaciously pursue results through teamwork, “Professional Competence” needed to cultivate a distinctive skill set and a proactive approach to problems, and “Compliance Requirements in Job Performance” needed to recognize and act upon responsibilities as a member of society.

* Since FY2020 we have continued to curtail some training programs to reduce the risk of COVID-19 infection.



Training Participant Summary

(participants)

	FY2017	FY2018	FY2019	FY2020	FY2021
Total participants	3,889	4,661	4,685	2,527	8,201
Key personnel	1,132	991	813	480	665
General employees	2,757	3,670	3,873	2,047	7,536

Average Annual Hours Spent for Training per Full-Time Employee

(hours)

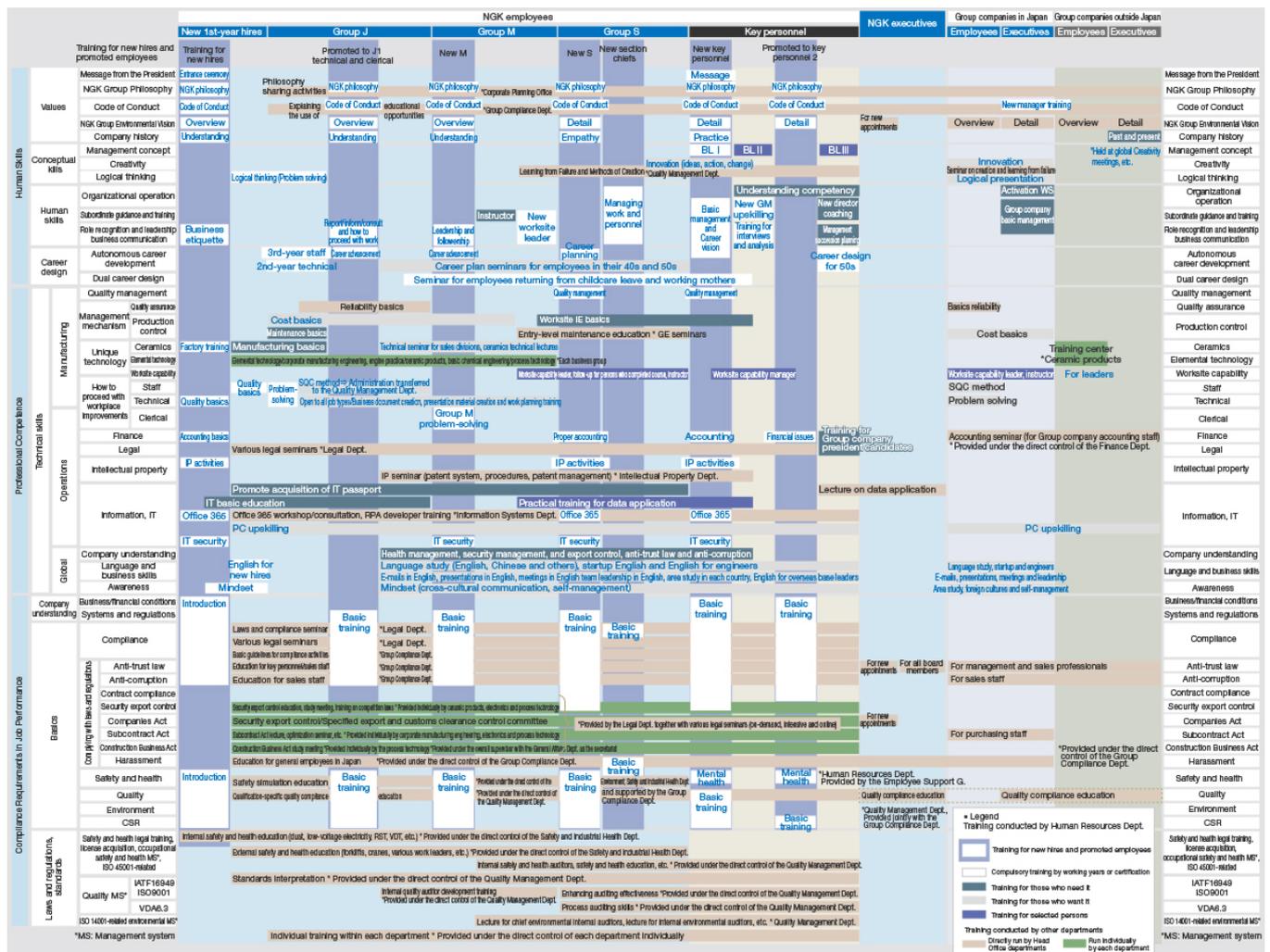
	FY2017	FY2018	FY2019	FY2020	FY2021
Average hours	21.7	21.3	21.4	6.0	28.0
Key personnel	15.6	12.8	12.3	4.2	18.0
General employees	23.3	25.0	23.7	6.4	31.0

Average Annual Cost of Training per Full-Time Employee

(yen)

	FY2017	FY2018	FY2019	FY2020	FY2021
Average expenditures	66,000	63,000	53,000	22,000	29,522

FY2022 Company-Wide Education Scheme



Key Personnel Competencies

In order to improve the managerial skills of key personnel and, thereby, contribute to greater organizational vitality, we have defined the “key personnel competencies (behavioral traits)” that are expected of key personnel in NGK. As the diversity of our human resources continues to increase, we want to put in place a structure that promotes a shared awareness across our company to enable key personnel to effectively contribute to business performance. We have established key personnel competencies for the sake of achieving the following aims.

- Ensure key personnel have a correct understanding of their expected roles so that their performance meets the expected contributions of those roles to company development.
- Ensure key personnel candidates have a clear vision for themselves, and promote their growth towards recruitment as key personnel.

Training Programs by Objective

Values

NGK training and education seeks to foster an understanding of the NGK Group Philosophy and Code of Conduct such that employees will not simply work for the sake of meeting their individual targets, but rather will think about the significance of the work they perform and the basis for their decision-making, leading to a sense of pride and shared identity as an NGK employee. It is not enough for employees to know what the NGK Group Philosophy and Code of Conduct are; we want employees to incorporate them into their behavior.

This approach is particularly evident in the corporate history training program that was launched full-scale at our head office in 2017 for every level of employee, from new hires to those promoted to managers. It is also incorporated into the educational programs of Group companies outside Japan in order to reach a variety of personnel. We will continue to develop and expand such programs.

Business Skills

We carry out training designed to equip employees with the mindset, knowledge, and skills they need to carry out their jobs. To ensure that the skills employees acquire are applicable and directly contribute to the work that they perform—i.e., practical skills instead of just knowledge—we provide coaching in cooperation with the participants' supervisors and training programs for handling challenges directly relevant to their own departments.

Career Support

In order to ensure that as many personnel as possible are able to actively participate in and contribute to the functioning of NGK, we provide employees with career development support in the form of a variety of effective HR initiatives, such as promoting the active participation of women and extending the mandatory retirement age. This support is focused on cultivating personnel capable of thinking outside the limits of predetermined career models to chart their own career path.

Career design training programs for women, employees in their 50s, and others serve as opportunities for employees to think about who they want to be and how they can challenge themselves in their work to grow to become that person.

To this end, we are continuing to focus on ensuring that every employee is able to work to their full potential within the context of the many and varied environments that comprise the NGK Group.

[> Initiatives for Employees to Chart Their Own Career Path](#)

Compliance Requirements in Job Performance

We provide employees with training that communicates to them the responsibilities, which NGK bears as a corporate citizen, as well as what this requires of them as employees of NGK. This training seeks to instill a strong sense of ethics and a commitment to doing what is right.

The fundamentals of NGK business—safety, quality, environment, and CSR—are inculcated from the time an employee joins the company to every time they receive a promotion so that knowledge ends up being reliably translated into action.

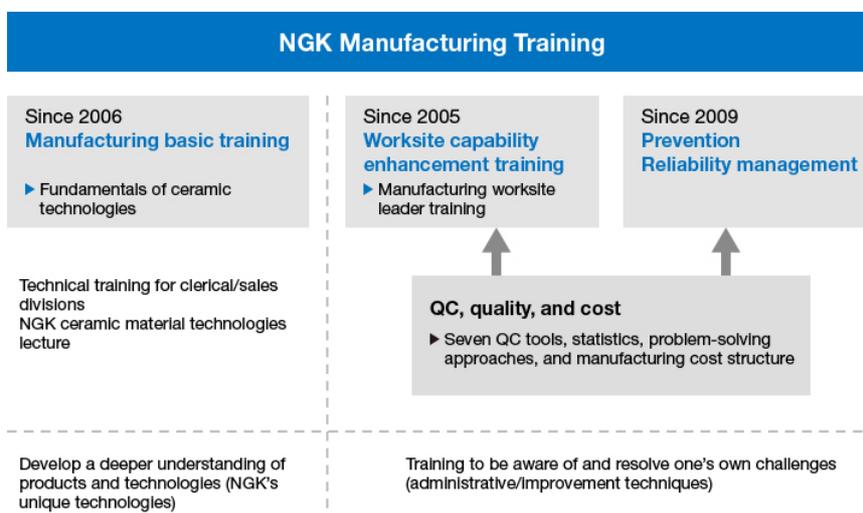
Manufacturing Training

We pursue training aimed at conveying the central importance of safety, the environment, quality, timely delivery, and cost in manufacturing while passing on the traditions and spirit of NGK manufacturing. This training also aims to grow employees into individuals who can support the creation of new value.

Towards this end, we provide training in unique technologies that will deepen employees' understanding of NGK products and technologies, as well as provide training in administrative and improvement techniques that will equip employees with the mindset and means to improve their workplaces.

Manufacturing basic training is centered on practical training tied to the actual manufacturing process. It involves teaching participants about ceramic technologies and manufacturing in general at NGK so that they will have a broad perspective, which they can apply in their work.

Worksite capability enhancement training cultivates human resources capable of making managerial contributions as manufacturing worksite leaders who independently pursue worksite capability improvements together with others both in and outside of their plant's organizational framework.



Developing Digitally Proficient Human Resources

Based on the NGK Group Digital Vision, we will educate all employees, from management to general employees, in digital transformation (DX), and will develop human resources who are skilled in the use of data and human resources to bridge the gap to DX. We provide training by grade level, according to experience and the role served. In the business units, training is segmented into levels such as “Leaders” to drive the pursuit of DX, “Supporters” who assist the leaders, and “Beginners” who learn how to view and process data.

Examples of development measures

- In the “Leaders” development program, employees leave the division they are affiliated with and participate in an internal internship in a specialist division for one year to concentrate on learning data analysis and digital technology.
- New employees learn IT (information technology) skills through e-learning during the first year after they join the company.

NGK Group Digital Vision



Innovation Training

The aim of innovation training is to backcast from the SDGs and social challenges in an environment that is changing drastically, to discover what points to consider with new businesses and the creative thinking that spawns innovation.

In the program for young employees with leadership potential, participants learn methods for working with employees from other companies who have different experiences and value, and overcome these barriers to create and achieve goals together.

It also aims to foster flexible thinking skills and outside-the-box thinking that avoids being trapped by existing ways of thought. Through workshops, participants learn methods and ideas that serve to broaden their minds.

Company History Training

This training program looks at the history of NGK in order to reexamine the origins of the corporate activities built up by our predecessors, to reinforce our shared values, and then to prompt participants to think about how this impacts the way they go about their jobs.

The program for Group S (section chiefs) uses videos to encourage participants to deeply consider what makes up the essence of NGK, with a focus on themes such as quality and globalization.

English language videos are being developed, and programs geared towards Group companies outside Japan are being steadily introduced.

English Language Training for New Employees

Since FY2011, we have been providing English language courses for all new regular-position employees with the goal of rapidly cultivating globally capable human resources.

In addition to English ability, participants cultivate global standard business skills like giving presentations in classes whose composition facilitates effective learning at each level.

Time spent learning English per new career-track hire (FY2021 results)

72 hours per year

Practical Overseas Training / Global Seminars

NGK conducts practical training over a period of six months at Group companies outside Japan with the aim of developing globally minded 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.

In addition, we also conduct a wide variety of global seminars aimed at employees engaged in overseas work, including future candidates for overseas postings. These seminars cover themes such as language acquisition training, studies on individual areas, and acquisition of global standard communication and management skills based on an understanding of foreign cultures.

Securing and Retaining Human Resources

Work Performance Evaluation

The NGK Group makes use of the following work performance evaluation when determining individual compensation.

Work performance evaluation	Percentage of employees targeted
Systematic use of measurable objectives (objective-oriented management) agreed upon in advance between the supervisor and subordinate	100%
Grade and qualification-specific comparison and ranking of employees according to a formal process	100%

Employee Engagement

Once every two years NGK carries out a survey in order to visualize workplace vitality.

For the survey carried out in FY2020, a total of 4,788 people took part (men: 4,207; women: 581). When compared against the average for other companies, the responses from NGK employees regarding job satisfaction and sense of relative importance tended to be higher. Also, job satisfaction scores were higher than those from the previous survey conducted in FY2018.

These survey results will be utilized as basic data for use in developing human resource measures focused on creating an organization that is more worker-friendly and offers employees a sense of challenge. The workplace-specific results will also be provided as feedback to supervisors and used for workshops intended to enhance division vitality, thereby contributing to improvement in the daily workplace environment.

Based on the results of the FY2020 surveys, in FY2021 we held workshops in response to requests from each department aimed at helping employees consider their own career path and proactively engage with their work. We also provided individual support for problem solving towards vitalization, including creating training plans to boost the motivation of subordinates in an employee's charge.

Results of Survey on Workplace Vitality

(%)

	FY2018		FY2020	
	Satisfaction	Employee coverage rate	Satisfaction	Employee coverage rate
Average hours	66	89	68	94
Men	—	—	68	95
women	—	—	69	89

* Note: Separate figures for women and men were not compiled in FY2018. Since the survey is conducted every other year, the next one is planned for FY2022.

> [Turnover Rate / Voluntary Resignation Rate](#)

Sustainability

Occupational Safety and Health

Basic Approach

The NGK Group operates an ISO 45001-certified Occupational Safety and Health Management System (OSHMS) in line with its Safety and Health Policy. The OSHMS serves as a mechanism for the ongoing, systematic achievement of employee safety and health initiatives. By strictly implementing this system and conducting risk assessment-based safety measures, we strive to raise the level of occupational safety and health throughout the entire Group.

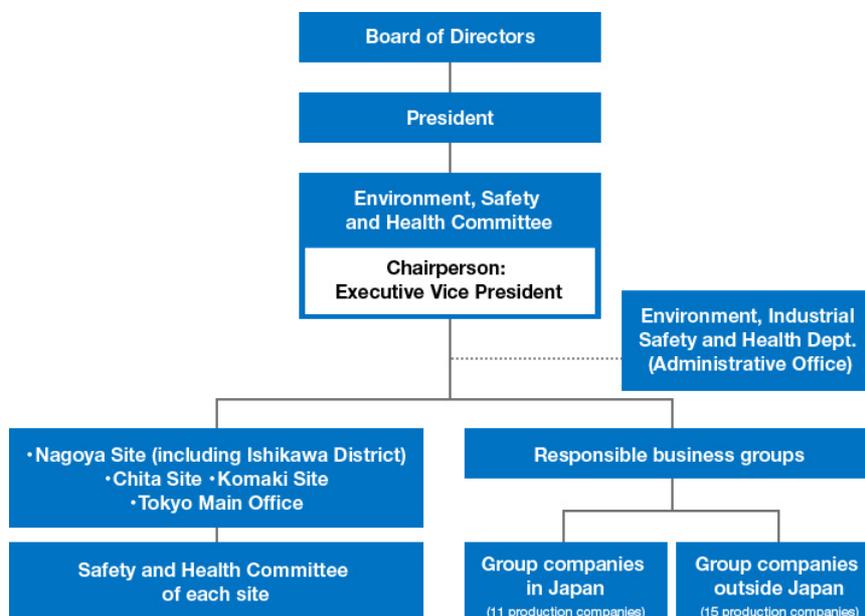
Safety and Health Policy

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

1. Comply with occupational safety and health laws 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 and 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.

Structure to Promote Safety and Health Management

NGK established the Environment, Safety and Health Committee chaired by the Executive Vice President in order to raise the level of the entire Group's safety and health. This committee meets at least biannually to deliberate and determine the Group's initiatives and action plan as well as monitor the results of activities, situation of work-related accidents and countermeasures. The committee reports to the Board of Directors at the end of every fiscal year and undergoes a review by senior management. Moreover, every business site holds Business Site-Specific Safety and Health Committee meetings monthly led by relevant labor representatives of every division and attended by General Safety and Health Manager (directors of each site/vice presidents). In addition to promoting awareness of Group activities and action plans, the committees investigate and deliberate important matters related to safety and health unique to each business site, and then penetrate and implement findings through the Safety and Health Committee members of each workplace.



Enhancing Safety and Health Activities

NGK views the enhancement of safety and health activities as one of its top priorities. In addition to rigorous operation of our occupational safety and health management system, we developed our second three-year action plan built around the key themes of risk management and enhanced governance. As key initiatives, we are promoting efforts to prevent and minimize incidents that could lead to serious injury or accidents, such as getting caught in rotating equipment, electric shock, and explosions. In addition to comprehensive risk assessments covering existing facilities and operations, when introducing new facilities or operations or modifying operations, we conduct a thorough risk assessment in advance to eliminate risks or reduce them to an acceptable level. All of NGK's business locations and plants as well as manufacturing Group companies in Japan and overseas have obtained ISO 45001 certification.

Results of FY2021 Activities

Medium-Term Action Plan	Fiscal year implementation items	Key Activities
Strengthen Risk Management	Reduce risk of serious injuries/accidents in the workplace	We completed a reexamination of equipment/operations that present workers with potential for serious injury or accident, such as being caught in rotating machinery, electric shock or explosions, and we put into place operational safeguards (e.g., administrative measures) at all production sites to control these risks. We are also mostly finished with the implementation of engineering or technical measures (e.g., equipment update or remodeling), except at some overseas sites.
Strengthen Group Governance	Entrench Group company governance mechanisms	In addition to safety and health-related auditing of Group companies by the dedicated department of the Head Office, Group company governance was strengthened through internal audits of Group companies by Business Group specialized teams responsible for overseeing them.
	Acquire international certification for safety and health management system (ISO 45001)	ISO 45001 certification has been obtained for all production sites of Group companies in Japan and overseas.

Work-Related Fatalities

Item	Scope	2017	2018	2019	2020	2021
Number of work-related fatalities (persons)	NGK	0	1*	0	0	0
	Manufacturing Group companies in Japan	0	0	0	0	0
	Manufacturing Group companies outside Japan	0	0	0	0	0
	Group total	0	1*	0	0	0

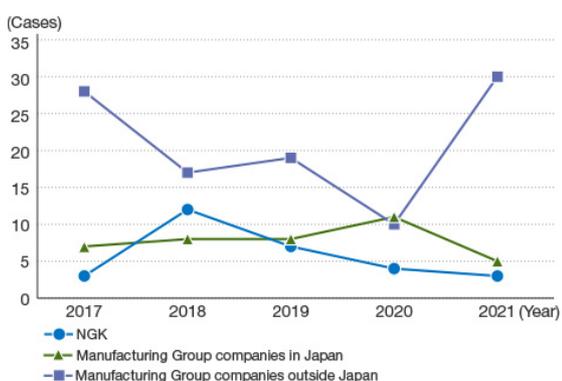
* In 2018 there was one work-related fatality. This fatality was the result of a traffic accident involving the truck of another company, which struck an NGK employee at a pedestrian crossing on a public road.

Work-Related Accidents

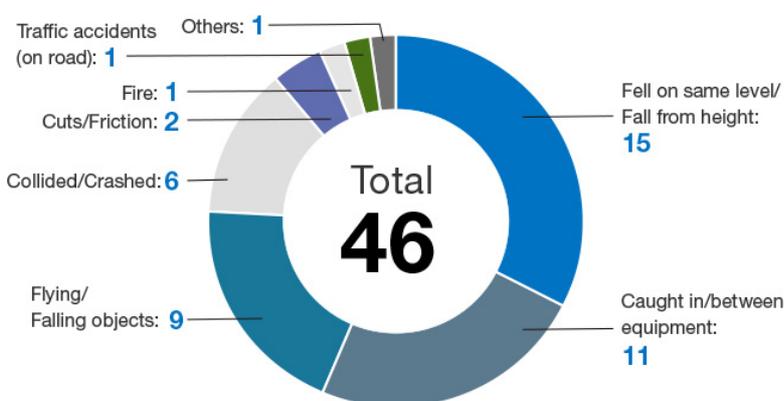
Item	Scope	Category	2017	2018	2019	2020	2021
Number of work-related accidents	NGK	Lost worktime accidents	1	4	0	1	2
		Non-lost worktime accidents	2	8	7	3	1
		Total	3	12	7	4	3
	Manufacturing Group companies in Japan	Lost worktime accidents	0	1	1	3	3

Item	Scope	Category	2017	2018	2019	2020	2021
	Manufacturing Group companies in Japan	Non-lost worktime accidents	7	7	7	8	2
		Total	7	8	8	11	5
	Manufacturing Group companies outside Japan	Lost worktime accidents	20	8	13	8	25
		Non-lost worktime accidents	8	9	6	2	5
		Total	28	17	19	10	30
Group total		Total	38	37	34	25	38

Trends in Work-Related Accidents



Work-Related Accidents by Type (past 7 years; NGK)



Response to work-related accidents

In the event of a work-related accident, following the NGK Group’s rules, we promptly notify relevant departments and convene the Work-Related Accident Deliberation Committee pursuant to the regulations of each company. This ensures that we are able to thoroughly identify the cause and implement countermeasures against future recurrence.

In 2021, there were 38 non-lost worktime and lost worktime accidents Groupwide. Broken down, these included three at NGK, five at manufacturing Group companies in Japan, and 30 at manufacturing Group companies outside Japan. The number of times employees were caught in rotating machinery, an area of focus, declined, but falls on same level while walking (12 accidents) and daily supplementary work-related accidents occurring during preparations, cleaning or cleanup (14 accidents) increased. As a result, we are conducting thorough risk assessments of daily supplementary work and further increasing our ability to identify potential risks.

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

Item	Scope	2017	2018	2019	2020	2021
Severity rate (number of lost workdays per 1,000 hours worked)	NGK Group	0.013	0.193	0.012	0.006	0.057
	NGK	0.000	0.743	0.000	0.002	0.0146
	Manufacturing Group companies in Japan	0.000	0.000	0.005	0.003	0.004
	Manufacturing Group companies outside Japan	0.022	0.015	0.020	0.009	0.035
	All industries (Japan, sites with 1,000 or more employees)*	0.03	0.03	0.03	0.03	0.04
	Manufacturing industry (Japan, sites with 1,000 or more employees)*	0.01	0.03	0.04	0.03	0.03

* Statistics on work-related accidents from Japan’s Ministry of Health, Labour and Welfare.

Lost Time Injury Frequency Rate (Employees)

Item	Scope	2017	2018	2019	2020	2021
Lost time injury frequency rate (number of lost time injuries per 1 million hours worked)	NGK Group	0.55	0.32	0.34	0.31	0.70
	NGK	0.11	0.40	0.00	0.10	0.19
	Manufacturing Group companies in Japan	0.00	0.14	0.13	0.46	0.43
	Manufacturing Group companies outside Japan	0.91	0.34	0.56	0.36	0.97
	All industries (Japan, sites with 1,000 or more employees)*	0.56	0.52	0.47	0.69	0.69
	Manufacturing industry (Japan, sites with 1,000 or more employees)*	0.25	0.29	0.26	0.28	0.31

* Statistics on work-related accidents from Japan's Ministry of Health, Labour and Welfare.

Work-Related Accidents at Contractors

Item	Scope	2017	2018	2019	2020	2021
Number of work-related accidents with lost workday	NGK	1	1	0	1	0
	Manufacturing Group companies in Japan	0	1	0	0	0
	Manufacturing Group companies outside Japan	2	3	3	1	2
	Group total	3	5	3	2	2
Number of work-related fatalities (persons)	NGK	0	0	0	0	0
	Manufacturing Group companies in Japan	0	0	0	0	0
	Manufacturing Group companies outside Japan	0	0	0	0	0
	Group total	0	0	0	0	0

Occupational Illness Frequency Rate

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021
Occupational illness frequency rate (n/million work hours)	NGK	0.11	0.10	0.00	0.00	0.00

External certification of occupational safety and health management system

To continuously raise the level of occupational safety and health in workplaces, we encourage companies in the NGK Group to acquire international certification for occupational safety and health management systems.

In 2017, our Nagoya Site received the first ISO 45001 private certification in Japan. In 2018, all other NGK sites and plants in Japan received ISO 45001 certification and JIS Q 45100 certification. As of June 2021, all 26 manufacturing Group companies in Japan and overseas have completed the acquisition of ISO 45001.

Acquisition of Management System Certification

Item	Scope	Category	FY2018	FY2019	FY2020	FY2021
Acquisition of occupational safety and health management system certification	NGK*	ISO 45001 and JIS Q 45100	100%	100%	100%	100%
	11 manufacturing Group companies in Japan	ISO 45001 and JIS Q 45100	58%	100%	100%	100%
	15 manufacturing Group companies outside Japan	ISO45001	40%	73%	93%	100%

* Nagoya Site, Chita Site, Komaki Site, Ishikawa Plant, Mitake Plant

Safety and Health Training

NGK provides training to employees and assists with their acquisition of qualifications/licenses required under safety and health laws and regulations. Our training includes various in-house programs on safety and health along with curriculum sourced from outside the company. In FY2021, a total of 1,369 employees received in-house training on safety and health standards. The breakdown includes rank-based training (453), danger prediction training (695), and others (221). This excludes external training as well as training conducted by each division such as worker training and job rotation training.

Main Training Programs

Training programs	Training curriculum
Legal training	Group training mainly for managers that provides a summary of safety and health related laws and regulations
Internal safety and health training	In-house group training required of employees, including workplace supervisor training and training on dust, low-voltage electricity, organic solvents, VDT, etc.
External safety and health training	Training conducted offsite required of employees, including lift/crane operators and various operation chiefs
New employee training	Group training for new graduate hires and individual training provided to newly assigned employees including temporary employees
Job rotation training	Training conducted by each division for employee transfers and work changes
Stratified education /Promotion training	Training provided at the time of promotion, including new promotions as well as newly appointed assistant managers, managers, general managers, and directors of business sites Stratified education training is provided to new graduate hires, mid-career hires, and workers promoted to regular employee status
Internal auditor training	Group training for the purpose of developing and improving the level of ISO45001 internal auditors
Worker training	Training and exercises for frontline work are conducted to evaluate skill level and certification of work proficiency
Frontline management training (safety officers)	(See below)
Danger-Prediction Training Center	(See below)

Acquisition of safety officer qualification

To increase their managerial skills, we train managers to become Safety Officers through e-learning and encourage them to obtain Safety Officer Qualification*. As of FY2021, 160 managers in research & development and engineering divisions, including general managers, plant managers, and managers of the manufacturing division had obtained this qualification (40% of target managers). We also encourage engineers of design and maintenance divisions for in-house equipment and production engineers at our plants to obtain Safety Assessor Qualification*.

* Safety Officer Qualification/Safety Assessor Qualification: Qualifications established and administered by The Institute of Global Safety Promotion (IGSAP). The qualifications certify that an individual possesses understanding and knowledge of safety or knowledge and skills of machinery based on international safety standards, respectively.

Establishment of Danger-Prediction Training Center

To prevent injuries mainly among young workers and inexperienced workers, in 2018 we established the 450 m² Danger-Prediction Training Center at our Chita Site,

where we launched safety training led by specialist employees with experience outside of the company.

The training center features equipment that enables employees to safely experience work-related injuries that have occurred in the past including caught in or between equipment and work-related accidents that could lead to serious injury such as electric shock or explosions. Combined with classroom learning using computer graphics, the training center provides practical programs where employees can refine their sensitivities toward dangers. In 2020, we introduced a virtual reality system for experiencing dangers and launched a new training program that combines this with conventional training approaches. As of FY2021, a running total of 4,321 NGK Group employees have participated.



Sustainability

Health Management

Basic Approach

The NGK Group strives to promote employees' health through the NGK Group Health Declaration: "Developing dynamic, people-friendly work environments and a health-conscious corporate culture."

Health Declaration of the NGK Group

At NGK, we consider employee health and safety to be of fundamental importance to the company's operation and are, therefore, proactive about developing dynamic, people-friendly work environments and a health-conscious corporate culture, which contribute to better health for each and every employee.

- Provide a workspace that is both people-friendly and work-friendly
- Cultivate a health-conscious corporate culture for executives, employees, and their families
- Promote early detection and early intervention for health concerns
- Offer support for mental health and wellbeing

NGK Insulators, Ltd.
President

Shigeru Kobayashi

Health Management Promotion System

Medical professionals, such as Chief industrial physicians and industrial health nurses, and the health management secretariat collaborate with the labor union and the health insurance association to promote health management at NGK. This is overseen by the director responsible for the Human Resources Dept.

Initiatives to Shorten Total Hours Worked

Reducing Long Work Hours

In July 2016, we lowered the maximum amount of overtime work to 70 hours per month (with an upper limit of 300 hours per half-year). To this end, employees are, as a rule, not allowed to work for more than seven days straight and are not allowed to do overtime on their twice-a-week refresh days. If either of these are necessary, they must get permission from their bosses beforehand. To prevent employees from working excessively long hours, there must be an interval period of at least 10 hours between shifts of late-night work.

In FY2021, there were nine cases of overtime work exceeding the company's upper limit, but no cases which violated legal regulations.

Response to Increase in Overtime Work

Every year, NGK discloses actual working hours and leave taken to the labor union. We then exchange ideas and discuss what measures to take.

If it appears that the amount of overtime worked is going to exceed 45 hours, we will first hold a labor-management meeting to determine the reason for the increase in overtime, then implement measures such as evening out work periods and workloads or adding additional workers.

Whenever it is determined that employees are actually working long hours, we discuss countermeasures for each worksite with the labor union.

For employees temporarily stationed overseas, as soon as it is discovered that they are working long hours, they are required to submit a written reason and undergo a health examination. This not only serves to maintain the health of employees temporarily stationed overseas, but allows us to determine the cause of the long working hours from the written report, and implement countermeasures to correct the situation.

Overtime Hours Worked

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Hours worked / overtime work (Annual fixed working hours: 1,919 hours)	NGK general employees	Annual actual working hours	2,072	2,081	2,059	2,044	2,044
		Average overtime work per month	24.3	25.2	23.7	21.6	23.4
	NGK including key personnel (managers)	Annual actual working hours	2,089	2,087	2,056	2,057	2,059
		Average overtime work per month	23.4	25.2	23.6	22.0	23.8
	NGK manufacturing divisions	Annual actual working hours	2,129	2,129	2,067	2,061	2,056
		Average overtime work per month	25.7	27.3	24.4	22.8	24.1
	NGK non-manufacturing divisions	Annual actual working hours	2,077	2,050	2,052	2,037	2,038
		Average overtime work per month	22.4	24.0	23.2	21.1	23.1

Following Up on 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 at monthly Safety and Health Committee meetings at each worksite to thoroughly promote the reduction of overtime work.

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of employees having consultations	NGK	All	85	243	78	41	37

Note: Numbers of people shown are cumulative totals. They also include people who only underwent a health exam.

Promoting Activities Supporting Mental and Physical Health

Four Types of Care for Mental Health

We facilitate the widespread implementation of ongoing mental and physical health promotion activities, centering on the four types of care for mental health promoted by the Ministry of Health, Labour and Welfare (MHLW).

In FY2021, we carried out stress checks for all employees.

These test results were sent to each department and analyzed by group. Based on the results of this analysis, we prepared training for managers of workplaces with comparatively high stress levels in improving interpersonal relations within the workplace and improving the work environment.

Four Types of Care

1	Self-care	2	Line care <small>(care by supervisors)</small> <small>Note: Recent, selective introduction</small>	3	Care by industrial health staff within business sites	4	Care by resources outside business sites
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Percentage of Employees Taking Stress Checks

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021
Percentage of employees taking stress checks	NGK	93.4	94.9	95.9	94.1	95.2
Percentage with high stress levels		9.7	11.7	10.7	9.9	9.0

Position-Based Mental Care Education

With an emphasis on self-care for new employees and young employees, we strive to deepen understanding of mental health by combining self-care and line care for new supervisors and key personnel.

We provide training for key personnel in areas with high occurrences of employee mental health problems with the goal of detecting and treating problems early on and putting these employees on the road to early recovery.

Position-Based Mental Care Education

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021
Number of employees taking position-based mental care education	NGK	All	402	567	614	585	517
		New hires	158	192	143	140	105
		General employees	181	306	339	362	307
		Key personnel	63	69	132	83	105

Promoting Better Health and Wellbeing Among Employees

In addition to annual health exams, NGK holds collaborative health promotion activities* with the health insurance association in efforts to promote better health and physical strength among employees. These activities include health lectures, health declaration challenges, the use of health apps for smartphones, physical strength measuring events, walking-age assessment events and related lectures, and recreational walks. New initiatives in FY2021 included streaming online fitness videos, holding online seminars on the themes of Dietary and Exercise Guidance and Exercising While Doing Daily Activities, and a quit smoking campaign.

* An initiative in which health insurance associations work closely with companies and use their respective strengths to create a positive work environment by efficiently and effectively promoting the health and wellbeing of employees and their families.

Percentage of Employees Taking Health Exams

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Target
Periodic health exam ¹	NGK	Total target employees	4,266	4,683	4,936	4,967	4,857	—
		Number taking health exam	4,230	4,601	4,855	4,894	4,728	
		Number of exceptions ²	36	82	81	73	129	
		Health exam ratio (%)	100	100	100	100	100	

¹ Including chest X-rays to catch the early signs of tuberculosis

² Employees on maternity leave, temporary retirement, etc.

Percentage of Employees Taking Metabolic Syndrome Checkup

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Target
Percentage of employees taking metabolic syndrome checkups	NGK	86.3	86.3	87.5	85.7	Being compiled	-
Percentage with metabolic syndrome		13.1	14.3	13.2	15.6		
Percentage under medical guidance		58.6	56.7	64.6	57.5		

Number of Participants in Health Promotion Initiatives

Unit: Persons

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021
Health lectures	NGK managers	200	270	300	-	-
Health declaration challenge	NGK employees	1,306	1,590	1,199	1,560	1,505
Smartphone health apps	NGK employees and families	522	742	1,127	1,134	1,511
Physical dynamism checkups	NGK employees	192	191	-	-	-
Walking-age assessments and lectures	NGK employees	-	-	64	-	-
Recreational walks	NGK employees and families	223	163	223	-	-

Note: Items marked with a "-" were not carried out in the year in question.

Percentage of Smokers

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021
Smoking ratio (%)	NGK	24.6	25.0	26.0	23.5	22.2

Response to Infectious Diseases and Other Global Health Problems

There are approximately 450 NGK employees and family members posted overseas, and while the number of business trips by our employees in Japan decreased due to Covid-19, their number is steadily increasing. So we are cognizant of the possibility of their contracting infectious diseases. To reduce this risk, employees posted overseas and their families, as well as those taking business trips, are provided with health management training by specialists. Participants learn the fundamentals of infectious diseases, are advised to take immunization shots, and are taught ways to avoid contracting diseases like malaria.

During the influenza season from autumn to winter, employees posted overseas are encouraged to get vaccinated locally. We also offer vaccinations at the in-company clinic.

In addition, from June through March of FY2021, we provided workplace vaccinations for three rounds of Covid-19 vaccine injections to approximately 6,000 people. We also carried over our efforts from FY2020 in identifying close contacts of those infected with Covid-19, placed limits on office attendance, encouraged employees to eat without talking, and distributed free masks.

Outstanding Health and Productivity Management Company

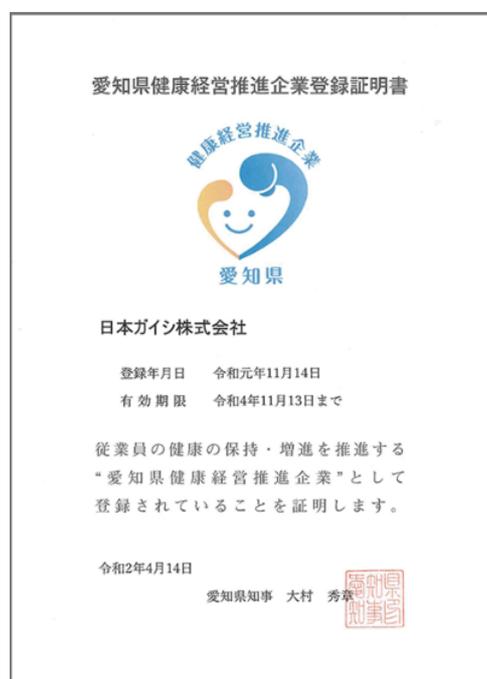
Since 2019, we have been included in the “White 500” list under the large enterprise category of the Health and Productivity Management Organization Recognition Program, run by the Ministry of Economy, Trade and Industry and Nippon Kenko Kaigi.

Also, since 2021, the NGK Health Insurance Association has been included in the newly-established “Bright 500” list under the small and medium sized enterprise category of the Health and Productivity Management Organization Recognition Program for two years in a row.



Aichi Prefecture Advanced Health Management Company

NGK and the NGK Health Insurance Association have earned a designation as an Advanced Health Management Company by the Aichi prefectural government. The aim of this program is to recognize companies and organizations that aggressively pursue health management, in the process increasing the number of companies taking action towards a healthy workforce and increasing the healthy life expectancy of the prefecture's citizens.



Sustainability

Social Contribution Activities

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.

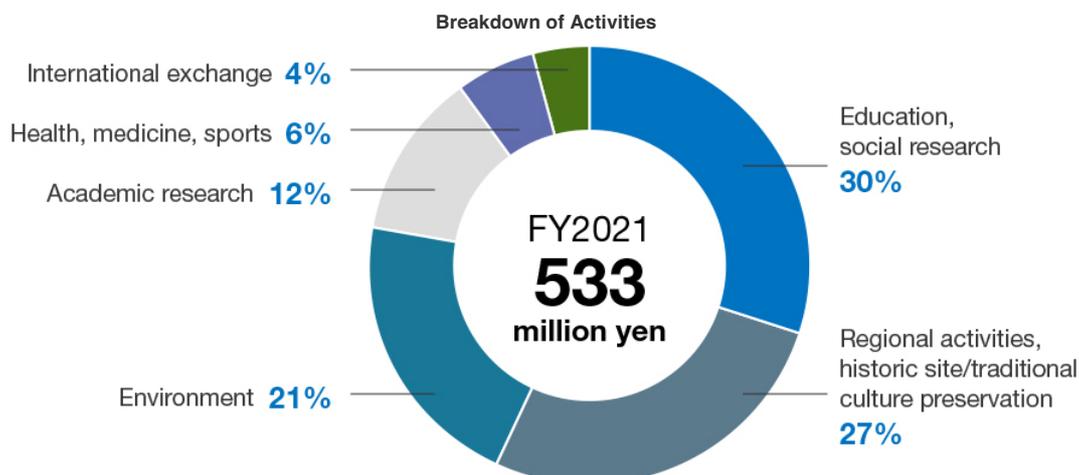
Information Disclosure

NGK promotes an understanding of activities and provides activity information to inculcate a social contribution mindset among employees.

The NGK Group’s social contribution activities are promoted by the General Affairs Department under the leadership of the ESG Management Committee. NGK collects reports from Group companies in and outside Japan on the social contribution activities they have conducted in various places. In FY2021, a total of 31 reports were received.

Results of Social Contribution Activities

	FY2017	FY2018	FY2019	FY2020	FY2021
Social contribution expenditures	300 million yen	302 million yen	273 million yen	296 million yen	533 million yen
Number of social contribution programs	10	10	13	10	16
Number of collaborations with NPOs/NGOs	4	4	4	4	3



NGK's Social Contribution Activities

Providing Scholarships and Assistance to International Students

In 1998, NGK established the NGK Foundation for International Students to facilitate the cultivation of individuals who will contribute to the development of the international community. Through the Foundation, NGK continues to provide assistance with housing and scholarships to overseas students visiting Japan.

The impetus for the Foundation's establishment stems from gratitude for the warm community support and hospitality shown to NGK's first employees and families posted overseas at the time of its initial overseas expansion 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 FY2021, we provided housing to 38 students from four countries, and scholarships (non-repayable) to 21 students from eight countries.

On April 1, 2022, this fund became a Public Interest Incorporated Foundation.



The NGK Foundation for International Students >

Exchange Between Supported Students, Communities, and Employees

NGK organizes a variety of activities to provide opportunities for grassroots international relations between supported students, regional communities, and employees. Since the year 2000, we have held annual exchange meetings where international students introduce their native languages and cultures. In FY2021, the exchange meeting was held online using a web conferencing system. During the online exchange meeting, international students acted as lecturers and introduced Chinese culture to children in local children's associations. As of FY2021, a total of 1,006 people have participated. In FY2022, we plan to keep an eye on the situation concerning the COVID-19 pandemic and consider whether to hold the event online or in-person.

Communication After Support Ends

To maintain relationships with international students after support ends, each year, we send out a New Year's greeting card that includes a company status report to former and current students. We also distribute NGK International Friendship Club Members Cards that include our contact information to international students after support ends. In FY2021, we sent New Year's cards with updates on the Foundation and NGK to around 300 students who have received support in the past.

Beginning Japanese Language Learning Support for Foreign Children Living in Japan

In FY2022, NGK began providing support for foreign children living in Komaki, Aichi Prefecture to learn Japanese. We are working in coordination with the private organization Ishiki Cosmos Support Study Group, which is based in the city.

We have provided one of the rooms in our company dormitory for use as a Japanese classroom. And employees who have been stationed overseas leverage their knowledge and skills to work as teaching assistants and help boost the learning language proficiency necessary for studying the subject in Japanese schools.

Aichi Prefecture has the second largest population of foreign residents in Japan, after Tokyo. And it has the largest number of foreign national children requiring Japanese-language instruction. Komaki is one of the municipalities with a particularly large number of foreign national children. NGK began this support as part of our social contribution activities, in part because there are approximately 300 foreign nationals working at NGK Ceramic Device.

In FY2022, we will provide about two hours of learning support, twice a week, for 19 children. Going forward, we will consider expanding the range of ages and localities to which we can offer support.

Support for Wheelchair Tennis

NGK supports wheelchair tennis as part of our support for persons with disabilities and for local sports.

We assist talented wheelchair tennis athletes based in Aichi Prefecture in various ways, such as helping to fund their travel inside Japan and overseas. In 2020, we established a new hard court as well as barrier-free outdoor restrooms at the NGK Group company-operated Moronoki Tennis Club (located in Midori-ku in Nagoya City), which is open to wheelchair tennis athletes and aficionados alike. NGK has also signed an official partnership agreement with the Japan Wheelchair Tennis Association (JWTA), with whom we work to sponsor annual events, competitions, and other opportunities for expanding and

developing the sport of wheelchair tennis. In FY2021, we held a support ceremony for wheelchair tennis athletes, an online exchange meeting for wheelchair tennis athletes and employees, and a new mixed style exchange event in which pairs consisting of a wheelchair tennis athlete and a non-handicapped person play tennis together.



[Sustainability](#)

Governance System

Basic Approach

NGK's basic policy on corporate governance is to ensure legality in business activities and transparency in management. The Company has established a structure that can respond swiftly to changes in the business environment and built and maintains shareholder-focused system to ensure fair management. To put this policy into practice, NGK has chosen the governance structure of a company with an Audit & Supervisory Board. We have established a corporate governance system that increases the effectiveness of corporate governance through debate and deliberation on important matters. This was accomplished by establishing the Executive Committee and various other committees to support the president in making decisions, in addition to the General Meeting of Shareholders, Board of Directors, and Audit & Supervisory Board.

NGK recognizes the need for swift, optimal decision-making and execution to respond to changes in the business environment. We have therefore introduced a executive officer system to segregate the management decision-making and supervisory function from the business execution function to clearly define the roles of and strengthen each function.

To strengthen the supervisory and oversight function of the Board of Directors, we have mandated reporting to Board of Directors from the key committees among committees that handle various risks surrounding NGK. To ensure that the objectives of the Corporate Governance Code are thoroughly implemented, we established the Nomination and Compensation Advisory Committee, Corporate Council, Conference of Outside Directors and Outside Audit & Supervisory Board Members, the Business Ethics Committee, and other committees.

In addition, we have established the NGK Group Code of Conduct to stipulate how everyone working for the NGK Group should execute their jobs so that they abide by society's laws and the company's Articles of Incorporation and comply with corporate ethics. All executives and employees are well versed in the code and are obligated to abide by it. In January 2019, the NGK Group Code of Conduct was revised with an emphasis on the realization of a sustainable society through business activities, respect for human rights, and thorough compliance to reflect changes in society since the previous revision.

[Corporate Governance Report](#)

Steps taken to strengthen corporate governance

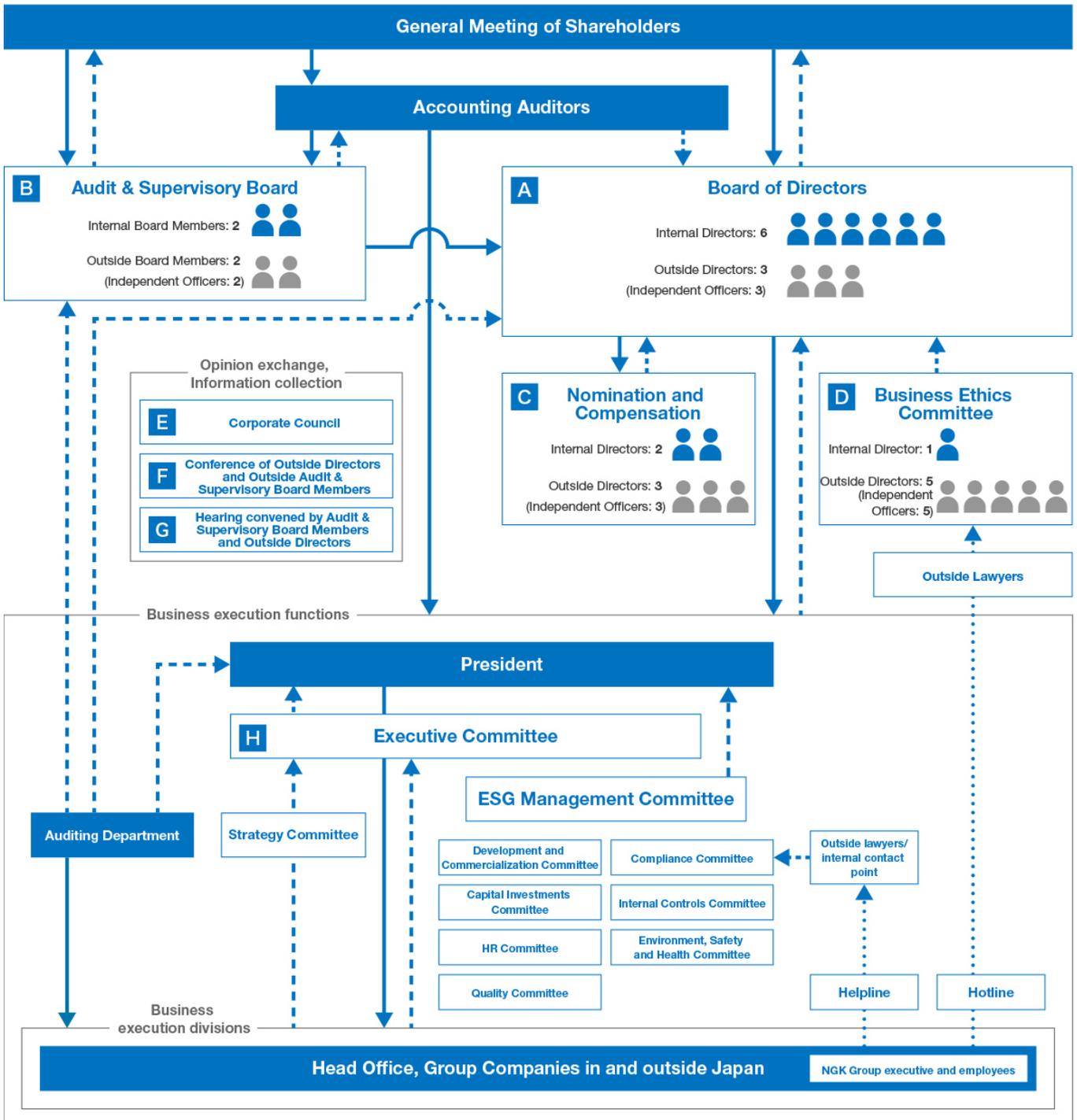
We continue to strengthen the corporate governance system. Enhancements include introducing an executive officer system to improve the management supervision and monitoring functions and other functions, and to provide suggestions on all aspects of management.

April 1999	Established the NGK Code of Conduct	January 2019	Revised the NGK Group Code of Conduct
April 2003	Revised guidelines into the NGK Group Code of Conduct	April 2019	Established the ESG Committee
June 2005	Introduced an executive officer system	February 2020	Endorsement of recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
	Introduced a stock option	April 2020	Established the Compliance Committee
Introduced an outside officer system	Established the HR Committee		
July 2005	Established the CSR Committee	April 2021	Formulated the NGK Group Vision
April 2007	Established the CSR Office		Formulated the NGK Group Human Rights Policy
June 2010	Appointed independent directors		Established the NGK Group Basic Guidelines for Compliance Activities
July 2011	Revised the NGK Group Code of Conduct	June 2021	Established the ESG Management Department
April 2015	Signed on to the UN Global Compact		Outside directors increased to 1/3rd of Board of Directors
June 2015	Established the Global Compliance Office	April 2022	An outside director made the chair of the Nomination and Compensation Advisory Committee
December 2015	Established the Nomination and Compensation Advisory Committee, Corporate Council, Conference of Outside Directors and Outside Audit & Supervisory Board Members, and Business Ethics Committee		Established the ESG Management Committee
June 2017	Appointed one additional outside director	June 2022	Introduced a Restricted Share Compensation Plan
October 2018	Appointed a chief compliance officer		

Corporate governance system

We have established the following system to ensure legality in business activities and transparency in management. This system makes it possible to respond swiftly to changes in the business environment and maintains a shareholder-focused system to ensure fair management.

- Decision-making, supervise, appointment/dismissal, business execution, audit, etc.
- Report, proposal, presentation of agenda, findings, deliberation, recommendation, etc.
- Whistle-blowing, consultation, etc.



Committees on Corporate Governance

A Board of Directors

No. of members: 9; Convened 13 times in FY2021

The Board of Directors is composed of nine directors (eight male, one female; one third of directors are outside directors). It discusses and votes on matters designated under the Companies Act, NGK's Articles of Incorporation and Rules for the Board of Directors. (These matters include company-wide unified budgeting, strategic planning such as dissolution, mergers, and alliances of the company, appointing and removing representative directors, and authorizing business reports and financial statements etc., the disposal and acceptance of transfer of important assets, the appointment and dismissal of important employees, etc.) The Board also monitors the job performance of all company directors. The chair of the Board of Directors is a non-executive director. In addition, both the full-time and outside members of the Audit & Supervisory Board attend meetings of the Board of Directors and provide their opinions when necessary.

B Audit & Supervisory Board

No. of members: 4; Convened 14 times in FY2021

The Audit & Supervisory Board is composed of four Audit & Supervisory Board members (all male). Audit & Supervisory Board members supervise directors' decision-making process and job performance, by attending meetings of the Board of Directors and other important meetings, receiving reports from directors, employees, etc. and requesting explanations where necessary. In addition, they review the establishment and operation of so-called internal control systems, and confirm the appropriateness of accounting auditors' auditing methods and results.

C Nomination and Compensation Advisory Committee

No. of members: 5; Convened 4 times in FY2021

The Nomination and Compensation Advisory Committee was established in order to ensure fairness and enhance transparency in officers' personnel matters, the determination of compensation, and other matters. The Nomination and Compensation Advisory Committee deliberates on personnel matters for directors and the Audit & Supervisory Board members, matters relating to compensation for directors and corporate officers, total compensation amount proposal for the Audit & Supervisory Board members, and a succession plan for the chief executive. It reports its results to the Board of Directors. The committee consists of a majority of independent outside directors and a committee chairperson who is selected from among the independent outside directors. It is composed of four male members and one female member. One outside Audit & Supervisory Board member attends committee meetings as an observer to confirm the appropriateness of the deliberation process.

D Business Ethics Committee

No. of members: 6; Convened 5 times in FY2021

The Business Ethics Committee is comprised of outside officers and one internal director who is in charge of compliance. The committee conducts necessary investigations into fraudulent acts and violations of laws and regulations involving corporate officers and employees and advises the Board of Directors on how to prevent recurrence. To ensure compliance with competition laws and the Foreign Corrupt Practices Act, the committee makes recommendations to the Board of Directors on building a compliance system and considering compliance activities. The Committee strives to strengthen the compliance system by establishing, in addition to the current Helpline System, a whistle-blowing system (hotline), which is directly linked to the Business Ethics Committee, as a mechanism to prevent any such fraudulent act or violation of laws and regulations. The committee is composed of five male members and one female member.

E Corporate Council

No. of members: 11; Convened 2 times in FY2021

The Corporate Council is a council where outside officers (outside directors and outside Audit & Supervisory Board members), representative directors, and others can exchange opinions. It provides an opportunity for management to actively seek advice from outside officers on various issues concerning management. The council is composed of ten male members and one female member.

F Conference of Outside Directors and Outside Audit & Supervisory Board Members

No. of members: 5; Convened 2 times in FY2021

This conference consists only of outside officers, and is a conference where outside officers can exchange opinions concerning corporate management issues and other matters to actively contribute to discussions in Board of Directors meetings. The committee is composed of four male members and one female member.

G Hearing Convened by Audit & Supervisory Board Members and Outside Directors

No. of members: 7; Convened 14 times in FY2021

Hearings consist of Audit & Supervisory Board members and outside directors. The purpose of these hearings is to collect information from relevant internal personnel concerning the corporate business environment and company issues. The hearing is composed of six male members and one female member.

H Executive Committee

No. of members: 16; Convened 18 times in FY2021

The Executive Committee is the body that deliberates necessary matters to assist the president in making decisions. It consists of the president, executive vice presidents, group executives of each business group, the group executive of Corporate NV Creation, the group executive of Corporate R&D, the group executive of Corporate Manufacturing Engineering, corporate officers in charge of each department, senior fellows, and full-time Audit & Supervisory Board members, as well as corporate officers, committee chairs, general managers and division heads designated by the president. Fifteen committee members are male and one is female.

Other Bodies Note: The number of times held refers to the cumulative total from April 2021 to March 2022.

<p>Strategy Committee Times held: 18</p>	<p>This committee conducts a broad range of discussions aimed at discovering problems and considering solutions concerning issues important to business management, strategy and policy planning, and reporting on the execution status and progress of various businesses and projects.</p>
<p>ESG Management Committee Times held: 9</p>	<p>This body assists the president, who is the ESG Management Committee chairperson, in decision-making about strategy, action plans, and important issues related to NGK Group sustainability (medium-to-long-term), as well as Environmental, Social, and Governance, and Sustainable Development Goals. It also performs deliberation for the presentation of agenda items deemed important to the Board of Directors or the Executive Committee.</p> <p>Note: In April 2022, we renamed the former "ESG Committee" to the "ESG Management Committee." The Committee will more proactively address the NGK Group's sustainability issues and the activities will be appropriately supervised by the Board of Directors.</p>
<p>Development and Commercialization Committee Times held: 2</p>	<p>This body deliberates items necessary to assist the decision-making of the president and Development and Commercialization Committee chair regarding policies, evaluations, budgets, major individual planning, and commercialization projects related to development and commercialization.</p> <p>Note: In April 2022, the Development Committee was abolished and the Development and Commercialization Committee was established as a higher body in charge of policy development and to oversee the entire processes of the company internal research and development and commercialization.</p>
<p>Capital Investments Committee Times held: 14</p>	<p>This body deliberates items necessary to assist the decision-making of the president and Capital Investments Committee chair regarding the examination and evaluation of policies, budgets, performance, and major individual planning related to capital expenditure and information systems.</p>
<p>Quality Committee Times held: 5</p>	<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 chair with decision-making regarding the following items.</p> <ol style="list-style-type: none"> 1. Determination, 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. Items pertaining to the quality assurance framework and avoidance of quality risks in commercialization of developed products 4. Other quality-related matters determined to be important
<p>Environment, Safety & Health Committee Times held: 3</p>	<p>This body performs overall management of the environment, safety and health for the NGK Group by regularly ascertaining overall conditions, and carrying out the necessary deliberations for making decisions on important policies, formulating action plans, and handling important matters.</p>
<p>Compliance Committee Times held: 3</p>	<p>This body assists the president and Compliance Committee chair with decision-making by deliberating essential matters pertaining to the following.</p> <ol style="list-style-type: none"> 1. Observance of laws, regulations, and corporate ethics <ol style="list-style-type: none"> 1.1. Determination, revision, or abolition of basic policies related to the observance of laws, regulations, and corporate ethics, including the Code of Conduct <p>Note: Deliberation items for Board of Directors meetings</p>

<p>Compliance Committee Times held: 3</p>	<p>1.2. Determination of systems, structures, and strict observance of important activities pertaining to laws, regulations, and corporate ethics</p> <p>1.3. Handling of Helpline matters</p> <p>1.4. Determination, revision, or abolition of risk management structures pertaining to laws, regulations, and corporate ethics</p> <p>2. Response to the matters, incidents, or accidents related to laws, regulations, or corporate ethics that are special crisis management matters</p> <p>3. Other compliance-related issues deemed important by the committee chair</p>
<p>Internal Controls Committee Times held: 3</p>	<p>This body deliberates matters necessary to help the president and Internal Controls Committee chair with decision-making regarding internal controls system assessment and reporting related to financial reporting based on the Financial Instruments and Exchange Act.</p> <p>1. Determines the scope of reporting for each fiscal year, assessment and reporting schedules, standards to assess internal controls, and other basic matters</p> <p>2. Summarizes internal controls assessment and drafts internal controls report</p>
<p>HR Committee Times held: 7</p>	<p>This body assists the president with decision-making by examining issue presentation, research reporting, solution development, and other essential matters related to corporate obligations in respecting human rights (issue handling) and the important personnel policies within the NGK Group.</p> <p>1. Matters related to the determination, revision, or abolition of basic policy on human rights</p> <p>2. Matters related to raising human rights awareness among Group companies and implementing human rights due diligence</p> <p>3. Matters related to important personnel policies whose impact may potentially extend to Group companies</p> <p>4. Other human rights and personnel policy-related matters deemed serious by the committee chair</p>
<p>BCP Countermeasures Headquarters Times held: 1</p>	<p>Aimed at ensuring business continuity in critical situations such as disasters, terrorism, or systems failure, this body executes the operation and maintenance of business continuity plans (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>
<p>Disaster Prevention and Control Headquarters Times held: 1</p>	<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>
<p>Security Export Control / Specified Export and Customs Clearance Control Committee Times held: 1</p>	<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>

Internal Control Systems

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 in each operating division. NGK has also 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 Code of Conduct (revised in January 2019) was formulated as a policy embodying the Group’s corporate philosophy. These guidelines specify the Group’s fundamental stance on sincerely engaging in business activities and fulfilling its responsibilities to society.

The task of ensuring Group-wide compliance with the NGK Group Code of Conduct, along with laws, regulations, and corporate ethics, is the responsibility of the Compliance Activity Promotion Subcommittee, which was established by the Compliance Committee and consists of managers from NGK divisions. The Business Ethics Committee handles matters concerning improper acts and legal violations involving NGK executives, and ensuring compliance with competition laws and Foreign Corrupt Practice Act.

The Board of Directors adopted an amendment to the “Resolution for the Development of Systems to Ensure the Appropriateness of Operations” at the March 2022 board meeting.

Sustainability

Board of Directors and Stock Information

[Structure of the Board of Directors](#) ▾

[Outside Directors/Outside Audit & Supervisory Board Members](#) ▾

[Effectiveness of the Board of Directors](#) ▾

[Policy on Cross-Shareholdings](#) ▾

[Donations and Other Spending](#) ▾

Structure of the Board of Directors

Directors >

Committee Membership (as of June 30, 2022)

Name	Board of Directors	Executive Committee	Nomination and Compensation Advisory Committee	Corporate Council	Conference of Outside Directors and Outside Audit & Supervisory Board Members	Hearing Convened by Audit & Supervisory Board Members and Outside Directors	Business Ethics Committee
Taku Oshima	○	○	○				
Shigeru Kobayashi	○	○	○				
Chiaki Niwa	○		○				
Ryohei Iwasaki	○		○				
Tadaaki Yamada	○		○				○
Hideaki Shindo	○		○				
Hiroyuki Kamano	○	○	○	○	○	○	○
Emiko Hamada	○	○	○	○	○	○	○
Kazuo Furukawa	○	○	○	○	○	○	○

Expertise of Directors (as of June 30, 2022)

Name	Independent outside directors	Field of experience				Specialized knowledge				
		Overall management	Overseas business International experience	Marketing	Manufacturing technology R&D	Finance	Legal Compliance	HR/Labor	ICT	Environment Energy conservation
Taku Oshima		○	○		○		○	○		○
Shigeru Kobayashi		○	○	○						○
Chiaki Niwa		○			○		○		○	○
Ryohei Iwasaki		○	○	○				○		
Tadaaki Yamada				○			○	○		
Hideaki Shindo		○	○			○		○		
Hiroyuki Kamano	○	○	○				○			
Emiko Hamada	○	○	○		○				○	○
Kazuo Furukawa	○	○	○		○			○	○	○

Ratio of Independent Outside Directors

Target ratio of Independent Outside Directors	Result	Name
One-third of the Board of Directors	1/3	Hiroyuki Kamano, Emiko Hamada, and Kazuo Furukawa

Board of Directors Diversity Policy

The Articles of Incorporation specify a maximum of 15 directors on the NGK Board of Directors. NGK does not discriminate on the basis of gender, age, nationality, and race. Based on this policy, NGK strives to achieve diversity in both gender and internationality of the Board of Directors by electing women directors and directors who possess experience in the management of overseas subsidiaries. NGK also strives to ensure independence of the Board of Directors by specifying that one-third or more of directors be independent directors.

NGK deems the following director skills necessary: Practical experience and demonstration of leadership in areas in which the NGK Group operates its business; professional expertise in finance, legal affairs, human resources and labor, information and communications, and other areas. We also think it is necessary to have highly independent outside directors who possess a high degree of expertise in legal affairs or corporate finance, or who possess knowledge of international affairs, trends in technology, and corporate management. The skill matrix (expertise) of the current Board of Directors is shown above.

Outside Directors / Outside Audit & Supervisory Board Members

Standard and Policy for Independence of Outside Directors and Outside Audit & Supervisory Board Members

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"). Even if a person falls under one or more of these items, the Company may make an exception and deem a person suitable

for serving as an Independent Outside Director of NGK in light of his or her character, knowledge, and other attributes. However, the person must still meet the requirements of the Companies Act and Tokyo Stock Exchange and the Company must provide an external explanation of why such person is suitable to serve as an Independent Outside Director.

In these standards for determining independence, a business executive refers to an executive director, executive officer, corporate officer or other employee, and the NGK Group refers to NGK and its subsidiaries or affiliates.

1. A major shareholder who holds 10% or more of current voting rights in NGK, or who was a business executive of the corporation if the major shareholder is a corporation during the last three fiscal years, including the most recent fiscal year.
2. A current business executive of a business partner of the Company which has engaged in transactions with the NGK Group totaling 2% or more of consolidated net sales for either party in any of the last three fiscal years, including the most recent fiscal year.
3. A person who was a business executive in a corporation that is a financial institution or other major creditor which is absolutely essential in financing the NGK Group and for which no alternatives exist, in the past three fiscal years, including the most recent fiscal year.
4. A current director or officer of an organization that has received donations or grants totaling 10 million yen/year or 30% of total average annual expenses of the organization, whichever is greater, from the NGK Group in any of the past three fiscal years, including the most recent fiscal year.
5. A certified public accountant (CPA) or tax accountant, or a current employee of an accounting firm or tax accounting firm who served as an accounting auditor or accounting advisor of the NGK Group in the past three years, including the most recent fiscal year.
6. An attorney, certified public accountant, tax accountant, or other consultant who does not correspond to any of the individuals mentioned above in 5, who received 10 million yen/year or more in cash and other assets in addition to officer compensation in any of the past three years, including the most recent fiscal year, or who does not correspond to any of the individuals mentioned above in 5 and is a current employee, etc. of a law firm, accounting firm, tax accounting firm, consulting firm, or other organization that provides expert advice, and that organization has received payments from the NGK Group totaling 2% or more of total consolidated net sales in any of the past three fiscal years, including the most recent fiscal year.
7. A person who was a business executive in a company in which NGK is currently a major shareholder, in the past three fiscal years, including the most recent fiscal year.
8. A spouse or relative within the second degree of kinship of a person mentioned above in 1 through 7.

Outside Audit & Supervisory Board Members

In order to ensure that outside Audit & Supervisory Board members are impartial and that there is no conflict of interest with our general shareholders, NGK makes comprehensive decisions based on the Securities Listing Regulations of the Tokyo Stock Exchange.

Reasons for Appointment of Outside Directors and Outside Audit & Supervisory Board Members

Outside Directors

Name	Reasons for appointment
Hiroyuki Kamano	<p>Having long engaged in legal practice as an attorney-at-law, Mr. Kamano possesses a wealth of experience and achievements in the legal community, including serving as Vice President of the Tokyo Bar Association. We expect Mr. Kamano to continue to utilize his expertise, extensive experience, and broad insight to oversee company management from an independent objective standpoint, primarily from the perspective of compliance. As an outside director of NGK, Mr. Kamano has been appropriately providing his opinions on matters such as business development and strengthening our compliance structure, making recommendations on business execution at NGK, and overseeing management. Therefore, we have elected him as an outside director.</p> <p>Mr. Kamano holds 1,000 shares of NGK stock. However, apart from this, he has no personal, financial, or important business relationship with, nor other vested interest in, NGK.</p> <p>Concurrent with his work with NGK, Mr. Kamano serves in a variety of roles, including as an outside director of Spancrete Corporation and as an outside director (Audit & Supervisory Committee member) of House Foods Group Inc. However, no personal, financial, or important business relationship, nor other vested interest, exists between NGK and the organizations with which Mr. Kamano currently works.</p>
Emiko Hamada	<p>Ms. Hamada has made remarkable achievements such as leading the invention and the world's first commercialization of the CD-R (recordable CD) while working for Taiyo Yuden Co., Ltd. Since then, she has been engaged in research activities mainly through industry-academia-government collaborations as Professor at Nagoya Institute of Technology and Visiting Professor at Nagoya University. We expect Ms. Hamada to continue to utilize insights she has developed through her career to oversee the management of NGK from an independent, objective standpoint based mainly on the perspectives of R&D and product commercialization. As an outside director of NGK, Ms. Hamada has been actually stating her opinions on product development, how to proceed on new businesses, and other areas, making recommendations on business execution at NGK, and overseeing management. We have therefore elected her as an outside director.</p> <p>Ms. Hamada holds 5,000 shares of NGK stock. However, apart from this, she has no personal, financial, or important business relationship with, nor other vested interest in, NGK. Concurrent with her work with NGK, she serves in a variety of roles, including as an outside director for Taiyo Yuden Co., Ltd. However, no personal, financial, or important business relationship, nor other vested interest, exists between NGK and the organizations with which she currently works.</p>

Name	Reasons for appointment
Kazuo Furukawa	<p>After serving as President & CEO of the Information and Telecommunication Systems Group at Hitachi, Ltd., Kazuo Furukawa served as Director, Representative Executive Officer, President & COO of the company. He also served as Chairperson of NEDO (formerly an Incorporated Administrative Agency, now a National Research and Development Agency) and possesses knowledge in information & telecommunications and other areas of technology and experience in managing large organizations. We expect him to continue to utilize his broad knowledge and experience to oversee the management of NGK from an independent, objective standpoint as a management expert. As an outside director of NGK, Mr. Furukawa has been appropriately providing a wide range of opinions on management decisions and business activities in general, making recommendations on business execution at NGK, and overseeing management. We have therefore elected him as an outside director.</p> <p>Mr. Furukawa holds 5,000 shares of NGK stock. However, apart from this, he has no personal, financial, or important business relationship with, nor other vested interest in, NGK. Concurrent with his work with NGK, he serves in a variety of roles, including as an outside director (Audit & Supervisory Committee member) for the Pasona Group Inc. However, no personal, financial, or important business relationship, nor other vested interest, exists between NGK and the organizations with which he currently works.</p>

Outside Audit & Supervisory Board Members

Name	Reasons for appointment
Masayoshi Sakaguchi	<p>Mr. Sakaguchi has a wealth of experience in the administrative sector and a proven track record in managing large organizations. He was chief of the Osaka Prefectural Police Headquarters, chief of the Commissioner-General's Secretariat (National Police Agency), and commissioner-general of the National Police Agency. Making use of this experience, he audits NGK's overall management from the viewpoint of the legality of business and risk management, thus helping enhance NGK's corporate value. We have therefore elected him to the position of outside Audit & Supervisory Board member.</p> <p>Mr. Sakaguchi has no personal, financial, or important business relationship with, nor other vested interest in, NGK. He has served as senior advisor to Nippon Life Insurance Company, which is both an NGK shareholder and a source of financing for NGK. However, at the end of March 2022, Nippon Life Insurance Company's holdings did not exceed more than 0.95% of total NGK shares, and, with regard to the financing received, NGK has business transactions with numerous financial institutions, and the nature of the financing secured from Nippon Life Insurance Company is not such that NGK is any way beholden to it. Therefore, we deem the shareholder and financial borrowing relationship between NGK and Nippon Life Insurance Company to be one which would not impact NGK's management decision-making. Moreover, the total amount of our payments to that company of management fees for corporate pension plans is less than 0.1% of consolidated operating expenses and, thus, does not create a conflict of interest with our general shareholders.</p> <p>Concurrent with his work with NGK, Mr. Sakaguchi serves in a variety of roles, including as president of the Japan Automobile Federation. However, no personal, financial, or important business relationship, nor other vested interest, exists between NGK and the organizations with which he currently works.</p>
Takashi Kimura	<p>Mr. Kimura possesses many years of experience in managing companies through his service as a Managing Executive Officer at The Bank of Tokyo-Mitsubishi UFJ, Ltd. (now, MUFG Bank, Ltd.), as President and Representative Director of Mitsubishi Research Institute DCS Co., Ltd. In addition to his experience and knowledge in finance and corporate governance gained throughout his career, Mr. Kimura also served as a full-time Audit & Supervisory Board member of MITSUBISHI GAS CHEMICAL COMPANY, INC. and possesses extensive experience and expertise as an auditor of listed companies. We consider him capable of utilizing his broad experience to contribute to enhancing the corporate value of NGK by auditing NGK's overall management, and have therefore elected him as an outside Audit & Supervisory Board member.</p> <p>Mr. Kimura has no personal, financial, or important business relationship with, nor other vested interest in, NGK.</p> <p>Mr. Kimura comes from the Bank of Tokyo-Mitsubishi UFJ (now MUFG Bank), which is both an NGK shareholder and a source of financing for NGK. However, at the end of March 2022, MUFG Bank's holdings did not exceed more than 2.27% of total NGK shares, and, with regard to the financing received, NGK has business transactions with numerous financial institutions, and the nature of the financing secured from MUFG Bank is not such that NGK is any way beholden to it. Moreover, given that 12 years have already passed since he left the Bank of Tokyo-Mitsubishi UFJ (now MUFG Bank), we do not believe his decisions are affected by the wishes of MUFG Bank in any way that would constitute a conflict of interest with our general shareholders. Also, no personal, financial, or important business relationship, nor other vested interest, exists between NGK and the organizations with which he is or has been involved.</p>

We have submitted written notification to the Tokyo Stock Exchange and Nagoya Stock Exchange of the appointment as independent officers of the above five individuals.

Effectiveness of the Board of Directors

Election of Board Members, Executive Officers, and Audit & Supervisory Board Members

When nominating candidates for the positions of director and Audit & Supervisory Board member, all representative directors discuss each candidate and obtain consent from the Audit & Supervisory Board for Audit & Supervisory Board member candidates. In addition to this, NGK strives to ensure fairness, transparency, and timeliness in the process of nomination, election/appointment, and dismissal. This is accomplished through deliberation of the nomination of each candidate for director and Audit & Supervisory Board member, and appointment and dismissal of representative directors and executive directors by the Nomination and Compensation Advisory Committee, which has independent outside directors as a majority of its members. The committee then reports its detailed conclusions to the Board of Directors. After the Board of Directors has sufficiently considered the conclusions of the committee, the Board nominates candidates for the positions of director and Audit & Supervisory Board member, and approves this as an agenda item (resolution) for the General Meeting of Shareholders. After directors are elected by the General Meeting of Shareholders, the Board of Directors appoints representative directors and executive directors, based on the report by the Nomination and Compensation Advisory Committee.

Training policies for officers

Directors and Audit & Supervisory Board members have been tasked with the responsibility of exercising the due care of a good manager. The Company therefore has established a training policy of providing the following types of opportunities to sharpen skills and knowledge so that they can fully execute their duties as experts in various kinds of management or as supervisors of business execution.

1. For internal officers: Training on the Companies Act, the Financial Instruments and Exchange Act, competition laws, and other aspects of corporate governance and compliance
2. For outside officers: Mainly providing separate explanations from the division in charge concerning items on the agenda of the Board of Directors and regularly providing information on the business environment and issues as well as opportunities for exchanging opinions

Evaluation on the effectiveness of the Board of Directors

NGK's Board of Directors conducts a survey of directors and Audit & Supervisory Board members at the close of each fiscal year to evaluate the effectiveness of Board of Directors meetings. The Board entrusts analysis and evaluation of the responses to an external organization, which reports the results to the Board of Directors. The Company continually strives to improve effectiveness through such means as considering the importance and necessity of each issue identified and reinforcing efforts in Board of Directors meetings during the next fiscal year.

Summary of the evaluation of effectiveness in FY2021

We conducted a survey in April 2022 to evaluate the Board of Directors meetings in FY2021 (ended March 31, 2022). The survey was comprised of 50 questions and free-response entry and the results were reported at the Board of Directors meeting held on June 9, 2022.

NGK made progress on the following initiatives and improvements concerning items identified as issues in the evaluation for the previous fiscal year:

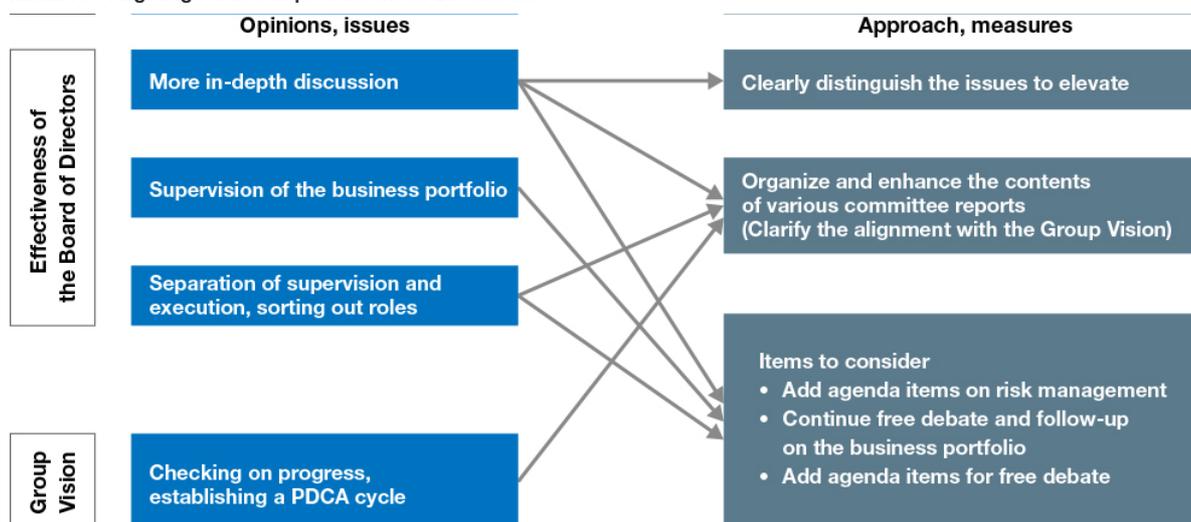
- Discussed important medium to long-term and strategic themes in expanded strategy committee attended by outside officers in addition to the main business executives in charge, and freely debated and reported on such themes in Board of Directors meetings.
- Reported the status of allocation, treatment, and development of top management candidates and shared information in Corporate Council meetings attended by outside officers. Also partially revised the succession plans for the chief executive and approved the plans in a Board of Directors meeting.

Regarding the overall evaluation, we received the following comments from the external organization, and recognize the need for ongoing discussion to further improve effectiveness and realize the Group vision:

- The NGK Board of Directors has maintained the elements that form the foundation necessary as a Board of Directors since the previous evaluation, including the commitment and leadership of each member and a healthy culture. Evaluation of corporate strategy and policy decisions, risk management, and the composition of the Board of Directors has also improved. We can see the positive impacts of the structural change to one-third outside directors and discussion on formulating the vision. As can be seen from the increase in the overall score, we think the Board of Directors continues to be effective due to the specification of problems and concrete steps the Board of Directors has taken to achieve improvement.
- Opinions in the free-comment section were divided on whether or not the recent reforms increased the effectiveness of the Board of Directors. A certain number of comments demanded concrete efforts to further improve actual effectiveness, rather than in form only. In particular, some think the Board needs to devise ways to separate execution from supervision, clearly distinguish between reporting items and discussion items according to this separation of functions, and reduce the number of items elevated to the Board of Directors, among other improvements.
- Although the overall evaluation of discussion on formulating the vision was high, some desired continued discussion on strengthening the PDCA cycle, better follow-up, supervision of the business portfolio, effective use of assets, and other topics.
- Some think there is a need to share and perform the checks to the level expected in regard to the Nomination and Compensation Advisory Committee, succession plans, and evaluations of executive management.

We will endeavor to ensure and enhance effectiveness of the Board of Directors through ongoing efforts based on the evaluation results.

Initiatives Targeting Further Improvements in Effectiveness



Management Succession Planning

The revised NGK Group Chief Executive Officer Succession Plan was approved by resolution of the Board of Directors in April 2022. This succession plan establishes the required qualities, development policies, selection procedures, and other actions for developing chief executive officer successors. Based on this, the president provides the Nomination and Compensation Advisory Committee with a progress report on the plan each year, and the committee reviews the appropriateness of the plan.

Policy on Cross-Shareholdings

NGK holds shares in listed companies that contribute the long-term business development of the NGK Group as cross-shareholdings, primarily to maintain and strengthen transactional relationships. We also hold shares in each company in the Morimura Group, which shares a common founder. We hold these shares to mutually enhance management quality because the Morimura Group brand is part of NGK's corporate value through its philosophy and history. As part of our asset portfolio, all cross-shareholdings are positioned as assets to supplement the liquidity considered necessary for our business plans. We always keep shrinking the size of cross-shareholdings in mind from the perspective of asset efficiency, and the size of cross-shareholdings may change due to changes in overall business trends and risks, financial conditions, the transactional relationship with each company whose shares we hold, and other such factors.

The Board of Directors regularly reviews NGK's capital policy and whether it is appropriate to continue holding these shares based on certain indicators in addition to significance of holding shares from the perspective of the transactional relationship. Such indicators include the credit rating and other indicators of the safety in holding shares, and the dividend yield and other indicators of efficiency. With respect to the cost of capital, shareholdings are not evaluated in isolation. We also evaluate cross-shareholdings as part of the balance sheets for each business, which have different risks and anticipated rates of return, in managing the return on invested capital (NGK version ROIC) for each business.

When exercising voting rights on cross-shareholdings, we focus on whether the business is being managed with an emphasis on enhancement of corporate value, shareholder return, in addition to evaluation from the perspective of the content of resolutions and whether they will adversely affect shareholder return.

Number of Stocks and Balance Sheet Amount

	Number of stocks	Total balance sheet amount (million yen)
Unlisted shares	37	2,068
Shares other than unlisted shares	39	37,893

Stocks for Which Number of Shares Increased in FY2021

	Number of stocks	Total acquisition amount for increase in number of shares (million yen)	Reason for increase in number of shares
Unlisted shares	—	—	—
Shares other than unlisted shares	1	49	Due to new investments in companies contributing to the creation of our new products and business

Stocks for Which Number of Shares Decreased in FY2021

	Number of stocks	Total acquisition amount for decrease in number of shares (million yen)
Unlisted shares	1	0
Shares other than unlisted shares	1	1,193

Donations and Other Spending

We forbid contributions to individual politicians which are forbidden by law, and donations to specific political groups or parties which exceed the amounts allowed by law. We did not make any political contributions in FY2021.

Sustainability

Auditing Status

Audit & Supervisory Board Audits

Each Audit & Supervisory Board member is responsible for providing an independent perspective on the job performance of directors and the accounting auditor, as well as for sharing information, including the results of audits performed by the full-time Audit & Supervisory Board members, with the other Audit & Supervisory Board members in order to help ensure auditing is both efficient and highly effective.

In FY2021, the Audit & Supervisory Board met 14 times for around 1.5 hours each time. The following four items were addressed as auditing priorities in FY2021.

1. Confirmation of the risk management response system and preparedness for future change
2. The status of ESG-related initiative penetration
3. The progress of new business, business restructuring, etc.
4. Business-specific risk awareness and reasonableness of the management decision-making process.

Audit & Supervisory Board members attend Board of Directors meetings, audit the meeting procedures and the content of resolutions, and express their opinions where necessary. At hearings convened by Audit & Supervisory Board members and outside directors, Audit & Supervisory Board members hear from and discuss with group executives of each business group and corporate officers in charge of each department concerning the budget details, business conditions, the status of risk management, the legal compliance system and other matters. When necessary, Audit & Supervisory Board members also conduct onsite audits and use other means to hear from and discuss with directors and other officers and employees, as well as directors and others at subsidiaries regarding business conditions, the status of risk management, and legal compliance.

In addition to the above, the full-time Audit & Supervisory Board members attended important meetings and committee meetings such as the Executive Committee, Compliance Committee, and Internal Control Committee, to confirm the business execution decision-making process, status of management, and other factors. They also met with the chair of the Nomination and Compensation Advisory Committee to hear about, verify, and confirm the appropriateness of the process and procedures for determining the policy on making decisions on the details of individual director compensation for the current fiscal year. They also held meetings with the representative directors every six months to share audit results and exchange opinions. In addition to this, the full-time Audit & Supervisory Board members have selected overseas subsidiaries for corporate group audits based on the importance and the approach on risks, and used online conferencing systems to audit them remotely. Meetings with the Audit & Supervisory Board members of major companies among domestic subsidiaries were conducted twice, including online. Two meetings, including online, were also held during the year for the Audit & Supervisory Board members, auditors, and others responsible for audits at other domestic subsidiaries and subsidiaries in China and South Korea. The full-time Audit & Supervisory Board members inspected important approval documents and other relevant documents, confirmed the results of internal audits by the Auditing Department, obtained information from divisions in charge of separate audits in the areas of safety, environment, and quality, and heard the audit findings from the accounting auditor concerning the internal controls audit of financial reports. They accompanied the accounting auditor to physical inventory checks to investigate the status of property. The full-time auditors also shared the details of these auditing activities with outside Audit & Supervisory Board members as necessary, through Audit & Supervisory Board meetings and other means.

Internal Audits

The Auditing Department (14 members) was established as department which is responsible for the internal auditing function. The department audits the status of business execution in NGK and each domestic and overseas Group company based on audit plans approved by resolution of the Board of Directors, and provides information that will contribute to management decisions to the President and Board of Directors. The general manager of the Auditing Department is a member of the Internal Control Committee. While internal audits are conducted independently of Audit & Supervisory Board audits and accounting audits, the Auditing Department regularly discusses audit policy, plans, and results with Audit & Supervisory Board members and the accounting auditor to improve the effectiveness and efficiency of audits. Moreover, because audits in areas such as quality, environment, and safety and health require specialized knowledge, the dedicated departments serving as secretariats of the committees responsible for each area perform internal group audits. The results of these audits are reported in each committee and the committee summaries are reported to the Board of Directors.

Accounting Audits

Accounting audits are performed by an auditing firm and include financial statement and internal control auditing carried out in line with the Financial Instruments and Exchange Act and auditing carried out in line with the Companies Act.

Selection of the auditing firm to perform accounting audits was carried out by the Audit & Supervisory Board according to a variety of criteria. Among the key criteria were whether the firm maintains systems and structures in line with the Regulation on Corporate Accounting (“Matters Related to the Performance of Duties of Financial Auditor(s)”); whether it possesses professional expertise and can carry out appropriate auditing while maintaining a position of independence; and whether there is any grounds for dismissal of financial auditors, as per the Companies Act. Based on the results of this confirmation, the Company selected Deloitte Touche Tohmatsu LLC as the accounting auditor.

In addition to the above criteria for the selection of the accounting auditor, Audit & Supervisory Board members and Audit & Supervisory Board also evaluated the suitability of the accounting auditor from the perspective of whether it communicates with management, Audit & Supervisory Board members, the Finance Department, and Internal Auditing Department, performs Groupwide audits, and addresses risk of fraud appropriately, through the daily audit activities. Based on this, Deloitte Touche Tohmatsu LLC (“Deloitte”) has been determined to be qualified to serve as the accounting auditor for NGK.

Sustainability

Compensation for Directors and Audit & Supervisory Board Members

Alignment of Officer Compensation with Long-term Performance

Policies for Determining Compensation of Directors

The compensation system for directors (excluding outside directors) and corporate officers has been established for the purpose of contributing to the Group’s sustainable growth and the enhancement of its medium-to-long-term corporate value by practicing the NGK Group Philosophy and realizing the NGK Group Vision. We reassess whether the level and composition of compensation is appropriate in light of those objectives and revise it as appropriate. The Company also strives to ensure transparency and fairness in governance of compensation.

The compensation of directors (excluding outside directors) and corporate officers consists of the following three components: basic compensation, which is a fixed annual amount in accordance with their position; a performance-linked bonus that varies depending on business performance each fiscal year; and stock-related compensation. This system is designed to raise director sensitivity toward the Company’s stock price, share with shareholders not only the benefits of a rise in the stock price but also the risks associated with a fall in the stock price, and motivate directors and corporate officers to enhance corporate value over the medium-to-long-term through appropriate corporate management.

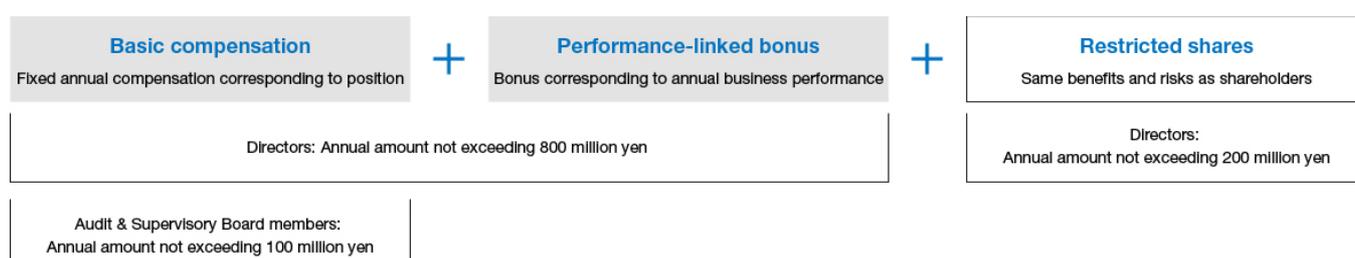
NGK only pays fixed annual compensation to outside directors and Audit & Supervisory Board members. We do not pay them performance-linked bonuses and stock-based compensation by granting restricted shares.

The relative proportions of variable compensation and fixed annual compensation are determined from the perspective of focusing on stability and improvement in performance over the medium and long term. Total variable compensation consists of a performance-linked bonus and the cash conversion value of restricted shares granted. It is set at an appropriate percentage of total compensation. The total amount of compensation, including basic compensation, is set according to the position and rank of the recipient. It is also taking into consideration the level of compensation according to the size of the company, which is based on data from a reliable external organization.

The Nomination and Compensation Advisory Committee consists of a majority of independent outside directors. At the request of the Board of Directors, the committee deliberates on the policies and procedures for determining compensation. The committee deliberates on and proposes the range of compensation for all directors and Audit & Supervisory Board members, basic compensation, and the basic amounts used as the basis for calculating performance-linked bonuses, and the number of restricted shares to grant (the level of monetary claims for payment as compensation for restricted shares granted) according to the position and rank of each individual director and corporate officer; and deliberates and proposes the amount of the performance-linked bonus for each individual director. The committee then reports its decisions on these matters to the Board of Directors.

The Board of Directors determines the amounts of compensation for directors and corporate officers after sufficient consideration of the recommendations received from the Nomination and Compensation Advisory Committee, as described above.

Composition of compensation



Performance-linked bonus calculation method (FY2022)

The following indicators are used in calculating the performance-linked bonus.

Short-term perspective	<ul style="list-style-type: none"> • Consolidated performance indicator for FY2022: Net sales, operating income, net income, and return on Invested capital (ROIC)* (target at the beginning of (or during) the fiscal year and results) • Consolidated performance results for FY2021: Net sales, operating income, and net income
Medium to long-term perspective	<ul style="list-style-type: none"> • Medium and long-term performance targets established in the NGK Group Vision: Operating income • Creation of new products and new businesses—Keep Up 30 • Initiatives to Reduce CO₂ Emissions

* NGK version ROIC is calculated based on operating income, sales receivables, inventories, and fixed assets.

Basic bonus amount	Short-term perspective		Medium-to-long-term perspective		Individual evaluation (100%)
	Percentage returned on invested capital (100%)	Increase/decrease from previous fiscal year results (100%)	Percentage achieved of medium-to-long-term performance targets (100%)	Percentage achieved on important issues for the current fiscal year (100%)	
Amount paid	Percentage returned on invested capital ← ▲100~+100% →	Increase/decrease from previous fiscal year results ← ▲100~+100% →	Percentage achieved of medium-to-long-term performance targets ← ▲100~+100% →	Percentage achieved on important issues for the current fiscal year ← ▲100~+100% →	Personal assessment ← ▲100~+100% →

(The basic bonus amount is allocated among the various performance indicators. Calculation of the bonus amount for each performance indicator ranges from -100% to +100%, according to the degree of achievement. As a result, the total amount of the performance-linked bonus ranges between -100% to +100% of the basic bonus amount.)

Overview of Restricted Shares

- Restriction period: The period extending from the date on which shares were granted as restricted share compensation for 2022 until the directors (excluding outside directors) and corporate officers resign from their positions as determined by the Board of Directors in advance.
- Conditions for release from restriction period: The restrictions on shares will be released when the restriction period has expired, provided that the individual granted the shares has continuously served in any of the positions determined by the Board of Directors in advance during the period extending from the date on which individual assumed the position until the immediately prior to the conclusion of the first annual Shareholders' Meeting subsequently convened.
- Gratis acquisition of shares by NGK: NGK will acquire all of the shares granted without paying compensation when certain grounds specified in the allotment agreement apply, such as when the grantee has violated laws and regulations.

Amount of compensation for Directors and Audit & Supervisory Board Members

Compensation for Directors and Auditor & Supervisory Board Members (FY2021)

Director category	Total compensation (million yen)	Total compensation by type (million yen)			Applicable officers (people)
		Fixed Compensation	Performance-linked compensation	Stock options	
Directors (excluding Outside Directors)	685	341	278	66	11
Outside Directors	41	41	-	-	3
Audit & Supervisory Board Members (excluding Outside Audit & Supervisory Board Members)	67	67	-	-	3
Outside Audit & Supervisory Board Member	27	27	-	-	2

Notes: 1. The total amount of compensation for directors (excluding outside directors), the total amount of compensation by type, and the number of applicable officers noted above include five directors who resigned from their positions on June 28, 2021 and the compensation each received.

2. The total amount of compensation for Audit & Supervisory Board members (excluding outside Audit & Supervisory Board members), the total amount of compensation by type, and the number of applicable officers noted above include one Audit & Supervisory Board member who resigned from his position on June 28, 2021 and the amount of compensation he received.

Officers receiving total compensation of ¥100 Million or More (FY2021)

Name	Officers category	Company category	Total compensation by type (million yen)			Total compensation (million yen)
			Fixed compensation	Performance-linked compensation	Stock options	
Taku Oshima	Director	Submitting company	68	69	14	152
Shigeru Kobayashi	Director	Submitting company	68	69	13	151

Name	Officers category	Company category	Total compensation by type (million yen)			Total compensation (million yen)
			Fixed compensation	Performance-linked compensation	Stock options	
Hiroshi Kanie*	Director	Submitting company	45	45	10	101
Chiaki Niwa	Director	Submitting company	45	45	10	101

* Resigned on June 27, 2022

Average Employee Compensation and President Compensation

At NGK, the compensation for the President was 19.5 times that of the average employee compensation in FY2021.

(FY2021)

President compensation: 151,000,000 yen

Average employee compensation: 7,731,189 yen

Sustainability

Communication with Shareholders

Open General Meeting of Shareholders

NGK endeavors to hold open General Meeting of Shareholders where its shareholders feel welcome to attend. At these meetings every year, we introduce NGK corporate activities with booths showcasing the company and displaying products explained by NGK staff.

We are also making efforts to expand General Meeting of Shareholders-related information, including the following:

① Mailing convocation notice in advance	Sent 21 days prior to the meeting date
② Disclosing information on the website in advance	Announced four days before convocation notice is sent out (since FY2018)
③ Taking part in the Tokyo Stock Exchange Electronic Voting Platform*	Online voting system made available
④ Posting General Meeting of Shareholders documents on the website	Convocation notices (Japanese/English), results of vote execution, notices of resolution, extraordinary reports published on website Annual Shareholders' Meeting https://www.ngk-insulators.com/en/ir/meeting/

* An electronic voting system operated by Tokyo Stock Exchange. It allows shareholders to vote not only through the conventional printed materials but also online, 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 dialogue with institutional investors. NGK senior management also visits and conducts one-on-one discussions with institutional investors in Japan and overseas.

Activities in FY2021

Activities	Details
Japan	Senior management conducted presentations for analysts and institutional investors twice. They also conducted one-on-one meetings and participated in onsite interviews.
Overseas	Senior management conducted overseas IR meetings targeting analysts and institutional investors twice.
Online IR Library	Included financial reporting information, the timely disclosure of non-financial reporting information, securities reports, annual reports, NGK Report, NGK Group Sustainability Website Data, General Meeting of Shareholders documents, and other information.

[Investor Relations](#) >

Participation in Nomura IR Asset Management Fair

To familiarize individual investors with the details of NGK business and performance, we took part in the Nomura IR Asset Management Fair 2022 (hosted by Nomura Investor Relations Co., Ltd. and cosponsored by Nomura Securities Co., Ltd.).

A total of 76 listed companies and investment firms participated in this year's event, which similar to 2021 was held online in order to prevent the spread of COVID-19.

At our virtual booth we used corporate introduction videos, company guides, NGK reports, and other materials to provide participants with a detailed overview of our company and financial data.



A company representative gives an easy-to-understand online introduction to NGK

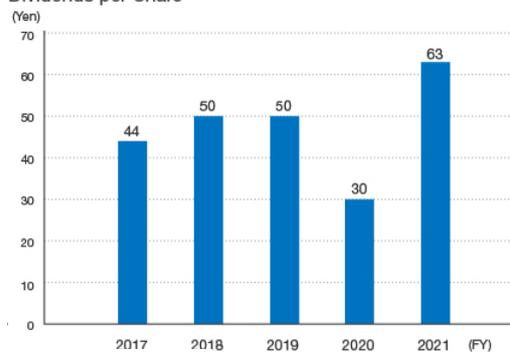
Returning Profits to Shareholders

At NGK, returning profits to shareholders is considered one of management's top priorities. As a basic policy, we aim for management that focuses on shareholders and ROE. We share profits while comprehensively taking account of our business performance, financial structure, and future business development. Our medium-term benchmark for the consolidated payout ratio is around 30%.

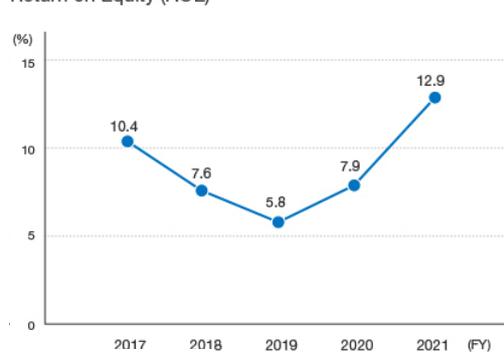
In fiscal 2021, we paid an annual dividend of 63 yen, and the consolidated payout ratio stood at 27.8%.

Looking ahead, we will balance profitability above capital cost with maintaining financial soundness, while proactively returning profits to our shareholders from a medium-to long-term perspective.

Dividends per Share



Return on Equity (ROE)



[Dividend Information](#)



Sustainability

Innovation Management

R&D Expenses

NGK Group R&D Expenses

	FY2017	FY2018	FY2019	FY2020	FY2021
R&D expenses (million yen)	21,100	23,271	22,928	22,448	23,551
R&D expenses as a percentage of net sales (%)	4.7	5.0	5.2	5.0	4.6

Open Innovation

The NGK Group uses open innovation as a means of facilitating collaborative new product development. We pursue open innovation through a variety of approaches, including joint development with outside partners, participation in demonstration testing carried out within the framework of bilateral national agreements, and obtaining unique technologies via acquisition of shares in other companies.

Examples of Open Innovation Initiatives

[Established Ena Electric Power as a step towards making a carbon neutral city a reality](#)

[Established the Environment Innovation Laboratory with the Nagoya Institute of Technology](#)

[Invested in perovskite solar cell spin-off from Kyoto University](#)

Process Innovation

The NGK Group works to achieve process innovation through a variety of approaches, including direct interlinkage of processes, process automation, and manufacturing method innovation. In FY2021, our process innovation efforts contributed to an approximately 1.9% reduction in the cost of sales.

Managing Emerging Markets

The following is the percentage of NGK Group sales coming from emerging markets*.

	2017	2018	2019	2020	2021
Percentage of sales	27	25	24	27	31

The following is the percentage of NGK Group employees in emerging markets*.

	2017	2018	2019	2020	2021
Percentage of employees	30	28	27	23	23

* Emerging markets are defined as all markets outside of Japan, North and Central America, and Europe

Production Measures for Emerging Markets

The NGK Group works to ensure that all of our overseas production bases operate in accordance with the NGK Group Code of Conduct and obtain ISO 9001 or IATF 16949 certification. We also encourage them to carry out quality assurance, quality control, quality improvement, quality-related training, and other activities. In FY2020, NGK Ceramics (Thailand) obtained IATF 16949 certification, and now all production bases are certified. We are working now to secure certification within three years of new sites, including those in emerging markets.

Quality Activities



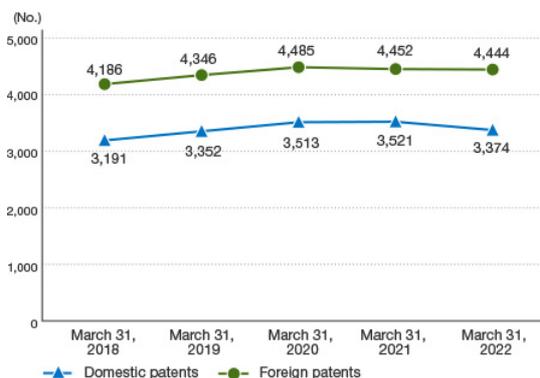
Sustainability

Intellectual Property Management

The NGK Group considers intellectual property (hereinafter referred to as “IP”) rights to be an extremely important management resource. The worldwide acquisition and utilization of rights such as patents, utility models, designs, and trademarks support the NGK Group’s business and R&D. Every year, we hold the Intellectual Property Activity Meeting, where the heads of the IP Department and other departments discuss and formulate IP activity targets based on the business environment and development targets. Progress is checked and followed up on quarterly to promote the development of a strategic IP portfolio.

The IP Department and relevant departments will continue working closely together to promote IP creation activities that contribute to the realization of NGK Group Vision: Road to 2050 and expansion of existing businesses and strive to protect and utilize rights appropriately.

Number of Patents Held



Number of Patents Held as of March 31, 2022

Domestic patents **3,374**

Foreign patents **4,444**

IP Management System

Integrated management of IP for the entire NGK Group is carried out by the IP Department. This department also pursues IP -related activities together with various other departments and divisions.



Responsibilities of the IP Department

- Application for/acquisition of patents, utility models, designs: Establish IP rights for NGK’s R&D achievements to protect corporate assets on a legal basis
- Patent search: Analyze the current patent landscape of other companies to prevent patent infringement risks
- Administration and operation of patent management systems
- Administration relating to acquired patent rights, including maintenance of rights, operation of excellent invention rewards, and cooperation with patent law firms
- Application for/acquisition and maintenance of trademark rights for corporate logos and product trademarks
- Copyrights
- In-house training on IPs

Dissemination of IP Information

The Information Utilization Group takes the lead in disseminating information on search know-how, examples of information utilization, and analysis of technological trends across the entire NGK Group to support the creation process of IPs.

In FY2021, the Information Utilization Group disseminated relevant information on each topic regarding carbon neutrality related to the NGK Group Vision. This included CO₂ isolation and capture technologies among the technological trends gleaned from its analysis of IPs.

IP Training

Training for young engineers

We provide e-learning and seminars with the aim of providing basic training for young engineers and of up-skilling for inventors.

Also, focusing primarily on young engineers in the R&D Department, we conduct training in patent search methods. These methods are taught via individual, computer-based practical training.

Since FY2020, training has been carried out via remote learning in response to the COVID-19 pandemic to encourage participation. In FY2021, we also held exercise-based workshops remotely.

IP Training Provided in FY2021

	Intended participants	Participants
E-learning of Patent Act introduction	Young engineers	48
Small-group workshops	Engineers	144
Seminars to acquire skills for using the IP search program	Engineers	182
Small-group workshops	Engineers in the Business and the R&D Departments	314 (total for 21 sessions)

IP Training

Employee invention reward system to provide rewards for employee inventions

In order to further encourage employees to create excellent inventions, we launched a revamped employee invention reward system, which is divided into four categories: application rewards, registration rewards, implementation rewards, and excellent invention rewards.

Excellent invention rewards honor contributions to the company with large financial rewards and commendations for particularly excellent inventions. These rewards include the Contributory Invention Reward for patents and know-how resulting in remarkable contributions to NGK's business, and the Innovative Invention Reward for patents, patent applications, and know-how which is innovative.

In FY2021, after multiple strict examinations, one was chosen for the Contributory Invention Reward and one for the Innovative Invention Reward.

Addressing IP Risks in foreign countries

To support our business for automotive exhaust purification ceramic products, for which we conduct manufacturing on a global scale, we have built a method for properly managing inventions at overseas plants. NGK promotes the practice of IP management overseas at the same high level as in Japan.

Overseas training of IP Department personnel

In FY2020, a member of the IP Department was dispatched to a patent law firm in the U.S. for one year in order to help us improve the efficiency of our operations by gathering the latest IP information from the U.S., undergoing practical training, and facilitating smoother communications with attorneys.



Staff member pictured with members of a U.S. patent law firm who provided assistance

Sustainability

Compliance Promotion Structure

NGK Group Code of Conduct

The NGK Group Code of Conduct has been compiled as a guideline for everyone who works within the NGK Group so that they are aware of what is expected of them in terms of work-related compliance in order to ensure honesty and reliability in our business activities. It has been translated into 11 languages, including English and French. All NGK Group employees will act with high ethical standards according to this code as they fulfill their social responsibilities throughout the entire supply chain to build societal trust in NGK.

At the beginning of FY2021, the Compliance Committee Chairperson delivered an awareness-raising message to the entire NGK Group about strictly adhering to the Code of Conduct. From February through November, NGK and Group companies in Japan posted awareness-raising posters based on a different theme each month to make the Code of Conduct more well-known.

NGK Group Code of Conduct >

Scope of Application

The NGK Group Code of Conduct applies to all employees and suppliers of the NGK Group. Employees are provided with the NGK Group Code of Conduct and guidebook on putting the Code of Conduct into practice upon joining the company. They also receive job grade-specific training and other instruction.

Non-Compliance Incident Reports

In FY2021, there were no incidents of serious legal non-compliance in the NGK Group.

FY2017	FY2018	FY2019	FY2020	FY2021
0	0	0	0	0

NGK Group Basic Guidelines for Compliance Activities

The idea of what constitutes good compliance activities continues to evolve worldwide amidst a changing social and legal landscape, and the NGK Group requires mechanisms for objectively evaluating and verifying, as well as continually improving, its own activities in light of international norms. It is also important that compliance-related activities as a whole be improved qualitatively by ensuring that compliance-related ideals and values be standardized not only in areas of legal compliance but also in areas such as safety, the environment, and quality. Thus, in April 2021, it was in this context that the new NGK Group Basic Guidelines for Compliance Activities were created in order to codify in writing the NGK Group's basic stance on, and approach to, compliance activities. Based on our NGK Group Basic Guidelines for Compliance Activities, related business groups and divisions are working together to qualitatively improve compliance activities with regard to safety, the environment, quality, exports, competition laws, and the like, so that they are more effective.

Compliance Promotion Structure

The NGK Group has established a Compliance Committee, which reports directly to the president. A Compliance Activity Promotion Subcommittee was established as part of the Compliance Committee to ensure proper execution of the Committee's work.



In FY2021, we asked Group companies to select compliance administrators and compliance officers and began discussions with them to establish the foundations of an effective and efficient compliance structure for the entire NGK Group. The Group Compliance Department is also leading the introduction of innovative training formats in each company using hybrid communication that includes group discussions as well as online and in-person meetings in an effort to enhance learning through interactive education. The goal of pursuing these efforts is to make sure that each NGK Group company will be able to independently formulate, implement, confirm effectiveness, and improve compliance measures in the future.

Mission of the Group Compliance Department

- Embed the idea of “compliance first” within the corporate culture across the NGK Group
- Ensure thorough compliance throughout the NGK Group by promoting compliance activities, which meet international norms and establish mechanisms for ongoing improvement
- As for Group companies outside Japan, promote compliance for our globalized operations by obtaining the most up-to-date information regarding applicable laws and social demands in each region

Mission Achievement-Focused Initiatives of FY2021

- Promoting awareness of NGK Group Basic Guidelines for Compliance Activities and its utilization in department work
- Compliance education (NGK and Group companies in and outside Japan) with a focus on effectiveness
- Adapting to global laws and regulations (competition laws, anti-bribery laws, etc.)
- Operation and maintenance of a whistleblowing system (In Japan: Adapt to revision of the Whistleblower Protection Act, Outside Japan: Adapt to EU Directive on the Protection of Whistleblowers)
- Operational support for quality compliance system

Sustainability

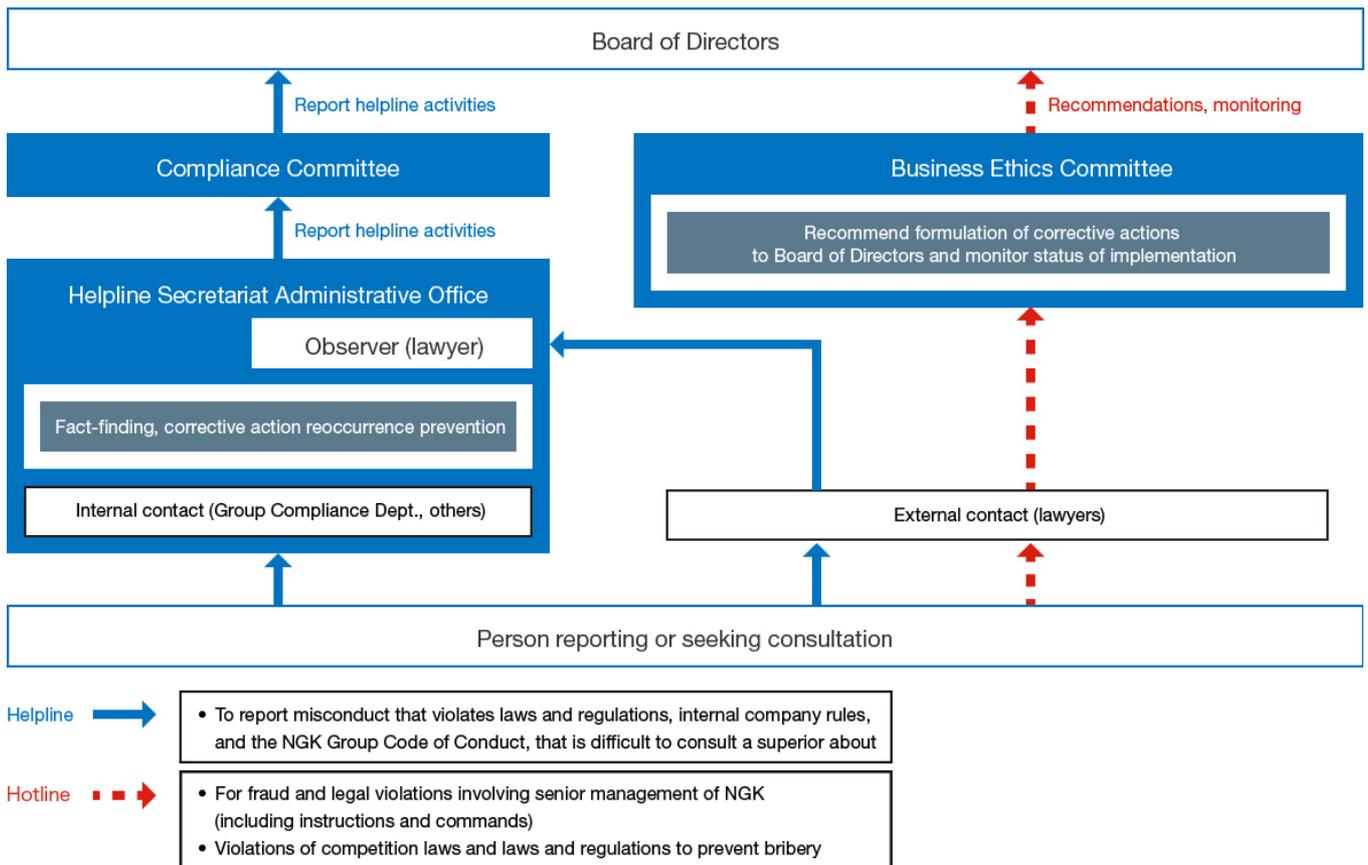
Compliance Initiatives

- [Whistleblowing system ▾](#)
- [Compliance with Laws and Regulations ▾](#)
- [Corruption Prevention Structure ▾](#)
- [Anti-Harassment Measures ▾](#)
- [Compliance Education ▾](#)

Whistleblowing system

Our whistleblowing system (helplines and hotlines) can be used by everyone who works at NGK and every Group company location. This includes officers, employees, employees dispatched on external assignments, advisors, contract employees, temporary employees based on a temporary employment agreement, and resident employees accompanying a service contract. Consultations and reports should be handled by a designated agent in principle, but it is also possible to seek consultation anonymously through an outside hotline. Our company rules guarantee protection of those seeking advice or reporting issues. We have also revised the company rules and established a structure to align with enforcement of the revised Whistleblower Protection Act.

Organization of whistleblowing 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 Code of Conduct and to facilitate quick resolution when issues occur. Each Group company outside Japan has its own helpline. In FY2021, these helplines received requests for consultation on a variety of issues, including harassment, rule violations, and quality issues.

Number of Helpline Consultation Cases (NGK)

FY2017	FY2018	FY2019	FY2020	FY2021
43	75	55	28	43

In FY2021, there were a total of 43 consultations concerning harassment, interpersonal relations, various rules and regulations, and the like. Each case was handled carefully in consultation with outside lawyers, and none of the details of the whistleblowing had an impact on company operations. Hereafter, we will continue to periodically evaluate and improve the effectiveness of the NGK Group Code of Conduct and our compliance measures.

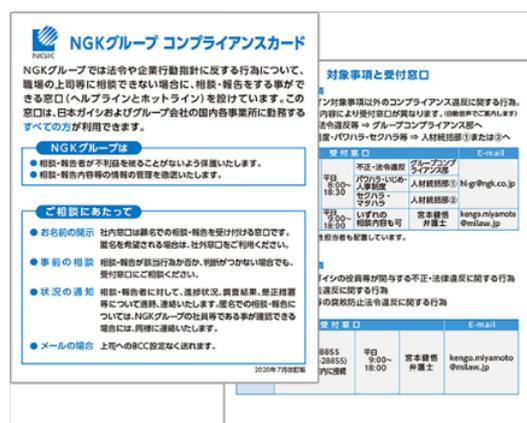
Hotline

We have established a hotline as a whistleblowing system for responding to fraud and legal infractions committed by senior management of NGK, and all violations related to competition laws and anti-corruption laws. Outside lawyers manage the hotline and the Business Ethics Committee, which consists mainly of outside directors, handles issues. The Committee reports these issues to the Board of Directors and takes corrective steps.

We continue to set up hotlines at Group companies outside Japan to respond to fraud and legal infractions committed by senior management, while taking the circumstances in each country into consideration. All Group companies outside Japan have set up hotlines for matters related to competition laws and anti-corruption law-related violations.

Compliance Card

To ensure thorough awareness of the whistleblowing system, we created a Compliance Card that employees could keep with them at all times, and distributed it to all employees at NGK and all Group companies in Japan. Also, in line with the revisions to the Whistleblower Protection Act, in FY2021 we revised our company regulations to allow former employees to contact the helpline/hotline for one year after leaving the company.



Compliance with Laws and Regulations

Observing Competition Laws, other laws and regulations pertaining to business transactions

In addition to mandating compliance with competition laws in the NGK Group Code of Conduct, we have established the Competition Laws Compliance Rules, set forth to comply with international standards. These standards are strictly enforced by the NGK Group. We have established these policies and procedures in order to eradicate unfair business practices and maintain fair and equitable business relationships with our business partners.

We also provide education and training aimed at ensuring widespread awareness and thorough compliance with the Competition Laws Compliance Rules and the Competition Laws Compliance Handbook. The Competition Laws Compliance Activity website we established posts practical manuals to guide compliance with competition laws. The Competition Laws Compliance Handbook was revised in FY2021 to accommodate changes in social conditions.

Anti-Competitive Behavior Incidents

In FY2021, there were no confirmed incidents of anti-competitive behavior in the NGK Group.

FY2017	FY2018	FY2019	FY2020	FY2021
0	0	0	0	0

Strengthening Our Compliance System in Relation to Competition Laws

Year conducted	Regulation development	Creation of internal systems	Education
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 (lawyers) (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 lawyers held at Group companies outside Japan
FY2013			<ul style="list-style-type: none"> Conducted briefing on the Competition Laws Compliance Handbook Invited U.S. lawyers to lecture on competition laws
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. lawyers (subsequently held annually) Conducted study meetings on competition laws at Group companies outside Japan (corresponding to laws and regulations in each country)
FY2015	<ul style="list-style-type: none"> Competition Laws 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 Revised the Competition Laws Compliance Handbook 	<ul style="list-style-type: none"> The Competition Laws Compliance Program was resolved by the Board of Directors Established the Global Compliance Office Contracted Pricewaterhouse Coopers to conduct an unbiased expert review of the implementation status of the NGK Group's Competition Laws Compliance Program and assess the overall oversight and reporting structures in place for NGK Group companies 	<ul style="list-style-type: none"> Conducted study meetings on competition laws for new employees Distributed a DVD on competition laws to Group companies in Japan Upgraded training on compliance with competition laws provided in 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 	<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 outside directors. The program was promoted based on suggestions received from the Committee. Retained PwC Advisory to assess the status of competition law compliance 	<ul style="list-style-type: none"> Expanded seminars led by lawyers in Asia Held seminars on the Companies Act and competition laws for newly appointed executive officers Prepared online-based training aimed at realizing broader training programs (implemented in FY2017 in Japan)

Year conducted	Regulation development	Creation of internal systems	Education
FY2017	<ul style="list-style-type: none"> Created an operating manual for database used to document competition law compliance 	<ul style="list-style-type: none"> Top management of headquarters, Business Groups, and Group companies provided notifications about compliance with competition laws at beginning of term 	<ul style="list-style-type: none"> Online seminars provided to 861 employees in Japan
FY2018	<ul style="list-style-type: none"> Clarified items that should be reported to the hotline when there were violations or fear of violation of competition laws, and revised Competition Laws Compliance Rules Created a working manual for compliance with competition laws 	<ul style="list-style-type: none"> Top management of headquarters, Business Groups, and Group companies provided notifications about compliance with competition laws at beginning of term* 	<ul style="list-style-type: none"> Held seminars on the Companies Act and competition laws for newly appointed directors and executive officers* Held competition law compliance lectures. All executives and managers attended.*
FY2019	<ul style="list-style-type: none"> Revised Competition Laws Compliance Rules at NGK Electronics Devices, Inc. to strengthen that subsidiary's competition laws compliance system 	<ul style="list-style-type: none"> Top management of headquarters, Business Groups, and Group companies provided notifications about compliance with competition laws at beginning of term* 	<ul style="list-style-type: none"> Held seminars on the Companies Act and competition laws for newly appointed executive officers* Held competition law compliance lectures. All key personnel and those designated by competition law compliance managers attended.* Information session provided regarding the Competition Laws Compliance Handbook's key points (on competitor information when creating email and documentation)
FY2020	<ul style="list-style-type: none"> Established the Competition Laws Compliance Activities Portal Site 	<ul style="list-style-type: none"> Top management of headquarters, Business Groups, and Group companies provided notifications about compliance with competition laws* 	<ul style="list-style-type: none"> Held seminars on the Companies Act and competition laws for newly appointed directors and executive officers* Held competition laws compliance lectures attended by executives, all key personnel, and those designated by competition law compliance managers*
FY2021	<ul style="list-style-type: none"> Revised the Competition Laws Compliance Handbook 		<ul style="list-style-type: none"> Conducted comprehensive education for all NGK directors and general managers on handling company violations of competition laws

* These items continue every year

Strict Adherence to Laws and Regulations Relating to Import/Export Management

As part of its full compliance efforts, NGK is engaged in strictly observing and enforcing laws and regulations related to import and export control. Based on the NGK Group Code of Conduct, we stipulate abidance with laws and regulations related to secure export control, and we carry out export control and employee training in accordance with 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 has screened exports to determine whether export licenses are required and has recorded screening results in a security export control database. However, since October 16, 2017, we have moved to a security export control system (TTP) and are performing management via this new system. Furthermore, export management with respect to the

export of certain products is conducted under the Japanese government's AEO (authorized economic operator) Program. We have used an export/import cargo management ledger to fulfill our obligations to track and record imports and exports; however, since our switch to a security export control system (TTP), we have been using the system's shipment ledger to track and record exports. We continue to use an import cargo control ledger for imports. Each department performs voluntary inspections of imports and exports under the AEO Program at the start of the fiscal year. In addition, we use NACCS data (Nippon Automated Cargo and Port Consolidated System) to verify the completeness of export/import cargo management ledgers and shipment ledgers. We have achieved nearly 100% completeness for both imports and exports.

Familiarization with the Export/Import Handbook

NGK also makes efforts toward thorough compliance with the Export/Import Handbook, which was published in FY2012 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 content of the handbook through study meetings related to export/import management conducted in each business division.

Study meetings on the AEO Program and export/import management are held one or more times per year targeting relevant staff in divisions responsible for export and import activities. In FY2021 these meetings were held not only in-person, but via web conferencing and newsletters. The meetings were held a total of 32 times, with 963 employees in attendance.

Independent review of Competition Laws Compliance Program

Since FY2015, NGK has contracted PwC Advisory LLC (hereinafter, "PwC") as an independent compliance professional. We retain PwC to perform an annual review of the NGK Group's implementation of its competition law compliance program according to the Competition Laws Compliance Rules. PwC also assesses the overall oversight and reporting structures in place for NGK Group companies, both in Japan and overseas locations. In FY2017, PwC began conducting interviews with the directors overseeing NGK's various business groups in order to assess the tone of each director's approach toward competition law compliance and further enhance their awareness of these efforts. The results of these reviews are used in operating and improving the competition law compliance program and other purposes.

Corruption Prevention Structure

The NGK Group Code of Conduct states, "We will never in any manner undertake bribery" and "We will undertake business activities with common sense and based on strict compliance and ethics." To this end, we implement anti-bribery measures in order to ensure fair and transparent transactions. In FY2015, we formulated anti-bribery rules for dealing with foreign public officials in order to ensure compliance with anti-bribery laws as well as ethical standards for business conduct. These rules prohibit engaging in acts of bribery, either directly or indirectly through a third party (entertainment, gifts of money and/or goods). The rules likewise prohibit payments to public officials to facilitate administrative procedures. Our Auditing Department also began reviewing overseas money transfers and entertainment expenses from FY2017.

Conducting Anti-Bribery Training

In addition to having in-house lecturers provide job grade-specific training to NGK employees, in FY2019 we began conducting training for sales department employees that incorporates interactive lectures by outside lawyers and group discussion of case studies. We also arrange attorney-led seminars and other training at all Group companies.

Corruption and Bribery Incidents

In FY2021, there were no confirmed incidents of corruption or bribery in the NGK Group.

FY2017	FY2018	FY2019	FY2020	FY2021
0	0	0	0	0

Anti-Harassment Measures

In FY2021, our measures to combat harassment in the workplace included the position-based lectures we have carried out in the past, plus a continuation of the video-based training targeting executives and employees at NGK and Group companies in Japan that we held in FY2020 out of consideration for the risk of infection with COVID-19. It defined both sexual harassment and harassment from a position of power, explained how to handle them in accordance with workplace regulations, and used multiple case studies to deepen participant understanding of what constitutes harassment and how it can be prevented. We continue working to prevent harassment before it occurs and improve the workplace environment.

Anti-Harassment Training

Item	FY2017	FY2018	FY2019	FY2020	FY2021
Sessions held	5	5	5	4	4
Number of participants	350	464	419	417	448

Compliance Education

Compliance Education 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 to introduce case studies. Since FY2018, we have included quality compliance and contract observance as part of our career education courses.

Compliance Education Conducted in FY2021 (Overall)

Name	Target	Content	Instruction Format	Number of sessions
Career education	New hires	Compliance basics, competition laws, anti-bribery regulations for dealing with foreign officials	Training by an in-house instructor	1
	Promoted or career-change employees	Compliance basics	Video presentation	1
	Mid-career hires	Compliance basics, competition laws, anti-bribery regulations for dealing with foreign officials	Video presentation	1
	Newly appointed supervisors	General compliance, competition laws, anti-bribery regulations, quality compliance, contract observance, security export control	Video presentation	1
	Newly appointed managers	General compliance, competition laws, anti-bribery regulations, quality compliance, contract observance, security export control	Video presentation	1
	Managers promoted to second grade	Compliance (including quality compliance)	Video presentation	1
Training for employees scheduled for postings abroad (global training)	Employees scheduled for postings abroad	Competition laws, anti-bribery regulations, security export control	Video presentation	1

Name	Target	Content	Instruction Format	Number of sessions
Compliance education	Managers and sales staff of Group companies outside Japan	Compliance basics, competition laws, anti-bribery regulations for dealing with foreign officials	Lectures provided by lawyers and paper materials-based in-house training	19 (24 sites)
	General employees of NGK and Group companies in Japan	Compliance, harassment prevention, whistleblowing system	Video presentation	1
	Sales staff of NGK and Group companies in and outside Japan	Anti-bribery regulations for dealing with foreign public officials	Lawyer-led seminar	4
	Executive officers	Competition laws	Lawyer-led seminar	2
	Newly appointed executive officers	Companies Act and competition laws	Lawyer-led seminar	1
	Managers and sales staff of NGK and Group companies in Japan	Competition laws	Video presentation	1
	Executive officers and general managers	Lectures on property inheritance	Seminar by executive officer or General Manager of Group Compliance Department	4
Laws and Compliance Seminars	Managers and other targets depending on content	May Export controls for technical information	Video presentation (in-house instructor)	1
		July Electronic contracts	Video presentation (in-house instructor)	1
		September Latest trends in insider trading regulations	Video presentation (in-house instructor)	1
		November Latest trends in anti-bribery regulations	Video presentation (outside lawyer)	1
		January Handling revisions to the Electronic Books Maintenance Act	Video presentation (in-house instructor)	1
		March Act on the Protection of Personal Information - Explanation of revised law and our company's response -	Video presentation (in-house instructor)	1
Other training	Directors and managers of NGK and Group companies in Japan	Quality compliance seminar "Thorough Quality Compliance" - Reviewing NGK inspection non-conformities -	Training by executive officers	1
	Business Divisions and Group companies in Japan	Competition laws, anti-bribery regulations, Subcontract Act	Training by an in-house instructor	5

Competition Law Education Conducted in FY2021

Name	Target	Content	Number of sessions
Training for newly appointed directors	Newly appointed directors and executive officers	Outside lawyer-led live seminar	2
Competition law compliance lectures	All directors, managers, and sales staff of NGK and its Group companies in Japan	Streamed video of outside lawyer-led live seminar	2
Compliance training for Group companies outside Japan	Managers and sales staff of Group companies outside Japan	Lawyer-led live seminar and online seminar; seminar conducted by an internal lecturer; conducted using paper-based resources	19 (25 sites)
Training on competition laws by internal lecturer	Targets depend on content	Division-requested on-site training; training by Legal Department staff	2

Anti-Bribery Training Conducted in FY2021

Name	Target	Content	Number of sessions
Training for sales staff	Sales staff in Japan and some Heads of Group companies outside Japan	Anti-bribery regulations for dealing with foreign public officials	2
Compliance education	Managers and sales staff of Group companies outside Japan	Outside lawyer-led live seminar and online seminar; seminar conducted by an internal lecturer; conducted using paper-based resources	16 (23 sites)

Other Dissemination Activities

We post the Compliance Newsletter on the company's intranet once a month. The Newsletter features a four-frame cartoon that explores familiar themes followed by detailed explanations of what we can learn from these examples.

In FY2017, we began making October the annual compliance strengthening month, during which we do things such as put up educational posters and inform employees about the whistleblowing system.

In FY2021, we trialed a Compliance Activities Award System and have begun to put it into practice from FY2022. We give awards for compliance activities, from each department and Group companies, that are particularly independent and original. They are then publicized throughout the NGK Group as good examples.

コンプライアンス便り Vol.57

今回のテーマ：外見を褒めただけなのに…



褒めつつも、相手は不愉快に思うことがあります。 相手の受け取り方を考えて発言しましょう。

ある日の朝、A部長は出社してきた新入社員Bさんに対して、「おはよう！ Bさんは、今日もおしゃれだね」と声をかけた。それを聞いたBさんは、複雑な表情で自席についた。苦笑いを浮かべたBさんを見て、「どうしたの？」と話しかけた先輩社員Cさん。Bさんは、「実は…」と、先ほど部長から言われたことを話した。それを聞いたCさんが、「A部長に悪気はないと思うけど、Bさんが困っていたことを私から伝えておくね」と言うと、Bさんはほっとしたようだ。

その後、CさんはA部長に、「言われた方の気持ちも考えて発言しないとダメです」「外見に褒めて

ほしくない人も、いるんですよ」と注意をした。A部長は、はつちの悪そうな表情で、「褒めつつもただただただだね」と言った。

A部長はBさんの外見を褒めて、気分良く仕事をやらせたいと思いましたが、言われたBさんや相手を聞いたCさんは、それは受け取らず、不愉快に思いました。なぜA部長は注意されたのでしょうか。そして、どのように考えるべきなのでしょう。今回は、「褒めるつもりで発言したことが、相手を不愉快にさせてしまうケース」について学びましょう。

この事例はフィクションです。

Note: Provided by "Compro Custom" compliance training tools service

Themes Covered in the Compliance Newsletter in FY2021

April	If you push yourself to get to work...
May	Let's greet each other
June	An open workplace
July	Work advice
August	Discriminatory posts on social media
September	Long working hours when telecommuting
October	Compliance strengthening month
November	Information leaks in web conferencing
December	Human rights week
January	Countermeasures against infection
February	Working with only a vague understanding
March	Television when telecommuting

Risk Management

[Risk Governance](#) | [Business Continuity Plan \(BCP\) Initiatives](#)

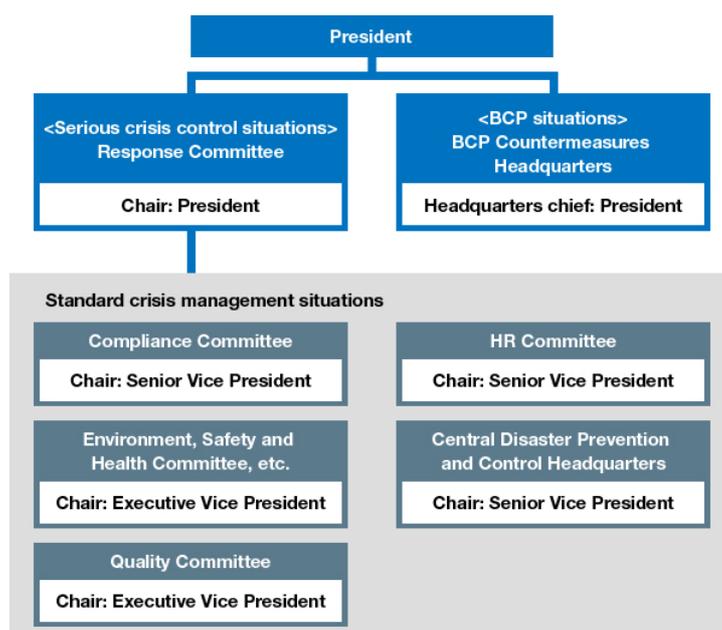
Risk Governance

Basic Approach

The NGK Group addresses the issue of serious risk by empowering the following committees to facilitate risk avoidance and prevention, in accordance with the Basic Rules of Crisis Management. Additionally, in the event of some particularly significant risk, the Senior Vice President in charge of the Corporate Planning Office can call a meeting, which would include the president, to develop countermeasures.

In times of increasing socio-economic uncertainty, it is important to have a heightened awareness of risk and to act before risks turn into crises. Therefore, in addition to the five committees, which we maintain in order to oversee matters of day-to-day risk, we also have in place a system by which top management can coordinate a rapid response to growing risks.

Risk Management Framework



Risk Identification Process

All risks discovered through the standard risk management process, which have the potential to affect the operational or financial situation of the Group are collected, reevaluated, and serious risks were identified in FY2019. The ESG Committee (former name in 2019) then deliberated and designated which identified risks need to be managed by the Group as a whole.

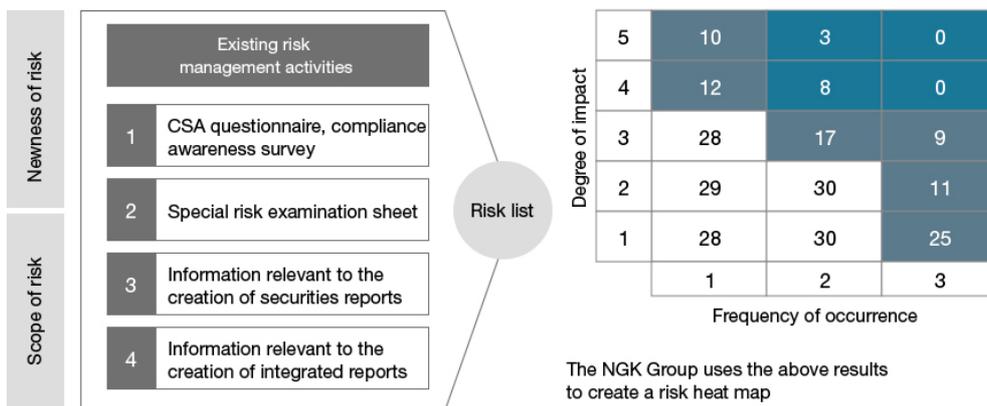
In FY2021 we began considering building a company-wide risk management framework which includes the risk identification process, and we aim to implement it in FY2022.



Risks from existing activities are collected and made into a list

Each risk is evaluated along a standardized evaluation axis, and serious risks are identified

ESG Committee deliberation is followed by a report to the Board of Directors and Executive Committee



The NGK Group uses the above results to create a risk heat map

Risks, Risk Summaries, Risk Responses

Risks	Summary	Response
1. Business operation risks	All operations	
	<ul style="list-style-type: none"> Demonstrations, terrorism, war, infectious or communicable disease, and other unforeseen matters 	<ul style="list-style-type: none"> Construct globally distributed, alternative systems
	(1) Environment Business	
	<ul style="list-style-type: none"> Changes linked to decline in demand for internal combustion engine vehicles 	<ul style="list-style-type: none"> Develop and launch new and high-performance products in line with stronger exhaust regulations
	<ul style="list-style-type: none"> Drop in market share due to rising competition from Chinese market 	<ul style="list-style-type: none"> Strengthen competitiveness via technical responsiveness that anticipates environmental regulations, and via capacity to ensure supply stability
	<ul style="list-style-type: none"> Decline in demand due to downturn in business, delayed timing of regulations, or other factors 	<ul style="list-style-type: none"> Respond appropriately to the content and timing of environmental regulations and trends in demand
	(2) Digital Society Business	
	<ul style="list-style-type: none"> Greater than expected decline in semiconductor demand 	<ul style="list-style-type: none"> Work together with direct customers who manufacture semiconductor manufacturing equipment, and make revisions to equipment capacity and personnel and production systems, etc., where appropriate
	<ul style="list-style-type: none"> Drop in market share due to delayed responsiveness to customer needs 	<ul style="list-style-type: none"> Differentiation through our unique materials, design, and manufacturing technologies Improve product supply capacity
	<ul style="list-style-type: none"> Significant changes in semiconductor manufacturing process due to innovative invention 	<ul style="list-style-type: none"> Carefully monitor semiconductor manufacturing process trends and revise production systems where appropriate to ensure quick response to changes in demand
<ul style="list-style-type: none"> Decreased demand for final consumer goods Decreased investment in portable base stations and data centers 	<ul style="list-style-type: none"> Carefully monitor customer trends and review personnel and production systems where appropriate to ensure quick response to changes in demand 	
<ul style="list-style-type: none"> Inability to develop new technology or release products in response to customer needs 	<ul style="list-style-type: none"> Carefully monitor customer trends and pursue timely technological development 	

Risks	Summary	Response
<p>1. Business operation risks</p>	(3) Energy & Industry Business	
	<ul style="list-style-type: none"> — Spread of competitors' products, such as lithium-ion batteries, that use innovative technologies 	<ul style="list-style-type: none"> — Point out superior points of NAS batteries (large capacity, long life) — Strengthen partnerships with leading overseas companies — Utilize government support measures
	<ul style="list-style-type: none"> — Changes in the energy policies of each country — Capital investment cutbacks by electric power companies — Adoption of polymer insulators in the Japanese market 	<ul style="list-style-type: none"> — Carefully monitor energy policy trends in each country and revise production systems where appropriate to ensure quick response to changes in demand
<p>2. R&D-related risks</p>	<ul style="list-style-type: none"> — Drop in market share due to growth of competition in kilns for lithium-ion battery cathode materials and electronic components 	<ul style="list-style-type: none"> — Inability to achieve adequate results with the input received due to increasingly complicated technological competition — A total of 300 billion yen will be set aside for research and development expenses over the next 10 years, 80% of which will be allotted to the carbon neutrality (CN) and digital society (DS) — Set a target of 100 billion yen in sales from new products and new businesses (New Value 1000) by 2030 — Establish a new Corporate NV Creation based primarily on marketing
<p>3. Legal compliance, human rights and safety, and quality-related risks</p>	(1) Legal compliance-related risks	
	<ul style="list-style-type: none"> — Decline in NGK Group's reputation due to actions in opposition to societal norms with regard to legal and regulatory compliance, respect for human rights, contract compliance, etc 	<ul style="list-style-type: none"> — Utilize employee training and handbook distribution to ensure employees are familiar with relevant laws and regulations and have a more compliance-focused mindset — Establishment of the NGK Group Basic Guidelines for Compliance Activities in accordance with international standards — The Business Ethics Committee, which comprises outside directors and compliance officers, watches out for serious improprieties or legal/regulatory violations — Reduce the possibility of compliance violations through a whistleblowing system
	(2) Human rights and safety-related risks	
<ul style="list-style-type: none"> — Human rights violations in the Group's business activities 	<ul style="list-style-type: none"> — Formulation of the NGK Group Human Rights Policy — Issuance of statement on the UK Modern Slavery Act — Compliance with international regulations related to human rights — Provision of a safe and enjoyable work environment that is comfortable to work in for all 	
<ul style="list-style-type: none"> — Employee occupational hazards, illness, or physical and mental health problems 	<ul style="list-style-type: none"> — In accordance with NGK Safety and Health Policy, identify serious hazard risks and use risk assessment to facilitate strengthening of preventative measures — Follow up on employees who work long hours, and conduct job grade-specific mental health education 	

Risks	Summary	Response
<p>3. Legal compliance, human rights and safety, and quality-related risks</p>	<p>(3) Quality-related risks</p>	
	<ul style="list-style-type: none"> — Quality-related risks such as loss of trust or profits, or contraction in growth, due to serious market complaints, contractual violation, or other unsatisfactory operations 	<ul style="list-style-type: none"> — Have Quality Management Department perform monitoring of each Business Group's quality activities, in line with NGK Quality Policy and under direct supervision of senior management — Regarding serious issues, convene quality review meetings in order to find a solution quickly — Establishment of Four Rules for Quality Activities — Company-wide deployment of quality risk elimination process activities
<p>4. Information systems-related risks</p>	<ul style="list-style-type: none"> — Negative impact on societal trust or business continuity due to shutdown of data processing, or to theft, destruction, manipulation, loss, etc., of data, following external cyber-attack or unauthorized system access, or after unexpected system failure or security issue 	<ul style="list-style-type: none"> — Establishment of an IT security system based on common standards within the Group — Conduct information security training for employees — Appropriate application and management of internal information assets
<p>5. Currency exchange, capital, and procurement-related risks</p>	<ul style="list-style-type: none"> — Decreased sales and profits and deterioration of business performance due to strong yen — Risk of negative impact on business operations, performance, and financial situation of NGK Group as a result of financing difficulties stemming from serious regional financial crises and other factors 	<ul style="list-style-type: none"> — Keep production close to local demand centers, perform financing in local currency, and optimize purchasing according to currency exchange situation — Hedge risks with forward foreign exchange contracts and other financial instruments
<p>6. Materials procurement and supply chain risks</p>	<ul style="list-style-type: none"> — Rise in prices of certain materials and energy in each region 	<ul style="list-style-type: none"> — Appropriately reflect risk in sale price — Reduce costs through competitive purchasing, design revisions, and other means
	<ul style="list-style-type: none"> — Delays in materials procurement and backlogged shipments to customers due to supply chain disruptions 	<ul style="list-style-type: none"> — Inventory control — Diversification of suppliers
<p>7. Climate change and disaster-related risks</p>	<ul style="list-style-type: none"> — Deterioration in business performance due to additional costs incurred by future international GHG regulations, environmental taxes, carbon taxes, etc — Locations facing operational difficulties due to water damage from sea level rise, increased size and magnitude of typhoons, and increased frequency of local torrential rains caused by global warming, or major disasters, fire, or other serious incidents or accidents 	<ul style="list-style-type: none"> — Disclosure of information on risks and opportunities based on recommendations from the Task Force on Climate-Related Financial Disclosures (TCFD) — Formulation of NGK Group Environmental Vision — Development and introduction of products and services that contribute to the realization of a carbon-neutral society — Aim to achieve net zero CO₂ emissions by 2050
	<ul style="list-style-type: none"> — Serious damage to facilities at production bases due to events beyond expectation — Long-term supply difficulties due to impacts on the local infrastructure where plants are located by events beyond expectation — Negative impact on manufacturing and sales due to emergence and spread of a major infectious disease like COVID-19 	<ul style="list-style-type: none"> — Promote business continuity plan (BCP) for entire Group — Decentralize production sites for main businesses — Increase number of suppliers — Reduce susceptibility of buildings and facilities to natural disasters — Guarantee safety of employees

Legal Risk Management in Overseas Subsidiaries

The NGK Group is working on understanding better legal risk management by overseas subsidiaries to minimize risks which become global and varied due to overseas business expansion.

We ask all overseas subsidiaries to report information pertaining to the status of lawsuits, legal affairs and consultation with lawyers twice a year, and whistleblowing system usage, export controls and access to legal-related information once a year. Major issues mentioned in such reports are reported to and shared at the Compliance Committee. Consultations from overseas subsidiaries are handled by the legal department and by lawyers, if necessary, to avoid risks.

Global Risks Lecture

In January of FY2021 we held a Global Risks Lecture for those in management positions. In addition to touching on the diversification of global risks, governmental and societal risks, and their relationship to business, the lecture explained what global risks companies should focus on, and essential risk management for business management.

Identifying and Preventing Risks Based on Questionnaire

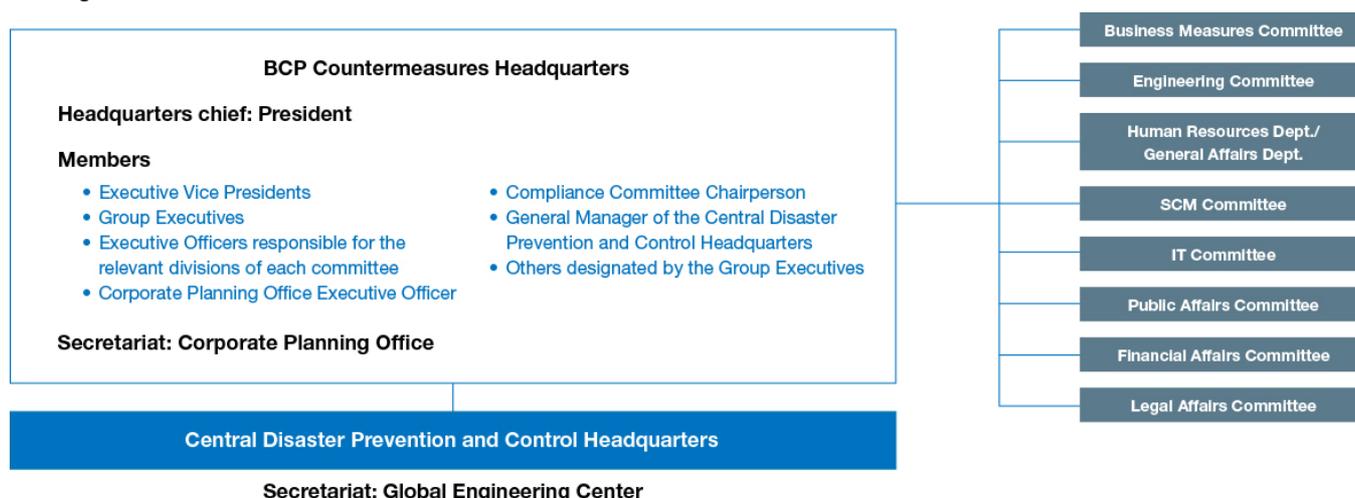
As part of efforts to enhance risk management practices, in FY2021 NGK and its Group companies in Japan conducted the third CRS (Corporate Risk Survey).

Combining the previously administered CSA (Control Self-Assessment) questionnaire and the compliance awareness survey, the CRS checks the understanding of respondents regarding the possibility of risk and its implications with the goal of grasping and preventing various potential risks arising from daily business operations. Based on the results of the survey, the relevant divisions and departments formulate and implement measures to reduce risks.

Business Continuity Plan (BCP) Initiatives

At NGK, we have established the BCP Countermeasures Headquarters under the direction of the president as an organization to carry out operation and maintenance of our business continuity plan, with the aim of respecting human life and cooperating with the local community. It promotes our business continuity plan (BCP) throughout the entire NGK Group. Measures taken in preparation for putting our BCP into operation include the establishment of multiple manufacturing bases and procurement sources, damage mitigation measures related to buildings and equipment, and employee safety assurance. We also conduct emergency drills presuming a major disaster with the aim of enhancing our ability to cope with a crisis in the event a disaster occurs. During these drills, participants are instructed to take real action according to the plan. This helps us to identify even small issues with each process and procedure and use our findings to improve the BCP. In addition, the BCP Secretariat leads the way in working to ensure business continuity by collecting information early on and implementing countermeasures in response to procurement difficulties stemming from the spread of infectious disease or changes in the global situation.

BCP Organizational Structure



* In the event of an emergency or disaster, the Central Disaster Prevention and Control Headquarters will switch over to the Central Disaster Control Headquarters to respond to the disaster.

FY2021 Initiatives

- Education**  — Carried out video-based earthquake and water disaster training for all NGK Group employees in Japan
- Awareness** 
 - Included special feature articles on household disaster preparedness in the MIZUHO in-house newsletter
 - Conducted a survey of household disaster prevention efforts
- Training**  — Revised our training scenarios to make them more effective
- Other**  — Revised the action plan based on insights gleaned from the prior fiscal year's practical BCP training

Future Initiatives

- Increase the level of training further (e.g., hold BCP training for operational units)
- Ongoing practical BCP training
- Level-up training to increase effectiveness of BCP
- Ongoing support for home disaster prevention initiatives (seminars, follow up on progress via surveys, etc.) from the perspective of respect for human life, which is the top priority of BCP

Sustainability

Information Security

Information Security Measures

Within the NGK Group, proper management and operation of information assets is a collaborative effort carried out by the General Affairs Department and ICT Department, in conjunction with other relevant administrative divisions and in line with the Basic NGK Group Information Security Policy. Every employee who uses a computer or other information-processing devices as part of their job is provided with our Electronic Information Security Handbook and is trained in the proper use of their devices, as well as made aware of the need to contact the General Affairs Department and ICT Department if the devices are lost, infected with a computer virus, or otherwise compromised. Also, under the rules of employment, employees are subject to disciplinary action if their improper use of information devices results in the leaking of confidential information or some other result that significantly impacts the company.

Meanwhile, personnel from NGK's ICT Department visit several Group companies each year to conduct on-site checks and provide guidance on their implementation of IT security measures. In FY2021, due to the impact of the global COVID-19 pandemic, these visits to overseas Group companies were not carried out; however, online sessions were held in order to share with them the IT security enhancement policies and measures implemented over the medium term. Additionally, we established a meeting body called the IT Global Meeting. This meeting body is split into the four regions of North and Central America, Europe and Africa, China, and Asia Pacific. Group companies located within each region participate in regional meetings where they discuss NGK's IT and DX strategies, including IT security.

Basic NGK Group Information Security Policy >

Formulation of the 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. Therefore, in FY2010, we formulated the NGK Group IT Security Standards with the goal of developing an IT security structure based on commonly shared Group standards and raising the bar when it comes to IT security.

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

Information security training

We conduct training sessions throughout the year to ensure strict adherence to information security among all employees.

We offer training for newly hired employees and newly promoted supervisors and managers to NGK employees while e-learning is offered to NGK employees and employees of some Group companies in Japan.

Item	Participants	Participation rate
Training for newly hired employees	105	100%
Training for newly promoted supervisors	116	100%
Training for newly promoted managers	68	100%
E-learning	5,601	100%

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

Ensure IT security against cyberattacks

As a countermeasure against cyberattacks, NGK is strengthening each category of protection, detection, response, and recovery from cyberattacks following the cybersecurity framework announced by the National Institute of Standards and Technology (NIST) of the U.S.

In FY2021, we worked in particular to improve and strengthen our detection capabilities. This included upgrading our anti-virus software on all company devices and linking this with log monitoring functions provided by an outside specialist. We prepared a SOP for response to and recovery from cyberattacks based on the latest trends ensuring we are prepared for any cyber contingency.

In FY2022 and beyond, we plan to conduct annual training exercises on IT security incidents as well as verify and upgrade the effectiveness of relevant documents.

Privacy Policy and Organization for Personal Information Protection

The NGK Group has established internal rules on privacy protection compliant with the Amended Act on the Protection of Personal Information of Japan which took effect from April 1, 2022 in an effort to ensure strict handling, management and protection of personal information obtained from customers. In FY2015, NGK formulated and published our Basic Policy on the Proper Handling of Specific Personal Information in response to the enforcement of the Act on the Use of Numbers to Identify a Specific Individual in Administrative Procedures.

[Privacy Policy](#)



Sustainability

ESG Data Section

Environmental

Preventing Global Warming

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Energy-origin CO ₂	All NGK Group manufacturing sites	-	84.1	86.8	87.3	75.6	61.5	10 ⁴ metric tons
GHG emissions (Scope 1: Energy-origin CO ₂)	NGK Group	-	32.0	32.3	30.9	26.4	30.9	10 ⁴ metric tons of CO ₂
GHG emissions (Scope 2: Energy-origin CO ₂)	NGK Group	-	52.1	54.5	56.4	49.2	32.5	10 ⁴ metric tons of CO ₂
GHG emissions (Scope 3) (FY2017-FY2020: Non-consolidated, FY2021: Consolidated)	NGK	Total	87.7	104.7	97.6	89.3	344.9	10 ⁴ metric tons of CO ₂
		Purchased goods and services (including resale items)	76.2	86.3	84.2	77.0	178.8	10 ⁴ metric tons of CO ₂
		Capital goods (capital investment)	8.4	15.2	9.9	9.0	13.4	10 ⁴ metric tons of CO ₂
		Energy	1.6	1.8	1.6	1.5	8.6	10 ⁴ metric tons of CO ₂
		Transport (upstream)	1.1	0.8	1.4	1.3	18.8	10 ⁴ metric tons of CO ₂
		Waste	0.1	0.3	0.2	0.2	1.2	10 ⁴ metric tons of CO ₂
		Business trips	0.1	0.1	0.1	0.1	0.3	10 ⁴ metric tons of CO ₂

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
GHG emissions (Scope 3) (FY2017-FY2020: Non-consolidated, FY2021: Consolidated)	NGK	Employee commutes	0.2	0.2	0.2	0.2	0.9	10 ⁴ metric tons of CO ₂
		Use of sold products	-	-	-	-	122.6	10 ⁴ metric tons of CO ₂
		Disposal of sold products	-	-	-	-	0.4	10 ⁴ metric tons of CO ₂
CO ₂ (non-energy origin CO ₂)	All NGK Group manufacturing sites	-	0	0	0	0	0	10 ⁴ metric tons of CO ₂
Total GHG other than CO ₂	All NGK Group manufacturing sites	Total	-	1	1	0	1	10 ⁴ metric tons of CO ₂
		CH ₄	0.0	0.0	0.0	0.0	0.0	10 ⁴ metric tons of CO ₂
		N ₂ O	0.0	0.0	0.0	0.0	0.0	10 ⁴ metric tons of CO ₂
		HFC	0.4	0.4	0.3	0.3	0.3	10 ⁴ metric tons of CO ₂
		PFC	0.0	0.0	0.0	0.0	0.0	10 ⁴ metric tons of CO ₂
		SF ₆	0.0	0.1	0.2	0.0	0.1	10 ⁴ metric tons of CO ₂

Consumption of Each Energy

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Electric power	All NGK Group manufacturing sites	0.88	0.93	0.95	0.88	0.98	TWh
Gas (natural gas conversion)	All NGK Group manufacturing sites	140	142	137	116	137	Million Nm ³
Oil (light oil conversion)	All NGK Group manufacturing sites	2.55	2.11	1.74	1.65	1.64	Million L

Conservation of Water Resources

Item		Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Water withdrawal	Tap water/industrial water	All NGK Group manufacturing sites	3.690	3.910	3.710	3.135	3.720	Million m ³
	Groundwater		0.630	0.620	0.620	0.640	0.614	Million m ³
	Rainwater		0.002	0.002	0.001	0.002	0.002	Million m ³
	Total		4.322	4.532	4.331	3.777	4.336	Million m ³
Water discharge	Rivers	All NGK Group manufacturing sites	0.782	0.767	0.828	0.734	0.733	Million m ³
	Lakes		0.000	0.000	0.000	0.000	0.000	Million m ³
	Sea		1.363	1.330	1.618	1.201	1.218	Million m ³
	Sewerage		0.378	0.382	0.419	0.376	0.458	Million m ³
	Factory complex processing		0.340	0.319	0.241	0.207	0.238	Million m ³
	Other		0.003	0.012	0.013	0.017	0.057	Million m ³
	Total		2.866	2.810	3.140	2.534	2.704	Million m ³
Volume recycled		All NGK Group manufacturing sites	0.090	0.090	0.090	0.066	0.063	Million m ³
Recycling rate		All NGK Group manufacturing sites	2.0	2.0	2.0	1.7	1.5	%

Raw Materials

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Raw materials	All NGK Group manufacturing sites	19.2	18.0	14.7	13.9	15.8	10 ⁴ metric tons
Recycled materials	All NGK Group manufacturing sites	0.4	0.4	0.4	0.4	0.4	10 ⁴ metric tons
PRTR	All NGK Group manufacturing sites	707	694	589	506	447	Metric tons
Water withdrawal	All NGK Group manufacturing sites	4.32	4.53	4.33	3.78	4.34	Million m ³

Chemical Management System

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
VOC	All NGK Group manufacturing sites	145.3	119.7	68.4	82.9	77.0	Metric tons
PRTR-listed substances (emissions into atmosphere)	All NGK Group manufacturing sites	154.2	127.5	76.3	89.4	83.5	Metric tons

Discarded Materials

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Discarded materials	All NGK Group manufacturing sites	5.8	5.8	5.4	4.6	5.4	10 ⁴ metric tons
Basic unit per net sales	All NGK Group manufacturing sites	13.3	12.8	12.5	10.35	10.5	Basic unit per net sales
Reduction rate against BAU	All NGK Group manufacturing sites	22	20	24	24	26	%
Recycled	All NGK Group manufacturing sites	4.4	4.3	4.3	3.7	4.2	10 ⁴ metric tons
Disposed of externally	All NGK Group manufacturing sites	1.5	1.6	1.1	0.8	1.2	10 ⁴ metric tons
Water discharge	All NGK Group manufacturing sites	2.865	2.809	3.140	2.534	2.738	Million m ³
PRTR-listed substances (discharge into bodies of water)	All NGK Group manufacturing sites	0.4	0.3	0.5	0.3	0.6	Metric tons

Products and Services Contributing to Environmental Protection

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Sales growth for products contributing to environmental protection	NGK Group	54	52	59	57	59	%

Environmental Accounting

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Capital investment	NGK and Group companies in Japan	6.0	14.8	13.6	26.8	9.4	100 million yen
Expenditures	NGK and Group companies in Japan	29.0	27.9	29.8	35.0	41.4	100 million yen
Economic benefits	NGK and Group companies in Japan	6.3	4.3	5.7	4.5	6.9	100 million yen
Cost-effectiveness	NGK and Group companies in Japan	21.7	15.5	19.2	12.9	16.7	%
CO ₂ eco-efficiency*	Consolidated	117	115	109	122	187	%
Discarded materials eco-efficiency*	Consolidated	139	144	146	176	172	%

* FY2013 = 100%

Environmental Management System

Item	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
NGK	4	4	4	4	4	Number of bases certified
Domestic Group	20	20	22	18	19	Number of bases certified
Overseas Group	18	20	21	21	21	Number of bases certified

New manufacturing sites that have been in operation for less than two years are excluded.

Social

Quality Management System

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Percentage of ISO 9001 certified sites	NGK Group	97	97	97	100	100	%

Employees

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of employees*	NGK	-	4,142	4,119	4,224	4,316	4,382	Persons
	NGK Group	-	18,783	20,115	20,000	19,695	20,099	Persons
Number of employees by gender	NGK	Total	4,136	4,355	4,529	4,650	4,745	Persons
		Male	3,621	3,807	3,951	4,046	4,132	Persons
		Female	515	548	578	604	613	Persons
	NGK Group	Total	19,406	20,578	20,409	20,195	20,656	Persons
		Male	15,013	16,167	16,010	15,920	16,393	Persons
		Female	4,393	4,411	4,399	4,275	4,263	Persons
Number of employees by employment type	NGK	Full-time employee	4,136	4,355	4,529	4,650	4,745	Persons
		Contract employee	398	507	464	287	272	Persons
		Temporary employee	392	389	395	302	372	Persons
Employee composition by region	NGK Group	Japan	38	37	39	37	37	%
		Asia	27	25	23	22	22	%
		Europe	18	21	21	25	25	%
		North and Central America	16	16	15	15	15	%
		Other	1	1	1	1	1	%
Retention rate of new hires after 3 years	NGK	Total	94.6	92.6	93.5	92.8	90.3	%
		Male	94.8	97.6	95.2	92.7	91.0	%
		Female	80.0	83.9	85.1	93.3	87.9	%
Average age	NGK	Total	38.7	38.7	38.8	39.2	40.0	Year
		Male	38.7	38.7	39.0	39.3	40.1	Year
		Female	38.6	38.4	38.6	38.6	39.6	Year
Average length of service	NGK	-	13.7	13.5	13.7	14.3	15.6	Year
Average salary	NGK	-	7,852,010	7,888,094	7,770,318	7,635,830	7,696,997	Yen
Labor union membership rate	NGK	-	94	96	97	98	98	%

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Turnover rate (Full-time employees only, excluding retiring employees)	NGK	Total	0.8	1.4	1.5	1.3	1.3	%
		Male	0.7	1.2	1.3	1.2	1.1	%
		Female	1.9	2.9	2.8	1.7	2.0	%
Voluntary resignation rate (Full-time employees only, excluding retiring employees)	NGK	Total	0.8	1.2	1.5	1.2	1.2	%
		Male	0.6	1.0	1.3	1.1	1.0	%
		Female	1.7	2.5	2.6	1.6	2.0	%
Work performance evaluation	NGK	Total	-	66	-	68	-	%
		Male	-	-	-	68	-	%
		Female	-	-	-	69	-	%

* Note: Includes employees from outside companies who have been temporarily assigned to the NGK Group, but excludes employees from the NGK Group who have been temporarily assigned to outside companies.

Diversity

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of new graduate hires	NGK	Total	111	155	143	141	105	Persons
		Male	96	122	115	108	89	Persons
		Female	15	33	28	33	16	Persons
Ratio of female employees among new graduate hires ¹	NGK	Total	22	26	28	34	17	%
		Administrative-related; target 30%	27	42	44	52	33	%
		Engineering-related; target 20%	20	22	24	27	13	%
Number of mid-career hires	NGK	Total	126	117	104	41	55	Persons
		Male	111	102	87	35	51	Persons
		Female	15	15	17	6	4	Persons
Ratio of female employees ²	NGK	-	12.5	12.6	12.8	13.0	12.9	%
	NGK Group	-	22.6	21.4	21.6	21.2	20.6	%
Number of key personnel (employees in managerial positions)	NGK	Total	865	890	900	969	1,028	Persons
		Male	848	870	874	940	993	Persons
		Female	17	20	26	29	35	Persons

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of key personnel (employees in managerial positions)	NGK	Dept. managers or higher	4	4	5	5	5	Persons
		Ratio of female employees	2.0	2.2	2.9	3.0	3.4	%
	Group companies outside Japan	Ratio of female employees	21.0	16.0	20.2	23.1	23.1	%
Number of female directors	NGK	Total	12	12	13	9	9	Persons
		Female	-	1	1	1	1	Persons
		Ratio	8.3	8.3	7.7	11.1	11.1	%
Number of employees with disabilities	NGK, NGK YU-Service, NGK Ceramic Device	Number of people	57	62	135	145	155	Persons
		Employment rate	1.90	1.92	2.20	2.35	2.46	%

* 1 Covers regular-position employees

* 2 Ratio among all employees

Human Resource Development

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Training participant summary (total participants)	NGK	3,889	4,661	4,685	2,527	8,201	Persons
Average annual hours spent for training per full-time employee (hours)		21.7	21.3	21.4	6.0	28.0	Hours
Average annual cost of training per full-time employee		66,000	63,000	53,000	22,000	29,522	Yen

Occupational Safety and Health

Item	Scope	Category	FY2016	FY2017	FY2018	FY2019	FY2020	Unit
Number of work-related fatalities	NGK	-	0	1	0	0	0	Persons
	Manufacturing Group companies in Japan	-	0	0	0	0	0	Persons
	Manufacturing Group companies outside Japan	-	0	0	0	0	0	Persons

Item	Scope	Category	FY2016	FY2017	FY2018	FY2019	FY2020	Unit
Number of work-related accidents	NGK	-	3	12	7	4	3	Cases
	Manufacturing Group companies in Japan	-	7	8	8	11	5	Cases
	Manufacturing Group companies outside Japan	-	28	17	19	10	30	Cases
Severity rate (number of lost workdays per 1,000 hours worked)	NGK Group	-	0.013	0.193	0.012	0.006	0.057	Day/1,000 hours
Lost time injury frequency rate (number of lost time injuries per 1 million hours worked)	NGK Group	-	0.55	0.32	0.34	0.31	0.70	Per a million hours worked
Occupational illness frequency rate	NGK	-	0.11	0.10	0.00	0.00	0.00	Per a million hours worked
Acquisition of occupational safety and health management system certification	NGK*	ISO 45001 and JIS Q 45100	-	100	100	100	100	%
	11 manufacturing Group companies in Japan	ISO 45001 and JIS Q 45100	-	58	100	100	100	%
	15 manufacturing Group companies outside Japan	ISO45001	-	40	73	93	100	%

* Nagoya Site, Chita Site, Komaki Site, Ishikawa Plant, Mitake Plant

Health and Productivity Management

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Average overtime work per month	NGK	NGK general employees	24.3	25.2	23.7	21.6	23.4	Hours
		NGK including key personnel (managers)	23.4	25.2	23.6	22.0	23.8	Hours
		NGK manufacturing divisions	25.7	27.3	24.4	22.8	24.1	Hours

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Average overtime work per month	NGK	NGK non-manufacturing divisions	22.4	24.0	23.2	21.1	23.1	Hours
Percentage of employees taking stress checks	NGK	-	93.4	94.9	95.9	94.1	95.2	%
Percentage with high stress levels	NGK	-	9.7	11.7	10.7	9.9	9.0	%
Number of employees taking position-based mental care education	NGK	-	402	567	614	585	517	Persons
Periodic health exam	NGK	-	100	100	100	100	100	%
Paid leave: Number of days used, utilization rate	NGK	Days used	12.2	12.8	14.1	11.9	13.8	Day
		Utilization rate	68.7	72.5	77.5	67.5	76.5	%

Social Contribution Activities

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Social contribution expenditures	NGK Group	3.00	3.02	2.37	2.96	5.33	100 million yen
Number of social contribution programs		10	10	13	10	16	Cases
Number of collaborations with NPOs/NGOs		4	4	4	4	3	Cases

Corporate Governance

Board of Directors

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of directors	NGK	12	12	13	11	9	Persons
Number of outside directors		3	3	3	3	3	Persons
Number of board of directors meeting held		15	14	14	14	13	Times

Audit & Supervisory Board Members

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of audit & supervisory board members	NGK	4	4	4	4	4	Persons
Number of outside audit & supervisory board		2	2	2	2	2	Persons
Number of audit & supervisory board meeting held		14	14	14	14	14	Times

Executive Officer

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of executive officers (excluding those also serving as directors)	NGK	13	15	15	22	22	Persons
Male		13	15	14	21	21	Persons
Female		0	0	1	1	1	Persons

Compensation for Directors and Audit & Supervisory Board Members

Item	Scope	Category	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Compensation for directors and auditor & supervisory board members	NGK	Directors (excluding Outside Directors)	676	570	535	591	685	Million yen
		Outside Directors	61	62	59	59	67	Million yen
		Outside Officers	62	66	66	66	68	Million yen

Measures for Returning Profits to Shareholders

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Dividends per share	NGK	44	50	50	30	63	Yen
Return on equity (ROE)		10.4	7.6	5.8	7.9	12.9	%

Intellectual Property Management

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of patents held (Japan)	NGK	3,191	3,352	3,513	3,521	3,374	Cases
Number of patents held (Overseas)		4,186	4,346	4,485	4,452	4,444	Cases

Whistleblowing System

Item	Scope	FY2017	FY2018	FY2019	FY2020	FY2021	Unit
Number of helpline consultation cases	NGK	43	75	55	28	43	Cases

Sustainability

GRI Standards Content Index

102 GENERAL DISCLOSURES

		Publication Location
GRI 102: General Disclosures 2016		
1 Organizational profile		
102-1	Name of the organization	<ul style="list-style-type: none"> – P174 Corporate Outline
102-2	Activities, brands, products, and services	<ul style="list-style-type: none"> – Products
102-3	Location of headquarters	<ul style="list-style-type: none"> – P174 Corporate Outline
102-4	Location of operations	<ul style="list-style-type: none"> – P174 Corporate Outline
102-5	Ownership and legal form	<ul style="list-style-type: none"> – P174 Corporate Outline
102-6	Markets served	<ul style="list-style-type: none"> – P174 Corporate Outline – Annual Securities Report, Overview of Business (P5) (Japanese)
102-7	Scale of the organization	<ul style="list-style-type: none"> – P174 Corporate Outline – Annual Securities Report, Financial Highlights (P2-3) (Japanese)
102-8	Information on employees and other workers	<ul style="list-style-type: none"> – P68 Basic Information Related to Employees
102-9	Supply chain	<ul style="list-style-type: none"> – P57 Supply Chain Management
102-10	Significant changes to the organization and its supply chain	NA
102-11	Precautionary principle or approach	<ul style="list-style-type: none"> – P2 ESG Management – P10 NGK Group Environmental Vision – P40 Environmental Management System – P137 Risk Management
102-12	External initiatives	<ul style="list-style-type: none"> – P2 ESG Management – P38 External Recognition of Environmental Performance and Participation in Environmental Initiatives – P47 Information Disclosure Based on TCFD Recommendations – P171 External Recognition

		Publication Location
102-13	Membership of associations	<ul style="list-style-type: none"> – P2 ESG Management – P38 External Recognition of Environmental Performance and Participation in Environmental Initiatives – P47 Information Disclosure Based on TCFD Recommendations
2 Strategy		
102-14	Statement from senior decision-maker	<ul style="list-style-type: none"> – P1 Message from the President
102-15	Key impacts, risks, and opportunities	<ul style="list-style-type: none"> – P2 ESG Management – P10 NGK Group Environmental Vision – P137 Risk Management – NGK Group Vision
3 Ethics and Integrity		
102-16	Values, principles, standards, and norms of behavior	<ul style="list-style-type: none"> – P2 ESG Management – P8 NGK's Core Policy on the Environment – NGK Group Philosophy – NGK Group Code of Conduct – Policies and Guidelines
102-17	Mechanisms for advice and concerns about ethics	<ul style="list-style-type: none"> – P128 Whistleblowing system
4 Governance		
102-18	Governance structure	<ul style="list-style-type: none"> – P102 Governance System
102-19	Delegating authority	<ul style="list-style-type: none"> – P40 Environmental Management System – P102 Governance System
102-20	Executive-level responsibility for economic, environmental, and social topics	<ul style="list-style-type: none"> – P2 ESG Management – P40 Environmental Management System – P102 Governance System
102-21	Consulting stakeholders on economic, environmental, and social topics	<ul style="list-style-type: none"> – P40 Environmental Management System – P102 Governance System
102-22	Composition of the highest governance body and its committees	<ul style="list-style-type: none"> – P108 Board of Directors and Stock Information – Annual Securities Report, Status of Officers (P71-76) (Japanese)
102-23	Chair of the highest governance body	<ul style="list-style-type: none"> – P102 Governance System – Annual Securities Report, Overview of Corporate Governance (P62-70) (Japanese)
102-24	Nominating and selecting the highest governance body	<ul style="list-style-type: none"> – P108 Board of Directors and Stock Information

		Publication Location
102-25	Conflicts of interest	<ul style="list-style-type: none"> – P108 Board of Directors and Stock Information – Policies and Guidelines
102-26	Role of highest governance body in setting purpose, values, and strategy	<ul style="list-style-type: none"> – P2 ESG Management – P40 Environmental Management System – P43 Global Environmental Management – P47 Information Disclosure Based on TCFD Recommendations – P102 Governance System – P137 Risk Management
102-27	Collective knowledge of highest governance body	<ul style="list-style-type: none"> – P2 Key ESG Activity Themes in FY2022 – P2 FY2021 ESG Committee Achievements – P108 Board of Directors and Stock Information
102-28	Evaluating the highest governance body's performance	<ul style="list-style-type: none"> – P108 Evaluation on the effectiveness of the Board of Directors
102-29	Identifying and managing economic, environmental, and social impacts	<ul style="list-style-type: none"> – P2 ESG Action System – P2 Position on SDGs
102-30	Effectiveness of risk management processes	<ul style="list-style-type: none"> – P137 Risk Management
102-31	Review of economic, environmental, and social topics	<ul style="list-style-type: none"> – P2 ESG Action System
102-32	Highest governance body's role in sustainability reporting	
102-33	Communicating critical concerns	<ul style="list-style-type: none"> – P137 Risk Management
102-34	Nature and total number of critical concerns	
102-35	Remuneration policies	<ul style="list-style-type: none"> – P117 Compensation for Directors and Audit & Supervisory Board Members
102-36	Process for determining remuneration	<ul style="list-style-type: none"> – P102 Corporate governance system – P102 Committees on Corporate Governance
102-37	Stakeholders' involvement in remuneration	<ul style="list-style-type: none"> – Annual Securities Report, Resolutions at General Meetings of Shareholders on Remuneration for Officers and Other Matter (P81) (Japanese)
102-38	Annual total compensation ratio	<ul style="list-style-type: none"> – P117 Average Employee Compensation and President Compensation
102-39	Percentage increase in annual total compensation ratio	
5 Stakeholder Engagement		
102-40	List of stakeholder groups	<ul style="list-style-type: none"> – P2 Communication with Stakeholders

		Publication Location
102-41	Collective bargaining agreements	<ul style="list-style-type: none"> – P68 Labor-Management Initiatives – Annual Securities Report, Overview of Employees (P11) (Japanese)
102-42	Identifying and selecting stakeholders	<ul style="list-style-type: none"> – P2 Communication with Stakeholders
102-43	Approach to stakeholder engagement	<ul style="list-style-type: none"> – P2 Communication with Stakeholders
102-44	Key topics and concerns raised	<ul style="list-style-type: none"> – P57 Communication Activities with Procurement Partners
6 Reporting Practice		
102-45	Entities included in the consolidated financial statements	<ul style="list-style-type: none"> – P174 Corporate Outline
102-46	Defining report content and topic boundaries	
102-47	List of material topics	<ul style="list-style-type: none"> – P2 Key ESG Activity Themes in FY2022 – P2 FY2021 ESG Committee Achievements
102-48	Restatements of information	NA
102-49	Changes in reporting	NA
102-50	Reporting period	<ul style="list-style-type: none"> – P175 Target Period
102-51	Date of most recent report	<ul style="list-style-type: none"> – NGK Report Archive
102-52	Reporting cycle	<ul style="list-style-type: none"> – NGK Report Archive
102-53	Contact point for questions regarding the report	<ul style="list-style-type: none"> – Inquiries about Sustainability
102-54	Claims of reporting in accordance with the GRI Standards	
102-55	GRI content index	<ul style="list-style-type: none"> – P157 GRI Standards Content Index
102-56	External assurance	<ul style="list-style-type: none"> – P176 Third-Party Assurance

103 Management Approach

		Publication Location
GRI 103: Management Approach 2016		
103-1	Explanation of the material topic and its boundary	<ul style="list-style-type: none"> – P2 Key ESG Activity Themes in FY2022 – P2 FY2021 ESG Committee Achievements
103-2	The management approach and its components	<ul style="list-style-type: none"> – P2 ESG Management – P8 NGK's Core Policy on the Environment – P10 NGK Group Environmental Vision – P12 5-Year Environmental Action Plan

		Publication Location
103-2	The management approach and its components	<ul style="list-style-type: none"> – P20 Initiatives Toward Carbon Neutrality – P25 Initiatives for a Recycling-Oriented Society – P28 Initiatives for Harmony with Nature – P40 Environmental Management System – P43 Global Environmental Management – P47 Information Disclosure Based on TCFD Recommendations – P53 Initiatives for Human Rights – P57 Supply Chain Management – P68 Labor Practices – P76 Diversity and Inclusion – P83 Human Resource Development – P88 Occupational Safety and Health – P94 Health Management – P99 Social Contribution Activities – P102 Governance System – P137 Risk Management
103-3	Evaluation of the management approach	<ul style="list-style-type: none"> – P12 Results of the Fifth 5-Year Environmental Action Plan in FY2021 (first year)

200 Economic

		Publication Location
GRI 201: Economic Performance 2016		
201-1	Direct economic value generated and distributed	<ul style="list-style-type: none"> – Annual Securities Report, Corporate Overview (P2) (Japanese)
201-2	Financial implications and other risks and opportunities due to climate change	<ul style="list-style-type: none"> – P47 Information Disclosure Based on TCFD Recommendations – P25 Handling and Risk Management of Water Resources – P137 Risks, Risk Summaries, Risk Responses
201-3	Defined benefit plan obligations and other retirement plans	<ul style="list-style-type: none"> – Annual Securities Report, Defined Benefit System (P123-125) (Japanese)
201-4	Financial assistance received from government	<ul style="list-style-type: none"> – Annual Securities Report, Consolidated Income Statement (P92) (Japanese)
GRI 202: Market Presence 2016		
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	
202-2	Proportion of senior management hired from the local community	

		Publication Location
GRI 203: Indirect Economic Impacts 2016		
203-1	Infrastructure investments and services supported	<ul style="list-style-type: none"> Financial Highlights
203-2	Significant indirect economic impacts	
GRI 204: Procurement Practices 2016		
204-1	Proportion of spending on local suppliers	
GRI 205: Anti-corruption 2016		
205-1	Operations assessed for risks related to corruption	
205-2	Communication and training about anti-corruption policies and procedures	<ul style="list-style-type: none"> P128 Compliance with Laws and Regulations P128 Corruption Prevention Structure P128 Compliance Education
205-3	Confirmed incidents of corruption and actions taken	<ul style="list-style-type: none"> Corruption and Bribery Incidents (NA)
GRI 206: Anti-competitive Behavior 2016		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	<ul style="list-style-type: none"> Anti-Competitive Behavior Incidents (NA)
GRI 207: Tax 2019		
207-1	Approach to tax	
207-2	Tax governance, control, and risk management	
207-3	Stakeholder engagement and management of concerns related to tax	
207-4	Country-by-country reporting	

300 Environmental

		Publication Location
GRI 301: Materials 2016		
301-1	Materials used by weight or volume	<ul style="list-style-type: none"> P14 Environmental Performance P14 INPUT
301-2	Recycled input materials used	<ul style="list-style-type: none"> P14 Environmental Performance P14 INPUT
301-3	Reclaimed products and their packaging materials	<ul style="list-style-type: none"> P12 Results of the Fifth 5-Year Environmental Action Plan in FY2021 (first year) > Recycling rate
GRI 302: Energy 2016		
302-1	Energy consumption within the organization	<ul style="list-style-type: none"> P14 Environmental Performance P14 INPUT

		Publication Location
302-2	Energy consumption outside of the organization	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 INPUT
302-3	Energy intensity	<ul style="list-style-type: none"> – P12 Results of the Fifth 5-Year Environmental Action Plan in FY2021 (first year)
302-4	Reduction of energy consumption	<ul style="list-style-type: none"> – P12 Results of the Fifth 5-Year Environmental Action Plan in FY2021 (first year) – P14 Environmental Performance – P14 INPUT
302-5	Reductions in energy requirements of products and services	<ul style="list-style-type: none"> – P30 Environmental/Social Contributions Through Our Products and Services
GRI 303: Water and Effluents 2018		
303-1	Interactions with water as a shared resource	<ul style="list-style-type: none"> – P25 Handling and Risk Management of Water Resources
303-2	Management of water discharge-related impacts	<ul style="list-style-type: none"> – P40 Regulatory Compliance
303-3	Water withdrawal	<ul style="list-style-type: none"> – P14 Environmental Performance > Water Withdrawal, Water Discharge, and Recycling Rate > Water Withdrawal by Source, Water Discharge by Destination, Volume Recycled, and Recycling Rate – P14 INPUT
303-4	Water discharge	<ul style="list-style-type: none"> – P14 Environmental Performance > Water Withdrawal, Water Discharge, and Recycling Rate > Water Withdrawal by Source, Water Discharge by Destination, Volume Recycled, and Recycling Rate – P14 OUTPUT
303-5	Water consumption	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 INPUT – P25 Handling and Risk Management of Water Resources
GRI 304: Biodiversity 2016		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	<ul style="list-style-type: none"> – P28 Survey of Organisms on Land Owned by NGK
304-2	Significant impacts of activities, products, and services on biodiversity	
304-3	Habitats protected or restored	<ul style="list-style-type: none"> – P28 Volunteer Activities by Employees
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	
GRI 305: Emissions 2016		
305-1	Direct (Scope1) GHG emissions	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 OUTPUT

		Publication Location
305-2	Energy indirect (Scope 2) GHG emissions	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 OUTPUT – P20 Introduction of Renewable Energy – P20 Introduction of Internal Carbon Pricing
305-3	Other indirect (Scope 3) GHG emissions	<ul style="list-style-type: none"> – P14 Scope 3 GHG Emissions
305-4	GHG emissions intensity	<ul style="list-style-type: none"> – P20 Initiatives to Reduce CO₂ Emissions
305-5	Reduction of GHG emissions	<ul style="list-style-type: none"> – P12 Results of the Fifth 5-Year Environmental Action Plan in FY2021 (first year) – P45 Environmental Efficiency – P20 Initiatives Toward Carbon Neutrality
305-6	Emissions of ozone-depleting substances (ODS)	
305-7	Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions	
GRI 306: Waste 2020		
306-1	Waste generation and significant waste-related impacts	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 OUTPUT – P25 Initiatives for a Recycling-Oriented Society
306-2	Management of significant waste-related impacts	<ul style="list-style-type: none"> – P25 Initiatives for a Recycling-Oriented Society
306-3	Waste generated	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 OUTPUT – P25 Effective Use of Resources > Waste Emissions
306-4	Waste diverted from disposal	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 OUTPUT – P25 Promoting Resource Recycling
306-5	Waste directed to disposal	<ul style="list-style-type: none"> – P14 Environmental Performance – P14 OUTPUT
GRI 307: Environmental Compliance 2016		
307-1	Non-compliance with environmental laws and regulations	NA
GRI 308: Supplier Environmental Assessment 2016		
308-1	New suppliers that were screened using environmental criteria	<ul style="list-style-type: none"> – P57 Promoting CSR Procurement
308-2	Negative environmental impacts in the supply chain and actions taken	

400 Social

GRI 401: Employment 2016		
401-1	New employee hires and employee turnover	<ul style="list-style-type: none"> – P76 Basic Information Related to Diversity > New Graduate Hires – P68 Basic Information Related to Employees > Turnover Rate
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	<ul style="list-style-type: none"> – P68 Enhancing Systems for Supporting Work-Life Balance
401-3	Parental leave	<ul style="list-style-type: none"> – P68 Overview of Childrearing Support Measures and Users
GRI 402: Labor/Management Relations 2016		
402-1	Minimum notice periods regarding operational changes	
GRI 403: Occupational Health and Safety 2018		
403-1	Occupational health and safety management system	<ul style="list-style-type: none"> – P88 Occupational Safety and Health
403-2	Hazard identification, risk assessment, and incident investigation	<ul style="list-style-type: none"> – P88 Occupational Safety and Health
403-3	Occupational health services	<ul style="list-style-type: none"> – P88 Occupational Safety and Health – P94 Health Management
403-4	Worker participation, consultation, and communication on occupational health and safety	<ul style="list-style-type: none"> – P88 Occupational Safety and Health – P94 Health Management
403-5	Worker training on occupational health and safety	<ul style="list-style-type: none"> – P88 Occupational Safety and Health – P94 Health Management
403-6	Promotion of worker health	<ul style="list-style-type: none"> – P88 Occupational Safety and Health – P94 Health Management
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	<ul style="list-style-type: none"> – P88 Enhancing Safety and Health Activities > Work-Related Accidents at Contractors – P57 Communication Activities with Procurement Partners > Supplier Training-Driven Support Efforts
403-8	Workers covered by an occupational health and safety management system	<ul style="list-style-type: none"> – P88 Occupational Safety and Health – P94 Health Management
403-9	Work-related injuries	<ul style="list-style-type: none"> – P88 Enhancing Safety and Health Activities > Work-Related Fatalities, Work-Related Accidents, Trends in Work-Related Accidents, Work-Related Accidents by Type, Severity Rate (number of lost workdays per 1,000 hours worked), Lost Time Injury Frequency Rate (Employees), Work-Related Accidents at Contractors – P94 Initiatives to Shorten Total Hours Worked > Overtime Hours Worked
403-10	Work-related ill health	<ul style="list-style-type: none"> – P88 Enhancing Safety and Health Activities > Occupational Illness Frequency Rate – P94 Promoting Activities Supporting Mental and Physical Health > Percentage with high stress levels

GRI 404: Training and Education 2016		
404-1	Average hours of training per year per employee	<ul style="list-style-type: none"> – P83 Skills development for employees > Average Annual Hours Spent for Training per Full-Time Employee
404-2	Programs for upgrading employee skills and transition assistance programs	<ul style="list-style-type: none"> – P83 Skills development for employees
404-3	Percentage of employees receiving regular performance and career development reviews	<ul style="list-style-type: none"> – P83 Securing and Retaining Human Resources > Work Performance Evaluation
GRI 405: Diversity and Equal Opportunity 2016		
405-1	Diversity of governance bodies and employees	<ul style="list-style-type: none"> – P76 Diversity and Inclusion – P108 Structure of the Board of Directors
405-2	Ratio of basic salary and remuneration of women to men	<ul style="list-style-type: none"> – P76 Basic Information Related to Diversity > Average Salary (ratio men/women)
GRI 406: Non-discrimination 2016		
406-1	Incidents of discrimination and corrective actions taken	
GRI 407: Freedom of Association and Collective Bargaining 2016		
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	<ul style="list-style-type: none"> – P53 Initiatives for Human Rights
GRI 408: Child Labor 2016		
408-1	Operations and suppliers at significant risk for incidents of child labor	<ul style="list-style-type: none"> – P53 Initiatives for Human Rights – P57 Supply Chain Management
GRI 409: Forced or Compulsory Labor 2016		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	<ul style="list-style-type: none"> – P53 Initiatives for Human Rights – P57 Supply Chain Management
GRI 410: Security Practices 2016		
410-1	Security personnel trained in human rights policies or procedures	
GRI 411: Rights of Indigenous Peoples 2016		
411-1	Incidents of violations involving rights of indigenous peoples	NA
GRI 412: Human Rights Assessment 2016		
412-1	Operations that have been subject to human rights reviews or impact assessments	<ul style="list-style-type: none"> – P53 Initiatives for Human Rights – P57 Supply Chain Management
412-2	Employee training on human rights policies or procedures	<ul style="list-style-type: none"> – P53 Initiatives for Human Rights – P57 Supply Chain Management
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments, and development programs	<ul style="list-style-type: none"> – P99 Social Contribution Activities
413-2	Operations with significant actual and potential negative impacts on local communities	

GRI 414: Supplier Social Assessment 2016		
414-1	New suppliers that were screened using social criteria	— P57 Supply Chain Management
414-2	Negative social impacts in the supply chain and actions taken	
GRI 415: Public Policy 2016		
415-1	Political contributions	— P108 Donations and Other Spending
GRI 416: Customer Health and Safety 2016		
416-1	Assessment of the health and safety impacts of product and service categories	— P61 Quality Activities
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	NA
GRI 417: Marketing and Labeling 2016		
417-1	Requirements for product and service information and labeling	
417-2	Incidents of non-compliance concerning product and service information and labeling	NA
417-3	Incidents of non-compliance concerning marketing communications	NA
GRI 418: Customer Privacy 2016		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	NA
GRI 419: Socioeconomic Compliance 2016		
419-1	Non-compliance with laws and regulations in the social and economic area	NA

Sustainability

ISO 26000 Content Index

Core Subjects	Issues	Corresponding items
Organizational Governance	Organizational Governance	<ul style="list-style-type: none"> – P1 Message from the President – P2 ESG Management – P102 Corporate Governance (General) – P126 Compliance (General) – P137 Risk Management (General) – NGK Group Philosophy – NGK Group Code of Conduct – Policies and Guidelines
Human Rights	<ol style="list-style-type: none"> 1. Due diligence 2. Human rights risk situations 3. Avoidance of complicity 4. Resolving grievances 5. Discrimination and vulnerable groups 6. Civil and political rights 7. Economic, social and cultural rights 8. Fundamental principles and rights at work 	<ul style="list-style-type: none"> – P1 Message from the President – P2 ESG Management – P53 Initiatives for Human Rights – P99 Social Contribution Activities – P88 Occupational Safety and Health – P94 Health Management – P128 Compliance Initiatives – NGK Group Code of Conduct – Policies and Guidelines – Procurement Information – UK Modern Slavery Act Statement for the year ended March 2022

Core Subjects	Issues	Corresponding items
Labour Practices	<ol style="list-style-type: none"> 1. Employment and employment relationships 2. Conditions of work and social protection 3. Social dialogue 4. Health and safety at work 5. Human development and training in the workplace 	<ul style="list-style-type: none"> – P1 Message from the President – P2 ESG Management – P53 Initiatives for Human Rights – P68 Labor Practices – P76 Diversity and Inclusion – P83 Human Resource Development – P88 Occupational Safety and Health – P94 Health Management – P99 Social Contribution Activities – P57 Supply Chain Management – P67 Customer Satisfaction – P128 Compliance Initiatives
Environment	<ol style="list-style-type: none"> 1. Prevention of pollution 2. Sustainable resource use 3. Climate change mitigation and adaptation 4. Protection of the environment, biodiversity and restoration of natural habitats 	<ul style="list-style-type: none"> – P1 Message from the President – P8 Environmental Policy and Environmental Vision (General) – P14 Achieving Our Environmental Vision (General) – P40 Environmental Management (General) – P47 Climate Change Strategy (General) – NGK Group Code of Conduct – NGK Group Vision
Fair Operating Practices	<ol style="list-style-type: none"> 1. Anti-corruption 2. Responsible political involvement 3. Fair competition 4. Promoting social responsibility in the value chain 5. Respect for property rights 	<ul style="list-style-type: none"> – P1 Message from the President – P102 Corporate Governance (General) – P126 Compliance (General) – P137 Risk Management (General) – NGK Group Code of Conduct – Policies and Guidelines

Core Subjects	Issues	Corresponding items
<p>Consumer Issues</p>	<ol style="list-style-type: none"> 1. Fair marketing, factual and unbiased information and fair contractual practices 2. Protecting consumers' health and safety 3. Sustainable consumption 4. Consumer service, support, and complaint and dispute resolution 5. Consumer data protection and privacy 6. Access to essential services 7. Training and awareness-raising 	<ul style="list-style-type: none"> - P2 ESG Management - P8 Environmental Policy and Environmental Vision (General) - P14 Achieving Our Environmental Vision (General) - P61 Quality Activities - P67 Customer Satisfaction - P122 Innovation Management - P128 Compliance Initiatives - P137 Risk Management - P143 Information Security - NGK Group Code of Conduct - Policies and Guidelines
<p>Community Involvement and Development</p>	<ol style="list-style-type: none"> 1. Community involvement 2. Training and culture 3. Employment creation and skills development 4. Technology development and access 5. Wealth and income creation 6. Health 7. Social investment 	<ul style="list-style-type: none"> - P1 Message from the President - P2 ESG Management - P68 Labor Practices - P76 Diversity and Inclusion - P83 Human Resource Development - P99 Social Contribution Activities - NGK Foundation for International Students - NGK Group Code of Conduct

External Recognition

External Recognition of the NGK Group

Inclusion of the NGK Group in Major Indices

Dow Jones Sustainability Asia Pacific Index



We have been selected to the Dow Jones Sustainability Asia Pacific Index for six consecutive years. This index is part of the Dow Jones Sustainability Indices which is one of the leading indices for socially responsible investment.

FTSE4Good Index Series



FTSE4Good

The FTSE4Good Index Series is an ESG investment index created by FTSE Russell. Companies recognized for being excellent from environmental, social and governance perspectives are selected to be composite stocks.

[FTSE4Good Index Series](#)

FTSE Blossom Japan Index



FTSE Blossom
Japan Index

The FTSE Blossom Japan Index targets Japanese companies. It is an index adopted by the Government Pension Investment Fund (GPIF) at the time of ESG investment.

[FTSE Blossom Japan Index Series | FTSE Russell](#)

FTSE Blossom Japan Sector Relative Index



The FTSE Blossom Japan Sector Relative Index is widely used to create and assess sustainable investment funds and other financial products.

[FTSE Blossom Japan Index Series | FTSE Russell](#)

MSCI ESG Rating



We have received an A in the ESG ratings of MSCI which provides tools and services to support important decision-making by investors around the world.

MSCI Japan ESG Select Leaders Index

2022 CONSTITUENT MSCI JAPAN ESG SELECT LEADERS INDEX

THE INCLUSION OF NGK INSULATORS IN ANY MSCI INDEX, AND THE USE OF MSCI LOGOS, TRADEMARKS, SERVICE MARKS OR INDEX NAMES HEREIN, DO NOT CONSTITUTE A SPONSORSHIP, ENDORSEMENT OR PROMOTION OF NGK INSULATORS BY MSCI OR ANY OF ITS AFFILIATES.

THE MSCI INDEXES ARE THE EXCLUSIVE PROPERTY OF MSCI. MSCI AND THE MSCI INDEX NAMES AND LOGOS ARE TRADEMARKS OR SERVICE MARKS OF MSCI OR ITS AFFILIATES.

We have been selected to the MSCI Japan ESG Select Leaders since 2017. This is an index which has been adopted by the GPIF for operation.

MSCI Japan Empowering Women Index (WIN)

2022 CONSTITUENT MSCI JAPAN EMPOWERING WOMEN INDEX (WIN)

THE INCLUSION OF NGK INSULATORS IN ANY MSCI INDEX, AND THE USE OF MSCI LOGOS, TRADEMARKS, SERVICE MARKS OR INDEX NAMES HEREIN, DO NOT CONSTITUTE A SPONSORSHIP, ENDORSEMENT OR PROMOTION OF NGK INSULATORS BY MSCI OR ANY OF ITS AFFILIATES.

THE MSCI INDEXES ARE THE EXCLUSIVE PROPERTY OF MSCI. MSCI AND THE MSCI INDEX NAMES AND LOGOS ARE TRADEMARKS OR SERVICE MARKS OF MSCI OR ITS AFFILIATES.

We have been selected to the MSCI Japan Empowering Women Index (WIN) adopted by the GPIF for operation.

S&P/JPX Carbon Efficient Index



The S&P/JPX Carbon Efficient Index is an ESG index jointly developed by the S&P Dow Jones Indices (S&P) and the Tokyo Stock Exchange of the Japan Exchange Group (JPX). We have received a rating of "9" in the decile classification and an evaluation of "discloses information" for our information disclosure.

ESG-Related External Recognition

CDP



The CDP is an international non-profit organization. It engages in activities to request from companies the disclosure of environmental-related information such as on greenhouse gas emissions and climate change initiatives. We have received the following assessments from the CDP.

	2021
CDP-Climate Change	B
CDP-Water Security	B
CDP SUPPLIER ENGAGEMENT	A

Health and Productivity Management Organization 2022 (White 500)

The Health and Productivity Management Organization System is a program to honor corporations putting into practice especially outstanding health management with respect to initiatives that address local health issues and initiatives to promote health being advanced by the Nippon Kenko Kaigi. We have been certified for four consecutive years.

L-Boshi

We acquired level 3 certification, the highest rank, of L-Boshi in August 2019. This serves as proof that we are an excellent company in terms of the initiatives we are undertaking to advance women in the workplace.

Kurumin

We were certified as a childcare support company based on the Act on Advancement of Measures to Support Raising Next-Generation Children in 2012. We have acquired the next-generation certification mark "KURUMIN."

Corporate Outline/NGK Group Website (As of March 31, 2022)

Corporate Outline

Company name	NGK Insulators, Ltd.	Consolidated subsidiaries	45
Address	2-56 Suda-cho, Mizuho, Nagoya 467-8530, Japan Telephone + (81) 52-872-7181	Equity-method affiliates	2
Established	May 5, 1919	Employees	NGK 4,382 Consolidated 20,099
Paid-in capital	69.8 billion yen	Stock exchange code	5333
Net sales	510.4 billion yen (consolidated, for FY2021)		

NGK Group Website

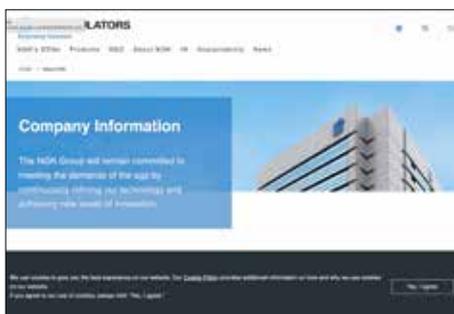
This booklet is an archive of our sustainability initiatives as of the end of September 2022 under the title of the NGK Sustainability Website Data 2022 (PDF). Our website also has sustainability information, in addition to detailed corporate information and investor relations.



Sustainability
<https://www.ngk-insulators.com/en/sustainability/>



NGK REPORT 2022
<https://www.ngk-insulators.com/en/sustainability/pdf/2022/ngk2022.pdf>



Company Information
<https://www.ngk-insulators.com/en/info/>



Investor Relations
<https://www.ngk-insulators.com/en/ir/>

Group Companies/Editorial Policy (As of March 31, 2022)

NGK Insulators

Head Office / Tokyo Main Office / Osaka Branch / Chita Site / Komaki Site / Ishikawa Plant / Sapporo Sales Office / Sendai Sales Office / Hokuriku Sales Office / Hiroshima Sales Office / Takamatsu Sales Office / Fukuoka Sales Office

Group Companies

JAPAN

ENERGY SUPPORT CORPORATION
KANSAI ENERGYS CORPORATION
KYUSHU ENERGYS CO., LTD.
HOKURIKU ENERGYS CORPORATION
ENERGYS SANGYO CORPORATION
AKECHI INSULATORS, LTD.
NGK OKHOTSK, LTD.
NGK ELECTRONICS DEVICES, INC.
NGK CERAMIC DEVICE CO., LTD.
NGK METEX CORPORATION
NGK FINE MOLDS, LTD.
NGK CHEMITECH, LTD.
NGK FILTECH, LTD.
NGK ADREC CO., LTD.
NGK KILNTECH CORPORATION
NGK LIFE CO., LTD.
NGK YU-SERVICE CO., LTD.
NGK LOGISTICS, LTD.
ENA ELECTRIC POWER Co., Ltd.
ABASHIRI ELECTRIC POWER Co., Ltd.

NORTH AND CENTRAL AMERICA

NGK-LOCKE, INC.
NGK CERAMICS USA, INC.
NGK AUTOMOTIVE CERAMICS USA, INC.
NGK METALS CORPORATION
FM INDUSTRIES, INC.
NGK ELECTRONICS USA, INC.
NGK INSULATORS OF CANADA, LTD.
NGK CERAMICS MEXICO, S. DE R.L. DE C.V.

EUROPE, AFRICA

NGK BERYLCO U.K. LTD.
NGK CERAMICS EUROPE S.A.
NGK EUROPE GMBH
NGK DEUTSCHE BERYLCO GMBH
NGK BERYLCO FRANCE
NGK CERAMICS POLSKA SP. Z O.O.
NGK CERAMICS SOUTH AFRICA (PTY) LTD.

ASIA, OCEANIA

NGK INSULATORS (CHINA) INVESTMENT CO., LTD.
NGK CERAMICS SUZHOU CO., LTD.
NGK TECHNOCERA SUZHOU CO., LTD.
NGK AUTOMOTIVE CERAMICS KOREA CO., LTD.
P.T. NGK CERAMICS INDONESIA
SIAM NGK TECHNOCERA CO., LTD.
NGK CERAMICS (THAILAND) CO., LTD.
NGK TECHNOLOGIES INDIA PVT. LTD.
NGK STANGER PTY LTD.

Editorial Policy

NGK has created a dedicated sustainability section on its corporate website in order to deliver information about the NGK Group's environmental, social and governance (ESG) initiatives for a sustainable society to a broad range of stakeholders in a timely manner.

We have archived our initiatives as of the end of September 2022 under the title of the NGK Group Sustainability Website Data 2022 (PDF).

We also publish NGK Report which conveys financial and non-financial information together with business strategies in a concise and clear manner to foster greater understanding of the NGK Group's corporate value and vision.

■ Reporting Boundary

Indicated in each article and data report as the reporting boundary varies.

■ Target Period

April 1, 2021 to March 31, 2022; however, some information concerns other fiscal years.

■ Forward-Looking Statements

This website contains forward-looking statements including performance forecasts. These statements are based on information available at present and on certain assumptions judged to be rational. Actual results may differ due to a number of factors.

Third-Party Assurance

Deloitte.

デロイト トーマツ

(TRANSLATION)

Independent Practitioner's Assurance Report

October 26, 2022

Mr. Shigeru Kobayashi,
President,
NGK Insulators, Ltd.

Masahiko Sugiyama
Representative Director
Deloitte Tohmatsu Sustainability Co., Ltd.
3-2-3, Marunouchi, Chiyoda-ku, Tokyo

We have undertaken a limited assurance engagement of the energy-origin CO₂ emissions on a non-consolidated basis indicated with for the year ended March 31, 2022 (the "CO₂ Information") included on page 14 and 15 in the "NGK Group Sustainability Website Data 2022 (PDF)" (the "Report") of NGK Insulators, Ltd. (the "Company").

The Company's Responsibility

The Company is responsible for the preparation of the CO₂ Information in accordance with the calculation and reporting standard adopted by the Company (the Report page 16). CO₂ quantification is subject to inherent uncertainty for reasons such as incomplete scientific knowledge used to determine emissions factors and numerical data.

Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. We apply International Standard on Quality Control 1, *Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements*, and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the CO₂ Information based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements ("ISAE") 3000, *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*, issued by the International Auditing and Assurance Standards Board ("IAASB"), ISAE 3410, *Assurance Engagements on Greenhouse Gas Statements*, issued by the IAASB and the *Practical Guideline for the Assurance of Sustainability Information*, issued by the Japanese Association of Assurance Organizations for Sustainability Information.

The procedures we performed were based on our professional judgment and included inquiries, observation of processes performed, inspection of documents, analytical procedures, evaluating the appropriateness of quantification methods and reporting policies, and agreeing or reconciling with underlying records. These procedures also included the following:

- Evaluating whether the Company's methods for estimates are appropriate and had been consistently applied. However, our procedures did not include testing the data on which the estimates are based or reperforming the estimates.
- Performing interviews of responsible persons and inspecting documentary evidence to assess the completeness of the data, data collection methods, source data and relevant assumptions applicable to the sites.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement.

Limited Assurance Conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the CO₂ Information is not prepared, in all material respects, in accordance with the calculation and reporting standard adopted by the Company.

The above represents a translation, for convenience only, of the original Independent Practitioner's Assurance report issued in the Japanese language.

Member of
Deloitte Touche Tohmatsu Limited



NGK INSULATORS, LTD.

NGK Group Sustainability Website Data 2022

■ For more information:
2-56, Suda-cho, Mizuho, Nagoya 467-8530, Japan
NGK Insulators, Ltd.
ESG Management Department
E-mail: pr-office@ngk.co.jp