

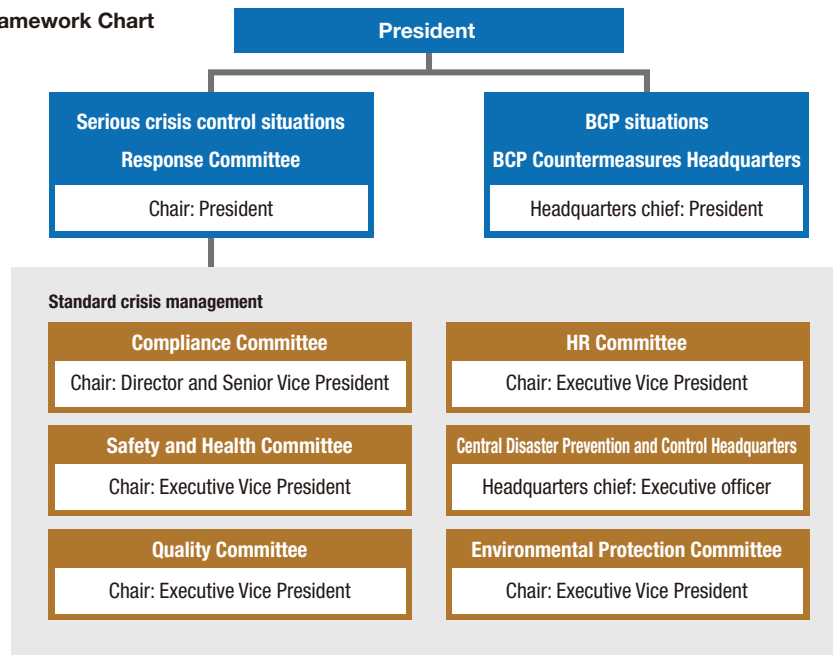
Risk Management

Approach to Risk Management

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 executive officer in charge of the Corporate Planning Office can call a meeting, which would include the president, to develop countermeasures.

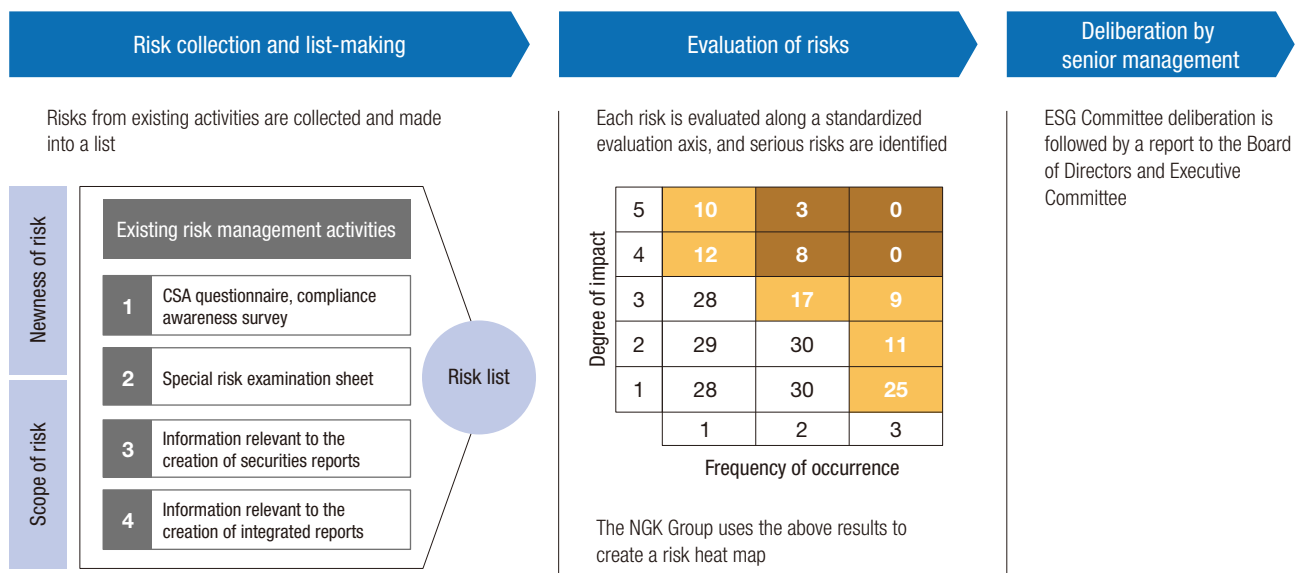
In times of increasing socio-economic uncertainty, it is important to have a heightened awareness of risk and to act before risks turn into crises. Therefore, in addition to the six committees, which we maintain in order to oversee matters of day-to-day risk, we also have in place a system by which top management can coordinate a rapid response to growing risks.

Risk Management Framework Chart



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 and reevaluated in order to identify any which may be serious risks. The ESG Committee will then deliberate and designate those risks that need to be managed by the Group as a whole.



Risks, Risk Summaries, Risk Responses

- 1 Business operation risks 2 R&D-related risks 3 Legal compliance, human rights and safety, and quality-related risks
 4 Information systems-related risks 5 Currency exchange, capital, and procurement-related risks 6 Climate change and disaster-related risks

Risk	Summary	Response		
1	<p>All operations</p> <ul style="list-style-type: none"> Demonstrations, terrorism, war, infectious or communicable disease, and other unforeseen matters <p>1 Ceramic Products Business</p> <ul style="list-style-type: none"> Drop in demand for NGK Group products due to decline in demand for internal combustion engine vehicles Drop in market share due to rising competition from Chinese market Inability to recover prior investment due to downturn in business, delayed timing of regulations, or other factors <p>2 Process Technology Business</p> <ul style="list-style-type: none"> Deterioration in performance and financial status due to declining demand for semiconductors Delayed responsiveness to customer needs Emergence of innovative semiconductor manufacturing process Drop in market share due to growth of competition in kilns for lithium-ion battery cathode materials and electronic components <p>3 Electronics Business</p> <ul style="list-style-type: none"> Sudden drop in base station and data server demand Inability to develop new technology or release products compatible with customer technology innovations <p>4 Energy Infrastructure Business</p> <ul style="list-style-type: none"> Change in energy policies overseas Trends among competitor companies and products Delay in timing of market expansion for large-capacity and long-life batteries 	<ul style="list-style-type: none"> Construct globally distributed, alternative systems Compensate for drop in demand by increasing number of new and high-performance products in line with stronger exhaust regulations Strengthen competitiveness via technical responsiveness that anticipates environmental regulations, and via supply stability Respond appropriately to automaker planning and changing business conditions, and then make revisions to capital investment planning Work together with direct customers who manufacture semiconductor manufacturing equipment, and make revisions to equipment capacity and personnel and production systems, etc., where appropriate Carefully monitor semiconductor manufacturing process trends and revise production systems where appropriate to ensure quick response to changes in demand Carefully monitor customer trends and pursue production system innovation where appropriate to ensure quick response to changes in demand Carefully monitor customer trends and pursue timely technological development Carefully monitor energy policy trends in each country and revise production systems where appropriate to ensure quick response to changes in demand Strengthen competitiveness via technical responsiveness and supply stability Carefully monitor customer trends and revise production systems where appropriate to ensure quick response to changes in demand 		
	2	<ul style="list-style-type: none"> Inability to achieve adequate results with the input received due to increasingly complicated technological competition 	<ul style="list-style-type: none"> Continue to receive input not only for increasing performance of existing products but also for finding promising new topics to explore 	
	3	<p>1 Legal compliance-related risks</p> <ul style="list-style-type: none"> Decline in NGK Group's reputation due to actions in opposition to society's expectations with regard to legal and regulatory compliance, respect for human rights, contract compliance, etc. <p>2 Human rights and safety-related risks</p> <ul style="list-style-type: none"> Human rights violations of workers in supply chain Employee occupational hazards, illness, or physical and mental health problems <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 complaint, contractual violation, or other unsatisfactory operations 	<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 With regard to serious improprieties or legal/regulatory violations, undertake prevention and monitoring overseen by Business Ethics Committee, which comprises outside directors and compliance officers Undertake human rights due diligence via HR Committee 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 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 	
		4	<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"> Construct IT security system standardized for entire Group Conduct information security training for employees
		5	<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 Rising production costs due to rising raw materials prices 	<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 Reflect risk in sale price to customer Reduce costs through competitive purchasing, increased productivity, and other means
	6	<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. 	<ul style="list-style-type: none"> Invest time and resources into developing and popularizing products and services that reduce environmental impact, and into developing and introducing high-efficiency, environmentally friendly production technology 	
		<ul style="list-style-type: none"> Operational decline due to global warming-caused sea level rise, increased size and magnitude of typhoons, increased frequency of local torrential rains, etc. Deterioration in business performance due to shutdown of production following major disaster, fire, or other serious incident or accident Decline in operations and negative impact on product manufacturing and sales due to emergence and spread of major infectious disease, such as new strain of influenza or coronavirus 	<ul style="list-style-type: none"> Announced endorsement in February 2020 of Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Begin taking concrete action Promote business continuity plan (BCP) for entire Group 	

Legal Risk Management at Group Companies Outside Japan

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

We ask all Group companies outside Japan to report information pertaining to the status of lawsuits, legal affairs and consultation with lawyers twice a year, and helpline usage, export controls and access to legal-related information once a year. Major issues found in such reports are reported to the Compliance Subcommittee and CSR Committee to share information.

Consultations from bases outside Japan are handled by lawyers and legal departments to avoid risks.

Identifying and Preventing Risks Based on Questionnaire

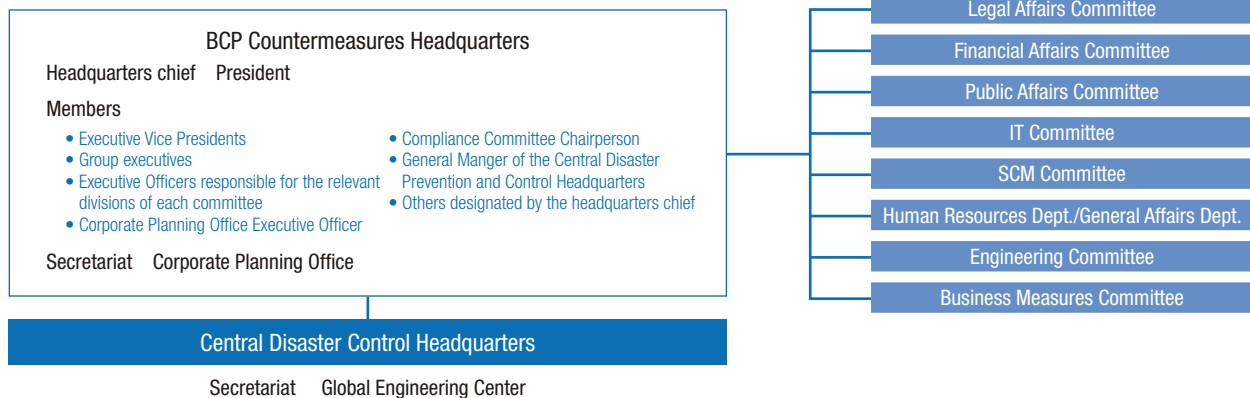
As part of efforts to enhance risk management practices, in fiscal 2019 NGK and its Group companies in Japan conducted the second CRS (Corporate Risk Survey). Combining the previously administered CSA (Control Self-Assessment) questionnaire and the compliance awareness survey, the CRS checks the understanding 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 create measures to reduce risks.

Business Continuity Plan (BCP) Initiatives

At NGK, we have established the BCP Countermeasures Headquarters as an organization for leading business continuity and quick recovery, under the direction of the president, in the event of a large-scale natural disaster, and we are promoting BCP for the Group as a whole. Measures include the establishment of multiple manufacturing bases and procurement sources, damage mitigation measures related to buildings and equipment, and employee safety assurance.

We conduct emergency drills assuming a major disaster with the aim of enhancing our responsiveness and adaptability in the event of a disaster crisis. In the drill, participants are instructed to take real actions faithfully according to the plan, through which we identify in detail issues related to each process and procedure and use the findings to improve the BCP.

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.

FY2019 Initiatives

Education		<ul style="list-style-type: none"> Invited disaster preparedness experts to present lectures aimed at heightening the crisis management mindset among headquarters members Hosted Web-based seminars on disaster preparedness and other topics for branches in and outside Japan Held disaster preparedness workshops aimed at key personnel in each division
Awareness		<ul style="list-style-type: none"> Distributed a disaster preparedness and emergency response guidebook to all employees of the NGK Group in Japan
Improvement		<ul style="list-style-type: none"> Invited disaster preparedness experts to come and hold disaster preparedness workshops aimed at key personnel in each division Revised our training scenarios to make them more effective
Other		<ul style="list-style-type: none"> Established systems for facilitating the simple and handy purchase of disaster preparedness equipment and supplies for NGK Group employees

Future Initiatives

- Initiatives aimed at resolving BCP-related issues brought into relief through workshops
- Ongoing disaster preparedness and BCP capacity assessment
- Improve the level of training and increase BCP effectiveness
- Ongoing household disaster preparedness support initiatives (seminars, disaster preparedness supplies sales events, etc.) focused on ensuring that respect for human life remains the top priority of BCP

Response to the COVID-19 Pandemic

In light of the COVID-19 pandemic, the NGK Group activated its BCP in April 2020. Along with gathering and sharing up-to-date information about the current situation, ensuring employees are familiar with information about infection prevention, encouraging telecommuting and other options, and distributing surgical masks to employees, we are monitoring factors that hinder business activity and are developing response measures for them. All of these actions are being taken from an “employee and community safety-first” mindset, and they are aimed at ensuring we can continue our business activities in a socially responsible manner.

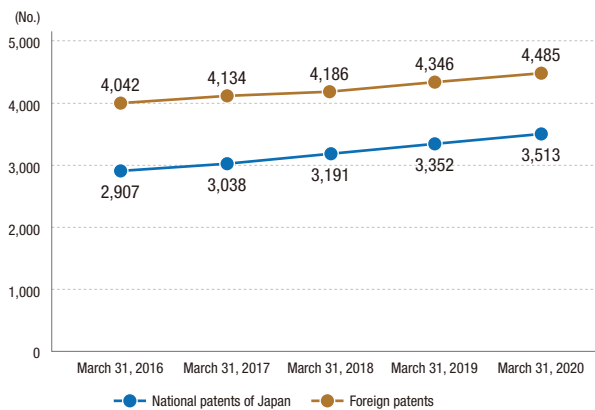
Intellectual Property Management

The NGK Group encourages the creation of intellectual property (IP) rights and works to ensure proper protection and use of IP rights. In addition, based on the policy of respect for the rights of others and ourselves, it aims for a strategic patent network to be built within the close cooperation between the Intellectual Property Department and other divisions such as Business, Research and Development, and Technology Divisions.

Specifically, it features a patent mapping function to present the internal and external patent landscape of specific technology areas using charts and graphs, which can be easily shared within the Group.

To prevent patent infringement risks, we regularly conduct patent monitoring of other companies for product families and development themes to update our database.

Change in the Number of Patents Held

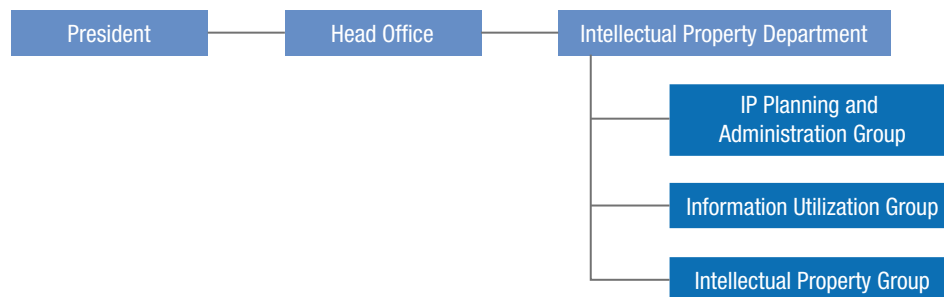


Number of Patents Held As of March 31, 2020

National patents of Japan **3,513**
 Foreign patents **4,485**

Intellectual Property Management System

Integrated management of intellectual property for the entire NGK Group is carried out by the Intellectual Property Department. This department also pursues intellectual property-related activities in conjunction with various other departments and divisions.



Responsibilities of the Intellectual Property Department

Application for/acquisition of IP rights (patent, utility model, design): Establish IP rights for NGK's research and development achievements to safeguard 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

Administrative work relating to acquired patent rights, including maintenance of rights, operation of the employee invention compensation system, and cooperation with patent law firms

Application for/acquisition and maintenance of trademark rights for corporate logos and product trade names and marks

Copyright

In-house training of intellectual property

Promoting Intellectual Property Training

Training for Young Engineers

E-learning and seminars are provided with the aim of providing basic training for young engineers and of up-skilling for patent applicants.

Also, focusing primarily on young engineers in the Research and Development Department, trainings in patent search methods are conducted. These methods are taught via individual, computer-based practical training.

IP Training Provided in FY2019

	Intended participants	Number of participants
Patent Act introductory e-learning	Young engineers	71
Seminars on the patent system (Patent I/II/III)	Young engineers	151
Seminars to acquire skills for using the IP search program	Employees in charge, engineers	74
Small-group workshops	Young engineers in the Business and the Research and Development Divisions	113 (total for 11 sessions)

Employee Invention Compensation System to Provide Incentives for Employee Inventions

In order to further encourage employees to create outstanding inventions, a revamped employee invention compensation system was launched in April 2019, which is divided into four categories: application incentives, registration incentives, implementation incentives, and excellent invention incentives.

The aim of the newly established “excellent invention incentives” category is to recognize, via a substantial financial reward and commendation, the contributions inventors of particularly outstanding inventions have made to NGK. Recipients are presented with either the Contributory Invention Award, which recognizes patents that have contributed significantly to business performance, and the Innovative Invention Award, which recognizes patents and patent applications for truly innovative inventions.

In fiscal 2019, after repeated and meticulous scrutiny of the applications from inventors, two applicants were chosen for the Contributory Invention Award and three for the Innovative Invention Award.

Responding to Intellectual Property Risks Outside Japan

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

“Patent Searching Know-How” Special Lecture Delivered at Outside Seminar

At the Nagoya Chamber of Commerce and Industry (Naka Ward in Nagoya City) JPDS Fair in Nagoya (sponsored by Japan Patent Data Service Company), a special lecture was provided by Yohei Seguchi of the Information Utilization Group.

Japan Patent Data Service (JPDS) is a company specialized in providing intellectual property information services, patent management systems, and other resources. It holds the JPDS Fair every year in order to outline its products and to introduce new services and functionality. The theme of Seguchi’s talk was “Important Considerations when Performing Patent Searches with NewCSS*”. He discussed various topics, such as NGK’s patent search activities and important points to remember when setting patent search queries.

*NewCSS is the name of the patent data service.

