

CSR Report 2013

NGK SPARK PLUG Group CSR Report



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Top Message



Shinichi Odo
President and Chief Executive Officer
NGK SPARK PLUG CO., LTD.
September 2013

NITTOKU SHINKA-RON (The Evolution of NGK SPARK PLUG): From the 1st SHINKA (Delving) to 2nd SHINKA (Renovating) Phase

The NGK SPARK PLUG Group has set out its vision of what NGK SPARK PLUG should be in 2020 as a distinguished manufacturing company, a highly profitable company, a progressive company, and a personnel "assets" company. To realize this vision, we formulated a long-term management plan—NITTOKU SHINKA-RON (The Evolution of NGK SPARK PLUG), together with a roadmap, dividing the road to 2020 into three 3-year phases: 1st SHINKA (Delving), 2nd SHINKA (Renovating), and 3rd SHINKA (Evolving). The Group strives to steadily progress through these three phases, toward the final goal of becoming a company that can offer "Real Value" to all our stakeholders. In March 2013, the Group completed the 1st SHINKA (three years devoted to delving) phase, during which we worked to delve into existing businesses and seek new businesses. In April 2013, we entered the next three years of the 2nd SHINKA (Renovating) phase.

The 2nd SHINKA (Renovating) phase is intended as a preparatory period for determining our direction toward regeneration. To establish a foundation for the final three years of the 3rd SHINKA (Evolving) phase, we will utilize corporate resources to the utmost, and boldly challenge new industrial domains and fields.

► Medium-Term Management Plan

Inaugural Year of the 2nd SHINKA (Renovating) phase

I have always stated that my mission as president of the company is to "bring innovation to NGK SPARK PLUG CO., LTD." It is true that bringing about innovation usually entails risks, but I believe that the greatest risk lies in not seeking innovation out of fear of changing. With "global," "speed" and "fair" as keywords, I encourage all employees to share the awareness that "We should change ourselves" and to work in concert to continue advancing the business structural reform.

For our company, which has many overseas operation sites, it is absolutely vital to establish and strengthen our global management system. However, I would also like to emphasize that it is our human resources that support all of our corporate activities. By mobilizing the capabilities of the Corporate Administration Group, we aim to reform the personnel system and enhance the management information network that oversees the entire Group, in order to foster human resources with a global perspective and to promote flexible employment of capable local personnel. In addition, we have set up a MONODUKURI Center within the Production Engineering Group, with the aim of taking over shop-floor expertise and the spirit of manufacturing, and passing these assets on to future generations.

In the Automotive Components Business, we are proud that our company's spark plugs and sensors hold the world's largest market shares. At the same time, however, we should all the more realize our social responsibility for supplying products in a consistent manner. To continue growing as the world's top manufacturer, it is important that we further strengthen our already strong Automotive Components Business.

1/ In response to the accelerating motorization in emerging markets, we have taken strategies for further market expansion. In the Chinese market for example, we released the NGK CX Lie Yan spark plug, designed exclusively for China and specifically geared to local needs.

With regard to the Communication Media Components Business and the Technical Ceramics Business, we have integrated the two business groups into a new Technical Ceramics Group. We will promote business reorganization and optimal resource deployment accordingly. In addition, production of organic IC packages will be transferred to overseas and domestic partners, as part of our efforts to shift toward a new fabless business model, specializing only on product development and design.

As for new businesses, we will promote innovation in fields relating to the environment, energy and electric vehicles, while being attentive to social and customer needs. With the New Business Advancement Group and the SOFC Project playing central roles, we will intensify our efforts to develop new products.

To ensure that the three years of the 3rd SHINKA (Evolving) phase will be fruitful, we will change our human resources, organizations and business for the better.

Promotion of CSR Management

The NGK SPARK PLUG Group reviews and improves compliance and risk management, in order to reinforce the basis for our operations. Moreover, the Group declared that it would promote CSR initiatives across the entire supply chain by applying its CSR Procurement Guidelines to our suppliers.

As a company engaged in manufacturing, it is natural that we should develop products that are friendly to people and the Earth and that live up to social expectations. I believe that it is also indispensable for us to pursue global environmental protection in every aspect of manufacturing activities throughout the entire value chain, covering from raw material procurement to product delivery. To achieve the targets set under the NGK SPARK PLUG Group Eco Vision 2015, we are earnestly committed not only to reductions in CO₂ emissions and water consumption, but also to waste treatment/disposal and management of chemical materials.

It is a matter of course that, to enhance our own value as a company, we should contribute to society through our business operations by manufacturing products that satisfy society's needs and help resolve social challenges. Additionally, as a corporate citizen I am sure that creating jobs is also part of our social responsibility and social contribution. In terms of manufacturing, Japan is never the best environment. But in order for us to survive as a global company over the long term, the key is how we can preserve "manufacturing that can be done only in Japan." From such a perspective, we will improve the quality of our labor force by producing even higher value-added products in Japan, thereby contributing to the creation of high-quality employment. We are also vigorous in promoting the diversity of our organization. If looking at Japan's workforce, one can be convinced that there will certainly be no future for Japan without empowerment of female workers. We will therefore place emphasis on diversity initiatives. To begin with, we will promote empowerment of female workers throughout our organization, but this is just one of many catalysts needed to reform our corporate culture. For further growth of our company, I wish to proactively employ motivated personnel, regardless of gender, nationality, age, and whether or not they have a disability.

Recognizing the importance of communication with stakeholders, we will properly grasp the trends of the world, and encourage the CSR and Expert Committees to hold lively discussions to identify challenges to address, so that all employees work together to contribute to creating a sustainable society.

We hereby release CSR Report 2013, which compiles our activities during fiscal 2012. We would very much appreciate your unreserved comments and opinions.

Feature 01: Contributing to Motor Sports

NGK spark plugs, the core products of NGK SPARK PLUG, are important functional engine components which determine a large share of engine performance. For years, we have supplied high-quality spark plugs to the field of motor sports. In fulfilling our responsibilities as a leading spark plug brand, NGK SPARK PLUG will continue to contribute to the reliability and the development of motor sports and automobile society.



Isle of Man TT (Tourist Trophy) Race

The NGK Spark Plug brand became known worldwide since teams used our spark plugs in the Isle of Man TT, a prestigious motorcycle race in the UK.

Technology Development of Spark Plugs for F1

The aim of Formula One (F1), the highest class of single-seater auto racing in the world, is not simply to compete in engine performance or machine design. The race is a fair competition involving the overall ability of the machine, driver, and team under strict technical regulations with safety and environmental issues kept in mind. Various devices and technological innovations developed from F1 have later made great contributions to the development of automotive technologies and use of the automobile in society.



Leading-edge technologies and ideas are used in spark plugs for F1 engine to boost engine performance. For example, to make the engine head design more flexible, it has been necessary to reduce the thread size on the one hand, and to offer resistance to heat and vibration to ensure durability in the demanding racing environment, which is characterized by continuous application of a high load. NGK SPARK PLUG is constantly exploring the best way to meet that challenge and setting new targets for itself. This can clearly be seen in the fact that since the company first supplied spark plugs for F1 engines in 1964, many teams have continued using NGK spark plugs.



Development of F1 machines and engine technologies continues throughout the season. At NGK SPARK PLUG, engineers at our Technical Center in Europe and engineers in Japan collaborate on a daily basis to provide technical support aimed at meeting the precise requirements for our spark plugs.

As a result of our efforts, the F1 machine that won the F1 Malaysian Grand Prix held in March this year marked the 300th win for a F1 machine equipped with NGK racing spark plugs. NGK spark plugs provide outstanding performance in various categories that include WRC, Super GT and other automobile races, as well as MotoGP, the Superbike World Championship and other motorcycle races, and snowmobiles.

Voice

I am a racing spark plug planner, developer, and designer who responds to requests from engine manufacturers. Recent racing engines need to meet the challenge of how to ignite limited fuel effectively and improve both power and fuel efficiency. The challenge is no longer simply to deliver power. Techniques that I have acquired through leading-edge development in the area of motor sports will be incorporated into our products.



Tomoaki Ueda
Spark Plug Engineering
Dept.,
Spark Plug Div.

Voice

I am currently involved in racing as the General Director of Nakajima Racing. Since I was a racing driver, NGK spark plugs have been a must for my teams. I feel very confident whenever I see NGK's red logo at race venues. I hope that you will continue to supply excellent products.



Satoru Nakajima
General Director,
NAKAJIMA RACING

Events

NGK SPARK PLUG supports motor sport venues and exhibitions and always has a booth at these events. At our booth, our products are on show, and visitors can experience replacing spark plugs and enjoy games by our mascot, the Spark Girls. These are only a fraction of the amusements that we present for spark plug users and visitors so that they may become acquainted with motor sports and expand their interest in and knowledge of replacement parts for automobiles.



The company sponsors the NGK Cup (Suzuka Sunday Road Race Grand Championship), in which a wealth of talent from beginners to experienced riders hone their skills to qualify for Japan's most prestigious race, the All Japan Road Race Championship. As such, the NGK Cup serves as a steppingstone for riders who are aiming to compete in the All Japan Road Race Championship and go on to international races.

These events and support activities allow NGK SPARK PLUG to contribute to the development and promotion of motor sports.

Voice

I visit many auto race venues including Japanese national racing championships and provide services to our spark plug users. To improve the brand image of NGK spark plugs in the field, I work almost every weekend at race sites, including the Suzuka 8 Hours Endurance Road Race in summer, the Formula One (F1) Japan Grand Prix and MotoGP in autumn, and snowmobile races in winter.



Hiroshi Nakao
Aftermarket Sales &
Marketing Dept.,
Sales & Marketing Div.

Voice

Visitors to the our event booth at the Suzuka 8 Hours Endurance Road Race

- It was a good that I took a close look at electric sparks being produced by a spark plug. (Male)
- It turned out that replacing a spark plug required more force than I expected. (Male)
- I was happy that my kids enjoyed the event a lot. (Female)



Hands-on experience of spark plug replacement

Feature 02: Development of Lead-free Piezoelectric Ceramics

Piezoelectric ceramics are widely used in home appliances everyday. However, the problem of that the most of piezoelectric ceramics contains lead still remains. Consequently, the challenge for us has been to develop a lead-free piezoelectric ceramic material to prevent lead from leaching from discarded equipment into the environment. NGK SPARK PLUG has developed lead-free piezoelectric ceramics with characteristics that are comparable to ceramics that contained lead.

Piezoelectric ceramics

Piezoelectric ceramics generate a voltage under an externally-applied force. Conversely, they elongate or contract when a voltage is applied. When an AC voltage is applied, they repeat elongation and contraction, or vibrate, and even generate ultrasound. In other words, piezoelectric ceramics are capable of converting electrical energy to mechanical energy. By making full use of this capability, piezoelectric ceramics are used in a wide range of applications from home appliances to industrial equipment that ordinary people do not handle.

Familiar examples of applications of piezoelectric ceramics



Printer ink head

Ink chambers made of piezoelectric ceramics change shape to eject ink.



Camera lens autofocus motor

The camera focuses automatically. The lens is marked "USM."



Speaker

Without sound emission holes, you can hear sounds when you put the cellphone's display screen to your ear.



Medical ultrasonography

Diagnostic sonography is used to check the sex and growth of fetuses and diagnose abdominal diseases.



Ultrasonic catheter

Uses ultrasound to view the inner walls of blood vessels despite the presence of blood.



Spectacles cleaner

Uses ultrasound to clean spectacles.



Knock sensor

Detects knocking.

Rear sensor

Alerts when the car approaches an obstacle.



Vibration-powered generator

Converts the power in your steps into electricity.

Contained lead in piezoelectric ceramics is the problem.

Lead zirconate titanate (PZT) is commonly used as a piezoelectric ceramics. As its name suggests, PZT contains lead. Since lead is poisonous, concern remains over how to dispose of products including PZT. If products including PZT are not properly treated, contained lead may leach from such products and contaminate soil and rivers and eventually affect human health. Regulations on the use of lead are therefore being tightened in Europe and other regions.

Nonetheless, PZT-based piezoelectric ceramics are still in use since they are not regulated under the RoHS directive in Europe at present. Because it is technically difficult to substitute electronic ceramics including lead such as PZT.

Although there are currently no restrictions on electronic ceramics contained lead, regulations on the use of lead are expected to be tightened. Consequently, it is important to develop lead-free piezoelectric ceramics that have characteristics comparable to PZT.

Development of lead-free piezoelectric materials

Sodium potassium niobate (KNN) is a promising substitute material for PZT. However, one significant challenge of developing KNN material has been acquiring stability of the material in addition to improvements to the characteristics because crystal grains of KNN are dice-like particles and it tends to have voids between the grains.

To address this challenge, NGK SPARK PLUG has conducted research for several years and successfully developed a lead-free piezoelectric material by mixing a phase primarily composed of KNN and another phase (named "NTK phase"). Sintered ceramic of this material has very dense structure and characteristics close to PZT. We made our knock sensor using this newly-developed material and tested it. The new material has proven to have performance comparable to PZT and that suggest that it should be possible to put into practical use.

We will continue our research and make efforts to commercialize lead-free piezoelectric ceramics.



Newly-developed lead-free piezoelectric material



Lead-free piezoelectric element



Knock sensor

Voice

KNN lead-free piezoelectric material was discovered more than 50 years ago. Nearly 15 years have passed since we took on the challenge of developing the material. Researchers worldwide have increased their expectations and conducted research. However, commercialization is still on the way. The length of time demonstrates how difficult the material is to and how attractive it is. Nonetheless, the result which commercialization of the material attains has been obtained in the last few years at last. This is a result of the efforts and enthusiasm of our research staff. I am genuinely grateful to the recent help received from many people, and we are now determined to launch the lead-free piezoelectric material on the global market.



Kazushige Obayashi
Engineering R&D Group

CSR of NGK SPARK PLUG Group

CSR Concept

We view CSR not just as a responsibility but as an opportunity to be accountable through review of the NGK SPARK PLUG Group's economic, environmental and social activities from a global perspective, to enhance corporate value, and to contribute to the sustainable development of society in accordance with our Corporate Philosophy.

Our CSR activities are wide-ranging, and include the following:

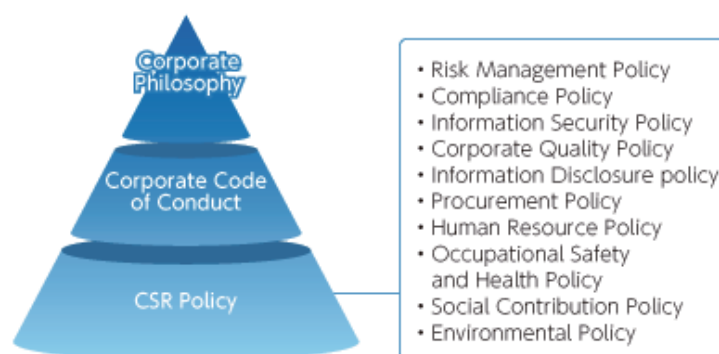
[Examples]

- Offering excellent products to customers
- Disclosing corporate information to shareholders and the broader investor community, in an optimal and easy-to-understand manner
- Collaborating with suppliers for mutual development
- Establishing a safe and employee-friendly working environment
- Participating in and supporting activities in the local community

To provide our Group's action guidelines for fulfilling CSR, in April 2011 our CSR Policy was established, which comprises 10 policies, such as the Compliance Policy and others. In line with the CSR Policy, we intend to review and promote CSR based on a multifaceted approach, into the future.

Philosophy and Policy Organization

Enhancement of Corporate Value



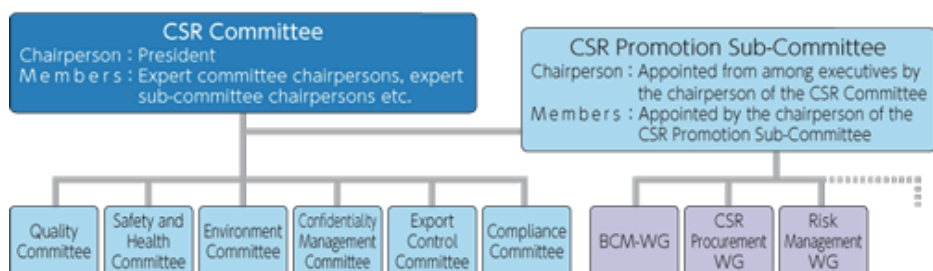
- ▶ Corporate Philosophy
- ▶ Corporate Code of Conduct
- ▶ CSR Policy [56KB] [PDF](#)

CSR Promotion System

The CSR Committee determines the priority themes for each fiscal year, to implement CSR Policy. The Committee also oversees and evaluates CSR-related activities implemented by the respective committees, working groups and divisions, and makes appropriate proposals regarding them, so as to achieve full optimization of CSR activities, thereby strengthening our business foundations.

The CSR Promotion Sub-Committee sets up respective working groups as deemed appropriate, each of which holds discussions on specific themes to develop countermeasures. We have established a company-wide CSR promotion system by securing close coordination between the CSR Committee, the CSR Promotion Sub-Committee and expert committees.

■ CSR Promotion System



Progress in our CSR

Nov. 1996	Adopted "Corporate Philosophy"
Feb. 1998	Adopted "Corporate Code of Conduct"
Apr. 1998	Established Ethical Committee
Feb. 2003	Adopted "Corporate Ethics Helpline System Operation Guidelines"
Nov. 2004	Revised "Corporate Code of Conduct" Published "Code of Conduct Guidebook"
Apr. 2005	Published "Guidelines on the Handling of Personal Information"
Aug. 2005	Established Export Control Committee Adopted "Export Management Regulations"
Feb. 2007	Adopted "Confidentiality Management Regulations"
Nov. 2007	Published "Confidentiality Management Guidelines"
Sep. 2008	Established Internal Audit Department
Apr. 2009	Prepared "Corporate Protection Manual"
Apr. 2010	Inaugurated CSR Promotion Department
Oct. 2010	Established CSR Committee
Apr. 2011	Adopted CSR Policy
Nov. 2011	Established Compliance Committee
Jan. 2012	Published "Compliance Guidebook"
Mar. 2012	Adopted "Compliance Regulations"
Oct. 2012	Adopted "Emergency Response Plan Regulations" and "Business Continuity Plan (BCP) Regulations"

Corporate Governance

Basic Philosophy

We believe that it is our foundational and important managerial task to establish and maintain a fair and efficient management system, while securing soundness and transparency in management, in order to enhance corporate value by fulfilling our corporate social responsibilities.

Management Organization

In April 2012 we introduced the corporate officer system and the system for determining officers' remuneration, based on assessment of their performance. These systems were introduced because we believe that, to achieve further development in the rapidly changing business climates and global economy, we need speedy decision-making and business execution. Moreover, decision-making rules were re-examined and revised to clarify where responsibility lies and to reduce decision-making time.

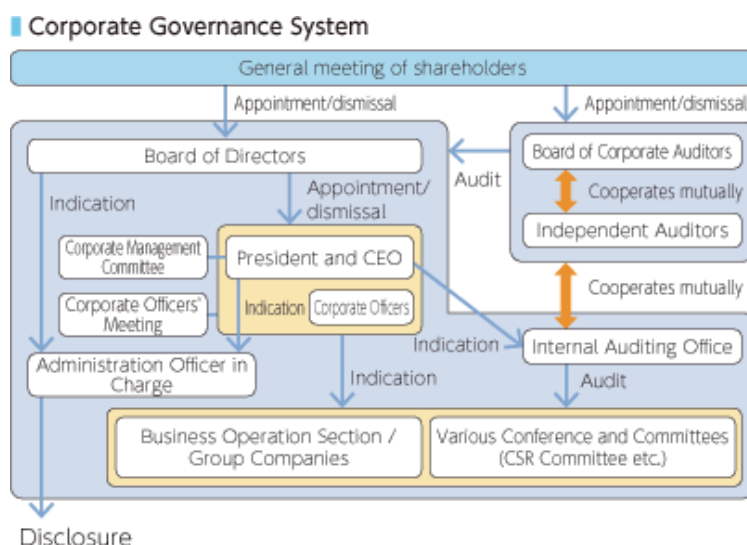
Management Oversight Functions

NGK SPARK PLUG CO., LTD. is a company with a Board of Corporate Auditors, which consists of two standing statutory auditors and two external auditors. These auditors attend the meetings of the Board of Directors and, if necessary, various committee meetings, to grasp the status of important issues. They also supervise directors' execution of duties, through audits of major offices and subsidiaries.

Internal Audits

The Internal Auditing Office reports to management the results of the business auditing of NGK SPARK PLUG CO., LTD. and its affiliates, and if necessary, makes proposals on how to correct any problems and improve business operations.

In accordance with requirements for the internal control report system over Financial Reporting under the Financial Instruments and Exchange Law, the internal auditing office assesses the effectiveness of internal control over financial reporting, to ensure the reliability of the Group's financial statements, thereby maintaining and improving our internal control.



Compliance

Compliance Policy

We acknowledge that our company is a member of society. In the light of this, we enhance corporate ethics, comply with laws and ordinances, international rules, and company regulations, striving to become a company trusted by the international community.

【Action Guidelines】

- We comply with all relevant laws and ordinances, the Corporate Code of Conduct, and company regulations.
- We regularly educate and raise the awareness of all our employees to impart a high-level of ethics and correct knowledge, with which they can act voluntarily to prevent compliance problems.
- Should a problem occur, we will promptly deal with the problem and fulfill our accountability, and will strive to identify the causes and prevent recurrence.

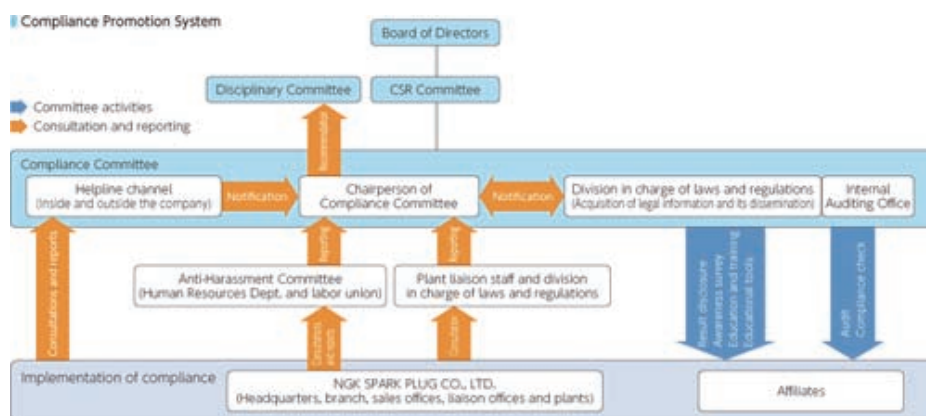
Basic Philosophy

We work to increase awareness among employees regarding compliance to act in a socially sensible manner, helping them to bear in mind that our enterprise is a member of society.

Compliance Promotion System

The Compliance Committee holds its meetings once every three months to confirm compliance status, and conducts surveys of the actual compliance conditions in each division, thereby striving to reduce compliance risks.

To reinforce the compliance promotion system, we will develop and improve the system to deal with any compliance violations, enhance the mechanism for complying with laws and regulations, and increase employees' awareness and knowledge about compliance.



Education and Awareness-raising

The Compliance Guidebook has been distributed to all employees working at the NGK SPARK PLUG Group, to ensure that individual employees abide by all laws and regulations as well as social and company rules, with heightened compliance awareness. In addition, in-house seminars are held as necessary, on appropriate themes and according to the employees' knowledge level.

Through these measures, we educate employees and raise their awareness so as to encourage them to act with consideration and empathy for others.

Corporate Ethics Helpline

If an employee discovers an actual or potentially illegal act, he/she should swiftly report it via his/her supervisor or manager. If this is difficult, the employee can use the Corporate Ethics Helpline as a means of seeking consultation and providing information.

The helpline channels set up inside and outside the company will accept such reports, which can be submitted by e-mail, internal e-mail, telephone, sealed letter or any other method that the informant wishes to use. Anonymous reporting is also permitted. We also protect the confidentiality of informants to prevent disadvantageous treatment of them, in accordance with the Whistleblower Protection Act.

In fiscal 2012, we received 15 reports, all of which were dealt with appropriately. We will continue to promote the use of the Corporate Ethics Helpline.

Voice

The Corporate Ethics Helpline is a reporting/consultation channel directly linked to the officer in charge of compliance. We operate the Corporate Ethics Helpline system with care to ensure that honest reporters will not be disadvantaged by making a report. In addition, we investigate and identify the facts behind all the reports submitted. We then take corrective measures on the basis of the results as well as measures to prevent any recurrence. We hope that employees will continue to make use of the Helpline to enhance our compliance initiatives.



Yasuo Mori
General Administration Dept.



Export Controls

To maintain international peace and security, Japan has implemented security export controls in full coordination with the international community, based on the Foreign Exchange and Foreign Trade Control Law. NGK SPARK PLUG CO., LTD. has drawn up its own Export Management Regulations to ensure thorough compliance with export restrictions, and has established a system that can flexibly deal with regulation revisions.

Our company has been approved by Customs as an authorized exporter that has established cargo security management and compliance systems, under the Authorized Exporters' Program. We have drawn up regulations for trade-related business operations and are committed to proper export cargo management.

We will continue to promote trade-related business in compliance with all laws and regulations, and to improve trade efficiency, while fulfilling our responsibility as a global company.

Voice

The most important requirement for export management is compliance with laws and regulations. If there are any legal violations in the process of export, not only would our company become unable to export products smoothly, but we would also lose our social credibility. To prevent this, we place emphasis on employee education and awareness-raising activities. For instance, the General Administration Department holds explanation meetings for relevant divisions to ensure appropriate export management. We will continue to take a careful approach to encourage employees to have accurate knowledge about export management.



Naoko Tokimoto
General Administration Dept.

Security Control / Information Security

Information Security Policy

We regard our own information assets as one of our management resources. Through the protection and effective use of our information assets, we pursue healthy maintenance and development of our business.

[Action Guidelines]

- We establish information security regulations that clearly define the system and responsibilities to protect all the information assets we keep for our customers, our information assets as information resources, and personal data.
- We comply with laws, ordinances, and regulations regarding information security.
- We educate all executives and employees who handle information assets about the importance of information security, and about specific items to be observed.
- We continuously implement measures necessary to improve the management system and to protect our information assets, keeping pace with a rapidly-changing information society.
- If a problem with the information security system is predicted to occur due to unforeseen circumstances, we will promptly take action to prevent an accident associated with the problem. Should the accident occur, we will strive to minimize the damage and take preventive measures against reoccurrence.

Needless to say, it is of great importance for companies to properly manage confidential information, in compliance with relevant legislation, including the Unfair Competition Prevention Act and the Act on the Protection of Personal Information. The importance of management of confidential information has been increasing with the rapid progress in information technology in recent years.

Under such circumstances, we established our Confidentiality Management Regulations as part of our endeavors to properly manage the private information of our company, customers and suppliers.

In response to the needs of an IT-oriented society, we also plan to introduce smart devices in an appropriate manner in order to improve our work efficiency, while maintaining thoroughgoing security management.

Our Privacy Policy is available on our website.

▶ Privacy Policy

Voice

To ensure security control, I consider it essential to develop the awareness of individual employees. However, it is not easy to ensure that all employees understand the importance of information security. If employees do not know the security rules, they may leak confidential information due to carelessness, resulting in tremendous damage to the company. We will promote and entrench the confidentiality management rules across the NGK SPARK PLUG Group, including affiliate companies, by implementing the plan-do-check-act (PDCA) cycle.



Tadashige Maegawa
General Administration Dept.

Intellectual Properties

To protect its existing and newly developed products, NGK SPARK PLUG CO., LTD. takes steps to actively acquire intellectual property rights and make effective use of them. We investigate the intellectual property rights of third parties in all production processes, from early stages of development to mass production, to avoid the risk of infringing the intellectual property rights of third parties or violating laws and regulations. We also verify the appropriateness of the intellectual property-related provisions in various contracts.

In the future, we will strengthen management of intellectual property across the Group, as the basis for our continued evolution as a "distinguished manufacturing company."

Voice

Along with facilities and human resources, intellectual property is an important asset for our company. We should therefore make effective use of intellectual property. With this recognition, we strive every day to ensure that any contracts concerning intellectual property rights licenses or the handling of joint development project outcomes can be concluded, in a manner that observes the relevant rules and that brings benefits to our company as well as our customers and the whole of society.



Kenji Mukai
Intellectual Property Dept.

Risk Management

Risk Management Policy

We are prepared to deal with various possible risks, such as natural disasters, accidents and spread of new infectious diseases. If such a risk should arise, we will act to minimize the impact on our stakeholders. We also work to restore and continue smooth business operations, thereby maintaining trust from our stakeholders.

【Action Guidelines】

- We strive to prevent factors that could affect business continuity.
- We conduct our activities with top priority on the protection of human life.
- We minimize impact on related parties.
- We strive for rapid restoration of business operations and stable supply of products and services.
- We take measures to prevent the recurrence of risks.

Basic Philosophy

In operating business, we face many risks including natural disasters, accidents, terrorism, and the spread of new infectious diseases. If an unforeseen incident occurs, we will act giving top priority to the protection of human life. We have also made contingency plans so that we can smoothly continue our business operation even under such circumstances.

Business Continuity Management

On March 2013 we held a company-wide emergency drill to deal with a major earthquake. The results of the drill were verified, evaluated and used to make improvements in our preparedness for possible future disasters.

We conduct disaster prevention activities from four basic perspectives—disaster reduction, preparation, response, and recovery—aimed at protecting human lives and property.

To ensure business continuity in the event of a disaster, in 2012 we established our Business Continuity Plan (BCP), which we have maintained, managed and continuously improved by following the plan-do-check-act (PDCA) cycle. Moreover, in order to keep to the target time for resumption of operations we have set based on business impact analysis (BIA), we will devise appropriate recovery measures, including alternative strategies.

Voice

We promote BCP education activities for all employees. A disaster prevention card and booklet are distributed to employees so that BCP activities can be established as part of our corporate culture. To ensure business continuity, the General Administration Department carries out BIA with the cooperation of each workplace, and implements risk management measures through visualization of important activities relating to our key products.



Yuki Aida
General Administration Dept.

Response to New Infectious Diseases

To protect employee's health from the seasonal influenza every year, we strive to prevent the spread of infection. Particularly regarding group infection at workplaces, which may affect our daily operations, we are ready to cooperate with the relevant divisions to implement immediate and intensive measures. During the flu season, we issue weekly reports so that all employees can share the information and take effective countermeasures. In addition, we are attentive to informations on candidate viruses for novel influenza.

Voice

In April 2009, the novel influenza virus H1N1 broke out in Mexico and spread throughout the world. In early 2013, human infection with the avian influenza virus H7N9 was identified in China. Since no one can predict when a new type of pandemic influenza may emerge, we will make all possible preparations, including the establishment of relevant guidelines and the review of stockpiles for emergencies, while paying attention to the actual situation.



Shiko Abe
Healthcare Promotion,
Human Resources Dept.

With Our Customers

Corporate Quality Policy

We continue to supply "Quality Products" to society with an emphasis on "Customer First," "Total Involvement," and "Continuous Improvement" principle.

【Action Guidelines】

- We strive to take a customer-oriented approach to accurately understand a wide variety of customers' needs and provide quality products and services, aiming to ensure greater customer satisfaction.
- We encourage all our employees to be actively involved in quality improvement activities, based on companywide cooperation, and to achieve higher goals by making the best use of their own individual abilities and creativity to address problems and challenging issues.
- Accurately responding to ever changing social/market environments and the diverse needs of customers, we strive to continue improving our systems, processes, products and services, aiming to further grow as an energetic and sound corporation.

Basic Philosophy

Under the continuously evolving business environment surrounding our Group, customers' quality demand is also becoming stricter and more complex. Against this backdrop, companies are increasingly expected to fulfill their corporate social responsibilities, by sincerely listening to customers' opinions, adequately and promptly responding to a wide variety of requests and issues, and meeting diverse expectations from customers.

To appropriately understand the diverse needs of customers and promptly take necessary actions from the viewpoint of customers, we at NGK SPARK PLUG CO., LTD. are committed to making company-wide efforts to improve our quality assurance system, aiming to provide safe and reliable products that ensure greater customer satisfaction.

To meet customers' diverse expectations, we also continue actively communicating our products and service information to customers, while at the same time manufacturing products by making the best use of the most suitable technology and our accumulated experience as a manufacturer. Through these efforts, we will work hard to offer new values to society.

Quality Management System

Since its establishment in 1936, NGK SPARK PLUG CO., LTD. has always emphasized "Nittoku Quality Mind," representing the company's traditional mentality that ensures a quality-oriented manner of doing business. This tradition remains intact, as shown by our Basic Quality Policy revised in 2006.

Based on our corporate quality policy, our divisions have respectively established comprehensive quality management systems in conformity with the ISO9000 series or ISO/TS16949 standards, promoting quality assurance activities.

In addition, with the aim of reinforcing our company-wide quality assurance efforts, we have strengthened collaborative activities among our Quality Committee, Quality Control Group and quality assurance sections of respective business units, thereby establishing a company-wide system to control and supervise product quality. Under this system, the Quality Committee works to identify quality-related risks and promotes corrective or preventive measures against any identified risks, with the ultimate goal of providing safe and reliable products to customers.



Voice

Since our company's foundation, our attitude toward manufacturing has been based on a policy of "no compromise on quality," known as "Nittoku Quality Mind," that represents the company's strong emphasis on quality integrity, ensuring the production of safe, reliable products of high quality to the satisfaction of customers.

We are committed to eliminating any defects in our products that may cause inconvenience to our customers. With this in mind, we also have established a system to respond promptly to any problems or accidents. We constantly aim for outstanding quality, and are pursuing comprehensive quality-oriented management.



Toshiki Sawada
Quality Control Group

Quality Improvement

NGK SPARK PLUG CO., LTD. is committed to quality management by promoting total quality management (TQM) activities.

- Top-down activities to embody our corporate policy in the policy management.
- Daily management to standardize prescribed operations at each workplace, as well as maintenance and improvement activities.
- Bottom-up activities to foster personnel development and activate workplaces, by encouraging small groups to conduct quality and business improvement activities.

Education

We provide a wide range of QC education and training programs on quality control, management techniques, QC circle activities, quality management systems, measurement management, etc. We also offer practical guidance and support to our employees to ensure that the knowledge gained through these programs is utilized in the workplace. As part of our activities to enhance quality awareness, increase the motivation of our employees and promote quality education, we hold events including quality-related exhibitions and lectures on quality. We also provide practical guidance to our suppliers to promote quality education and solve problems, aiming to encourage them to deliver higher quality parts and materials by implementing continuous quality improvements.

Voice

I encourage my group members to adopt a statistical approach as much as possible when streamlining the design and development of materials and the manufacture of products, examining evaluation methods and setting conditions. Even after attending a statistical technique lecture, we find it difficult to implement what we have learnt in practice. Every time we encounter problems, we work with the Quality Control Group to find solutions. Introducing the statistical approach taught in the lecture allows us to visualize things that we have not noticed, resulting in product quality improvement and production streamlining. Practical results are motivating my group members to use a statistical approach more frequently.



Toshiki Honda
Engineering Dept.,
Spark Plug Div.

NQC activities (small-group activities)

We make effort to solve problems and issues which we are facing in daily work. As a means of it, we have implemented NQC activities - a form of QC circle activity - throughout the company with the aim of personnel training and improving workplace skills.

During the Quality Month which is in every November, the company presentation meeting for accomplishment done through NQC activities are held, and the President's Award goes to the circle in recognition of best practice. At the company improvement practice presentation and award ceremony every June, commendations are given to small groups implementing exceptional NQC activities in daily operations throughout the year and overseas companies achieving outstanding improvement practices. We support NQC activities and improve quality by strengthening the organization that promotes them, creating activation teams of QC circle instructors and encouraging employees to participate in presentation meetings and training programs outside the company.

Voice

I belong to the secretariat of the Division Committee. With the basic principles of the QC circle activities, "For Yourself, For Your Colleagues and For Your Company" constantly in mind, I started focusing on face-to-face activities in meetings three years ago. When individual small groups engage in QC circle activities, I give them direct guidance and assistance so that communication in the workplace changes for the better. These activities have borne fruit and monthly meetings are now firmly established. The bottom-up approach taken by members is essential in promoting QC circle activities. I also believe that improving supervisors' understanding of the activities and offering an environment suitable for the activities play a key role. I am stepping up my efforts on these points. In fiscal 2013, I will join the NQC activity activation team as a QC circle instructor and become involved in building a new system and framework aimed at enhancing quality. I am willing to teach the most of the knowledge and knowhow I have gained.



Kazuhiko Noro
Quality Assurance Dept.,
Semiconductor Div.

Measurement control

We are responsible for the proper functioning of NGK SPARK PLUG's measuring equipment. We are working toward developing our manufacturing strengths by ensuring that all measuring instruments used for manufacture and inspection are calibrated for accuracy, and by visualizing and improving on-site problems using measuring instruments and implementing equipment precision evaluation and jig acceptance inspection.

Measurement forms the foundations of manufacturing. We are making all-out efforts to achieve the very best accuracy in measurement and continue to provide support for our overseas plants, group companies and suppliers to improve our manufacturing capabilities.

Voice

We did not receive much support from the Measurement Control Section over the past three years since NGK Spark Plugs (Thailand) Co., Ltd. launched its operation. At present, they provide us with guidelines on measurement control and support for equipment evaluation and jig precision validation that form the foundations of manufacturing. They also respond to our inquiries quickly. With their support, we aim to improve our manufacturing capabilities and NGK SPARK PLUG's quality levels.



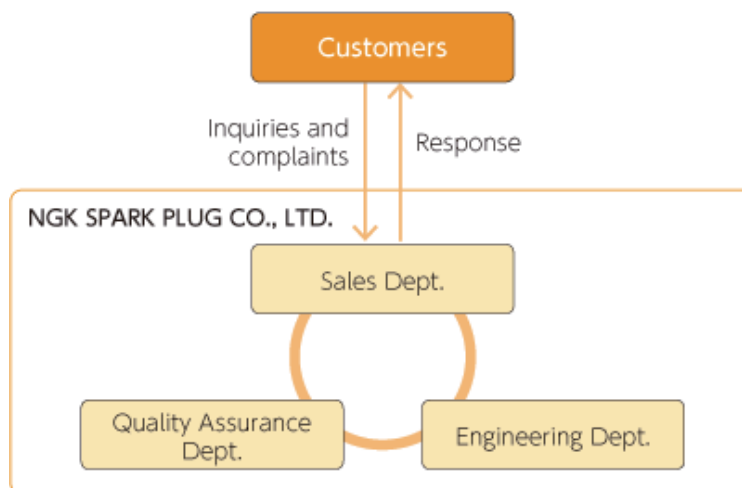
Plant Manager
Tatsuya Yamada
NGK Spark Plugs (Thailand)
Co., Ltd.

Communicating Information to Customers

Responding to Inquiries and Complaints

Inquiries and complaints on our products received from customers are first accepted at our sales division. Then the quality assurance division works together with the technical division to quickly respond and take necessary actions to the inquiries and complaints.

Response to inquiries or complaints



Information Dissemination through Websites

Our website named "Plug Studio" disseminates information on spark plugs, exhibitions at events, motor sports, etc. Using our applicable product number searching system, users can find a product number and the number of spark plugs applicable to the respective type/model of automobile.

► Plug Studio

Communication through Exhibitions and Events

We use opportunities provided by various exhibitions and auto races to directly communicate with customers at the venue by displaying our products and technologies. In doing so, we are able to keep abreast of the ever-changing needs of our customers.



NEPCON JAPAN 2013



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Responding Product Defects

We make it a rule that any product defect we have detected and found to possibly cause harm to customers be immediately announced to the public through our websites, newspapers, trade journals and other media as appropriate and that we simultaneously implement countermeasures against such defects to protect all users.

With Our Shareholders and Investors

Information Disclosure Policy

Aiming to become an enterprise capable of receiving great support and popularity from people around the world, we strive to conduct transparent business operations and fair information disclosure.

【Action Guidelines】

- We disclose any corporate information required to be disclosed by the Financial Instruments and Exchange Act and other laws and regulations, in an accurate and timely manner.
- We actively disclose our corporate information, which is not subject to laws and regulations however deemed to be important for stakeholders, through our daily actions, such as issuance of a press release and updates of our website.
- We focus on enhancing communication with our shareholders, investors and other stakeholders to further promote mutual understanding with them.

Basic Philosophy

We at NGK SPARK PLUG CO., LTD. are well aware that promoting transparent and fair information disclosure is indispensable to having all our stakeholders better understand and evaluate our business operations. To achieve this goal, in addition to meeting the legal standards of information disclosure, we also strive to strengthen information disclosure through various media and promptly post information on our website, with the aim of ensuring stakeholders' greater trust in our business operations.

▶ Investor Relations

Shareholders' Meeting

We hold our Ordinary General Shareholders' Meeting every June, at which we explain the business results of the previous year to our shareholders, who then vote on matters to be resolved. We also answer questions given by them directly.



General meeting of shareholders held in June 2012

IR Activities

Our shareholders and investors assist us in promoting the sustainable development of our business and improving our corporate value, and in this sense, they are not only supporters for us but also our important partners. So we actively communicate with them, through investor relations activities, to explain our business environment, financial conditions, visions and growth strategies.

For overseas institutional investors, we visit major financial centers in North America, Europe and Asia to meet with them individually on a regular basis. We also hold meeting for domestic analysts and institutional investors. We meet with individual investors more frequently to ensure that they understand our company clearly.

Voice

Our company is unfamiliar to end-customers. We will increase the number of company information session and provide more opportunities for our investors to find out more about NGK SPARK PLUG. We intend to make company information session memorable for our stakeholders and investors to create more fans of NGK SPARK PLUG.



Riki Matsuno
Public Relations Office

Returning Profits to Shareholders

Returning profits to our shareholders is one of the priorities on our agenda, and we aim to maintain consistent and stable payment of dividends. Presently, we seek to achieve a consolidated dividend payout ratio of 20% or more, and intend to continue semiannual payment of dividends. Our dividend payment plan is based on comprehensive financial strategies taking into consideration the following budgets; R&D expenses (as needed for future growth), capital investment (to expand or streamline our business) and internal reserves (for future investments). Dividend per share during fiscal year 2012 was 22 yen.

Employment / Human Rights

Human Resource Policy

We acknowledge that employees are the most important management resources. In the light of this, we respect the diversity and individuality of our employees and cultivate abundant human resources, striving to promote the further development of our Group as a whole.

【Action Guidelines】

- Respecting the rights of our employees, we eliminate discrimination and harassments in employment, and avoid the use of forced labor or child labor.
- We secure and foster human resources who help pass down our quality products principle to the following generations. To this end, we provide learning opportunities and other programs to support the career development of our employees.
- We establish a personnel evaluation system to ensure that people with different qualities can fully realize their own capabilities.

Basic Philosophy

Acknowledging that employees are the most important management resources, we respect the diversity and individuality of our employees, aiming to cultivate a wide variety of human resources. We also place an emphasis on offering a desirable working environment in which individual employees are encouraged to make full use of their capabilities and potential.

Voice

Things are changing rapidly inside and outside our organization. As we see people's new sense of values, drastic market movements and emerging countries, with the changes never experienced before such as the drastic changes in markets and the case of emerging countries, the environment of our company is also changing rapidly from both within and without. We, at the Human Resources Department, work on the reform of our personnel system, with the goal of empowering our organization to gain the following strengths; [1] the ability to cope with changes and survive difficulties, by developing diverse human resources with a can-do spirit and the ambition to create new business, products, technologies and markets, and [2] a Group-wide personnel tracking system, allowing the company to identify excellent employees in domestic and overseas units so as to provide them with the right position and chance to use their talent and aspirations effectively.

We need and develop those people who have a discerning eye to distinguish "assets" from "wastes" for our organization, who never simply resign themselves to the present situation, who make strenuous efforts to cope with drastic changes and have an aspiration to realize an innovation.



Masakazu Mori
Human Resources Dept.

Promotion of Diversity

We promote diversity in our organization as we believe that diversity and inclusion are essential for companies to attain sound growth and ensure happiness for all employees. Here, diversity means an employee-friendly workplace that accepts different personnel "assets" (one in which all people regardless of their gender, age, disability or nationality, enjoy their work) and includes diverse values and ideas that move the company forward.

Work-Life balance

Our employee demography shows that the number of employees on maternity/paternity leave has been constant at around 50 persons in recent years. In our company, many female employees return to work after maternity leave. The Paternity/Maternity Plus Program, established in Japan in 2010, is helping to gradually increase the number of male users of our childcare leave system (nine persons in total). We believe that increasing the time our employees can spend with their family members will eventually help improve the quality of their work life.



Empowerment of female workers

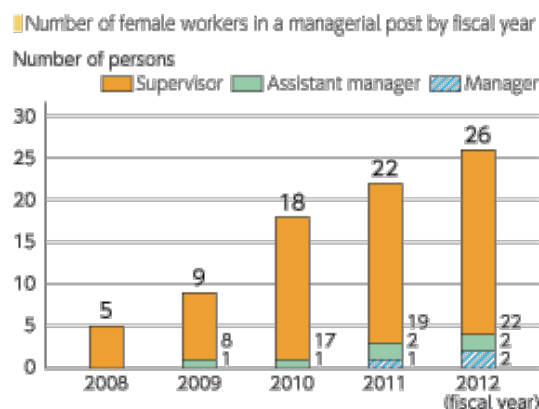
The average length of employment for female employees now exceeds 13 years, which means that we have a favorable work environment for women, including wives and mothers. The ratio of women to the total number of employees on the managerial track now exceeds 10% and the numbers of female employees in managerial posts (supervisor or manager) and female employees on overseas assignments (five persons as of March 2013) are increasing yearly.

This demonstrates that women are starting to play a more important role.

In fiscal 2012, we launched a full-scale diversity initiative. We invited external lecturers to give talks on diversity for women employees and their managers, and organized seminars for female leaders (female employees who are to be promoted to supervisor). We will continue to work hard to improve managers' understanding of female employees and raise our female employees' awareness of empowerment.



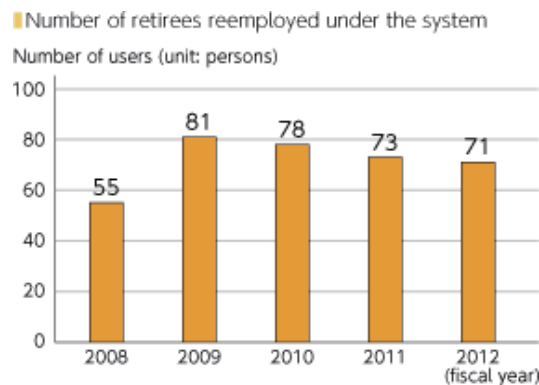
Diversity lecture



Post-retirement reemployment

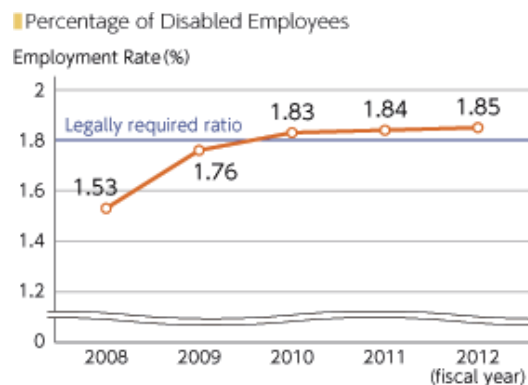
In 2001, we introduced a post-retirement reemployment system, with the aim of taking advantage of long-accumulated knowledge and expertise of retired employees and also satisfying their desire to stay at work.

Employment of the elderly population is an important issue for our society, as the national pension system has been reformed, deferring the starting age of recipients, and the demographic shift into aging society is quite rapid. We are working hard to introduce more opportunities for older workers, and intend to design various reemployment systems to take into account the aptitudes, motivation and abilities of senior employees so as to find mutually beneficial solutions for both employer and senior employees.



Employment of the disabled

The ratio of the disabled employee in our company was 1.85% at the end of 2012 fiscal year, which was fulfilled legal required ratio 1.80%. However, the ratio was raised to 2.0% in April, 2013. So we have to actively promote the employment of the disabled much more than before. We have decided to hire 4 additional handicapped high school graduates in this fiscal year. We continue to offer those employees a comfortable work environment with sufficient care and attention to safety aspects.



Human Resource Development

We aim at the development of those who can communicate the company's traditional attitude of emphasizing quality-oriented principle to younger employees, and also those who have the ability to cope with changes inside and outside the organization and follow through reforms. To this end, we implement diverse education and training programs systematically, based on our corporate Human Resources Development Concept, with the aim of ensuring continuous capacity building of employees.

Education/training programs

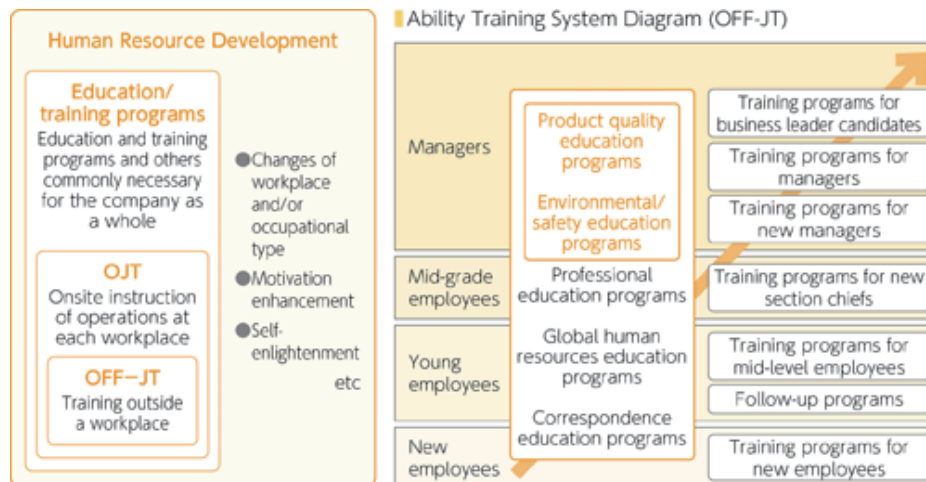
Our education and training activities consist mainly of OJT (on the job training) opportunities, through which employees are trained to acquire skills and knowledge in their normal working situation. We also have OFF-JT (off the job training) programs, providing employees with learning opportunities outside their respective workplaces. We have a wide range of OFF-JT programs that include quality education, environment and safety education, manufacturing education, training by organizational level, training by global human resources and career improvement support. During fiscal 2012, 4,581 employees participated in OFF-JT programs and 130 employees in correspondence programs.



Human Capital Development
Human Resources Dept



Orientation for new employees



Expanded Use of Personal Card System "My Career"

The company runs My Career, a tool to support employees in building a career. Individual employees have their own My Career card, in which they input their job history, skills, knowledge, objectives, positions they are aiming for and any opinions every six months. This helps them confirm what they want to do and what they can do in building their career. They also receive comments from their supervisors. We continue to use My Career as a tool to facilitate communication in the workplace and as a database to make full use of our human resources.

Labor-Management Relations

Labor-management relations should be oriented to the combined employer-employee effort to contribute to society through the provision of good products and services. At NGK SPARK PLUG, both labor and management understand their respective responsibilities and strive to improve the work environment through mutual trust and cooperation.

Labor-Management Conferences

Labor-management conferences are held on a regular basis, providing interactive communication opportunities. During a conference, information exchanges are made and diverse issues are discussed, including topics of management issues and working-hours reform.

Reduction in Working Hours

We have a "no overtime day" once a week. On this day, labor union members and management representatives patrol all workplaces to get all employees to leave at the designated time.

Anti-Harassment Measures

The company management and the labor union are working together to prevent any harassment and to protect the human rights of all employees. NGK SPARK PLUG's Work Rules explicitly prohibit all sorts of behavior that constitute harassment, and we have an anti-harassment committee responsible for the prevention of such behavior. Also, all plants have an advisor, who is designated jointly by the company management and the labor union, to listen to employees' assertions or reports of harassment.

Greeting Campaign

We have been continuing our "greeting campaign" since September 2008, encouraging employees to say "good morning" with a smile at the start of each day and "goodbye" when leaving work. Once a month, in the morning and after work, representatives of the labor union and the management stand on the sidewalks at the premises to greet employees.



Greeting Campaign

Group Response to Domestic Labor Laws

Individual affiliates need to respond to frequently updated labor laws. Even if a single company in our group does not comply with a law, the responsibility lies with the entire group. Therefore, we always keep our eyes on potential risks to prevent noncompliance. An exchange meeting is held every quarter between general managers of our affiliates, where problems that they face are discussed and information is shared. The entire group continues to join hands in compliance.

Voice

In fiscal 2012, we visited our affiliates and gave them lectures on the importance of the management of working hours. To prevent any ambiguity, we explained the basic rules and concept. We also offer question-and-answer sessions repeatedly so that the idea that time management and rules are important can take root.



Kenji Takagi
Human Resources Dept.

Occupational Safety and Health

Occupational Safety and Health Basic Policy

We strive for occupational safety and health as the starting point of business activities on the basis of respect for human life and dignity.

【Action Guidelines】

- Observe laws and self-standards relating to occupational safety and health.
- Reduce risks and elimination of work-related accidents through sustainable improvement in occupational safety and health management system and performance.
- Prevent health hazards and promote the physical and mental health of employees.
- Publicize this policy among all the employees, promote consciousness through training and enlightenment, and expand toward the overall participation in labor safety and health activities.

Basic Philosophy

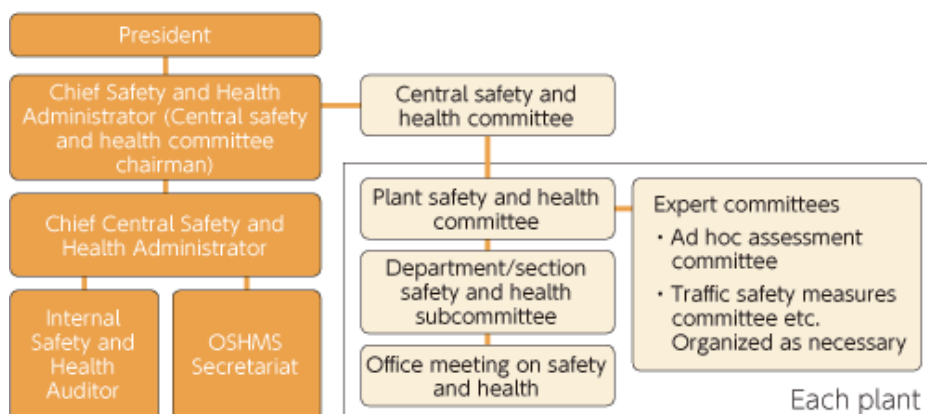
Occupational safety and health is the most familiar theme for employees in their daily duties. It is the most important theme for enterprises as well in their efforts to provide a working environment in which employees are encouraged to do their best in operations. We are well aware that offering a secure and safe workplace is our important corporate responsibility.

To this end, we established our occupational safety and health management system in 2006, aiming to realize "zero accidents" and secure safety at all workplaces. We will continue strengthening our safety and health management activities at a company-wide level, aiming to establish a corporate culture of "safety first."

OSHMS

With the aim of eliminating on-the-job accidents and creating a comfortable, safe work environment, we have established an in-house occupational safety and health management system (OSHMS). We are accredited as complying with JISHA OSHMS Standards. Each plant and office set safety goals and safety plans in accordance with our OSHMS guidelines, aiming to conduct OSHM activities based on a "total involvement" principle. To attain a step-by-step improvement of our safety status, the progress and results of such OSHM efforts are verified by our internal safety and health auditors as well as the plant safety and health committee and the central safety and health committee.

■ Safety and Health Promotion Organization



*Each plant refers to Headquarters and Nagoya Plant, Komaki Plant, Miyanojo Plant, Ise Plant

Targets & Results for Fiscal 2012

Evaluation standards achieved : ○ Not achieved : ×

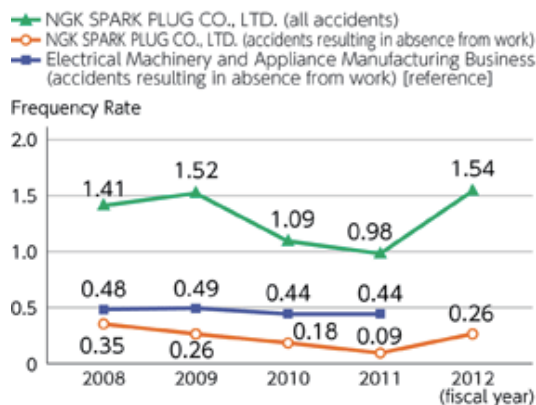
	Fiscal 2012			Fiscal 2013
	Target	Result	Evaluation	Target
1. Elimination of work-related accident	Essential safety of machinery and facilities, and promotion of self-management of them	We have made improvements to the identification of machines and equipment that should be maintained according to the law and their voluntary management.	○	Promotion of skill assessments
	Promotion of new risk assessment	We have given explanations on the new risk assessment system in the workplace and introduced it to the model workplace.	○	Promotion of new risk assessment (in the workplaces concerned)
	Completion of rules of operation methods and thorough compliance to the rules	We have reviewed operational procedures. The "Stop, Call out and Wait" rule has been enforced.	○	Examination and revision of irregular working procedures
2. Improvement of work environment	Improvement of work environments	Noise reduction in the second and third management categories has progressed little in the relevant workplaces.	×	Improvement of the work environment (safety and health) in workplaces
3. Promotion of health	Utilization of results of periodical health examinations to ensure employees' autonomous health management and their receipt of necessary instructions and consultation	Special health guidance has helped promote the health of employees.	○	Guidance on the self-management and the prevention of health by the help of medical examinations
	Promotion of employees' autonomous efforts to maintain their mental health while empowering managers to fulfill their responsibility to supervise health conditions of their subordinates	The self-care handbook has been used effectively and employees have been encouraged to read it out together. This helped increase employees' awareness of the importance of mental health.	○	Self-care and line care for mental health
4. Enhanced of education, training and enlightenment	Enrichment of education and training for safety and health in workplaces	Hands-on safety training with accident simulation was given so that young and less-experienced workers understand risk and the importance of safety.	○	Creation of an annual education program and implementation of education
	Enforcement of patrols for behavior relating to safety and health	Managers patrol their workplaces to ensure that rules are being complied with and introduce activities to remind employees.	○	Implementation of safety and health patrols (with importance to activities)
	Promotion of measures for safety, sanitation, and health in daily life	Information on the KYT and Hiyari Hatto incidents was shared, and employees were encouraged to read out the texts of the Handbook for Safety and Health Management together. These helped increase employees' awareness of safety.	○	Reading over of the safety and health rules and check in workplaces

Elimination of occupational accidents

A series of accidents resulting in inquiries to new employees who had just graduated from high school occurred in our group companies at the beginning of fiscal 2012. In response to these circumstances, the chairman of the Central Safety and Health Committee declared a state of emergency and the group has strengthened our safety and health activities. There have been no more accidents involving injuries to new employees since then but the frequency rate of all occupational accidents stood at 1.54 for fiscal 2012, which was equivalent to the annual average rate.

In fiscal 2013, we are improving our hands-on safety training with accident simulation and promoting risk assessment, thereby enhancing health and safety.

Frequency Rate of Accidents



Improvement of Working Environment

We conduct working environment measurements in accordance with the Industrial Safety and Health Act, targeting workplaces subject to significant dust pollution or severe noise. Plants and operational sites that have been classified in the second or third management category are especially encouraged to implement effective solutions so that they can be reclassified in the first management category. We also take measures to prevent cases of heat stroke in the summer by measuring the WBGT (Wet-Bulb Globe Temperature used as a heat index), encouraging an adequate intake of water and salt, providing cooling gear and the like, holding seminars on preventing heat stroke, and installing drink vending machines. In our offices, we measure the level of lighting and CO₂ concentrations to ensure that the work environment is always acceptable. In winter, we install humidifiers in our offices to help prevent the spread of flu viruses.

Health Promotion

We have a slogan – "Bring your best physical and mental condition to your workplace and maintain it until leaving." Self-discipline is a key to the maintenance of one's condition, and we promote employees' autonomous health management efforts.

Health Checkups

Our industrial physicians, clinic doctors and industrial health management staff follow up employees who have abnormal results in their health checkups, and send them on to specialized medical institutions when necessary. These coordinated efforts allow employees to maintain and improve their own health.

We also step up our efforts in public relations to raise employees' consciousness of their health and improve their attitude toward maintaining their own health.

Mental Health Care

We arrange in-house and external line care training programs. We also provide employees with a Self-Care Handbook and encourage them to use the stress check sheet in the handbook to increase their awareness of the importance of "self-care." We give the employees of our Japan-based group companies' in-house lectures on disease prevention and self-health management. We have also established an externally-run hotline which employees who are worried about their mental state can call to consult with a specialist.

Efforts by NGK Spark Plug Health Insurance Society

Working together with the company and the labor union, the health insurance society provides a wide variety of programs to support member workers' mental and physical good health. Specifically, health management and disease prevention efforts conducted by the health insurance society include: metabolic syndrome improvement/prevention programs; subsidies for medical examinations; support programs for quitting smoking; subsidies for flu vaccination; and other health management promotion programs such as walking tours and bus hiking. The health insurance society also operates three clinics at our domestic plants, as well as a resort facility for member employees in the Gokasho Bay area located in Minami-Ise, Mie Prefecture.

Enhancement of Education and Enlightenment Programs

As part of our daily activities to promote workplace safety and health management, we conduct occupational safety and health patrols, encourage information sharing about KYT and Hiyari Hatto incidents, and encourage employees to meet and read out

texts together of the Handbook for Safety and Health Management. Our internal auditors review these activities. Regarding problems identified at occupational safety and health patrols or at workplace meetings, they are reported to relevant local safety and health committees, to be discussed among committee members to find a solution.

In response to the recent increase in the number of young employees who have not experienced dangerous situations, in fiscal 2010 we introduced hands-on safety training with accident simulation using a machine into our training programs for new employees. We have added a pointing and calling procedure simulator to the machine, and constantly improve our training programs to further raise awareness of safety.



Simulation training



Simulation training

Comments from trainees on hands-on safety training

- I learned about the risks of being unaware of safety and the resulting accidents firsthand.
- I fully understand that pointing and calling facilitates smooth and mistake-free operations.
- I felt that untidy clothing was dangerous as it was likely to get caught in machinery.

With Our Suppliers

Procurement Policy

We aim to realize globally optimal procurement based on our quality products principle. To this end, we focus on strengthening cooperation with suppliers and promoting our CSR efforts throughout our supply chain system, while at the same time striving to carry out proper purchasing transactions when procuring materials and parts, based on the following guidelines:

【Action Guidelines】

- We conduct rational transactions based on fair, transparent, and open competition.
- We select a supplier based on comprehensive assessment of its product quality, technology, prices, deliveries, and efforts to continuously make improvements.
- Aiming to become a good corporate citizen, we are engaged in business operations complying with applicable national and international laws and regulations.
- We ensure stable procurement of better quality products at a reasonable cost and an earlier delivery.
- Aiming to procure more eco-friendly products, we strive to promote our green supplier system.
- Aiming to have our suppliers understand our company, we strive to establish mutual trust with our suppliers. Recognizing that we and our suppliers can be good partners for each other, we strive to realize our mutual development.

Basic Philosophy

It is indispensable to establish healthy partnerships with our suppliers to procure better raw materials and parts in a more timely and stable manner. Through our supply chain system, we work hard together with suppliers, aiming at mutual prosperity and further strengthened mutual trust.

Promoting CSR-Oriented Procurement

We promote the following activities for suppliers and our employees respectively, for the purpose of ensuring fair transactions with suppliers and the establishment of mutually beneficial sound partnership with suppliers.

<For suppliers>

- We explain our CSR procurement guidelines on our websites.
- We actively communicate with our suppliers to explain our corporate policy through corporate policy conferences, etc.
- We explain our green procurement guidelines on our websites.
- We provide face-to-face assistance through diverse activities, including 5S workplace improvement activities and seminars.
- We renew contracts with suppliers to include our new CSR guidelines, strengthened compliance and environmental conservation.

<For our employees>

- We hold seminars for our procurement personnel to ensure their compliance with the Subcontract Act.



In-house seminar
on the Subcontract Act
Voice

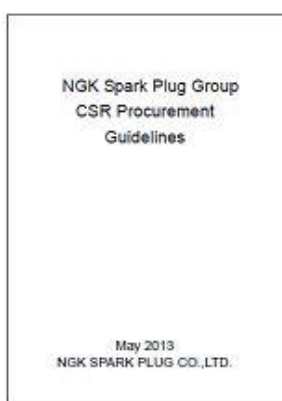
Our Procurement Group is responsible for promoting the NGK SPARK PLUG Group's procurement activities from a global point of view to help optimize overall production. To this end, our group works to link our suppliers with our departments and divisions, to encourage transparent transactions and to build stronger relationships. As society's call for CSR-oriented procurement is increasing, collection and dissemination of information are also necessary. With the support of our suppliers, we are pursuing CSR-oriented procurement.



Member of Board Corporate
Officer
Teppei Okawa
Procurement Group

CSR Procurement Guidelines

We have released the NGK SPARK PLUG Group CSR Procurement Guidelines that state the group's procurement vision and policies including corporate philosophies and CSR policies, and CSR areas and activities that we are involved in. In these guidelines, we ask our suppliers to understand and cooperate with our initiative on a supply chain basis.



CSR Procurement Guidelines [PDF](#)

▶ Japanese version

Sharing Corporate Policy

We hold a corporate policy conference to our main suppliers, offering them an opportunity to deepen their understanding of the present situation of our company and our goals.

At the conference held in May, 2012, explanation was given about our business performance, the fifth medium-term management plan, as well as respective division's policy under the plan. We also showed the direction to be taken by our company, reaffirming that we would work with suppliers to overcome the current severe business environments. In addition, we requested our suppliers to take responsible actions to appropriately control substances of environmental concern, promote quality improvement and cost reduction, and facilitate CSR activities.



We explained our vision
to suppliers

Green Purchasing Requirements

In the purchase of office supplies and appliance, we choose an environmental consideration type product.

1. Have less environmental impact during use.
2. Have a significant effect on environmental improvement during use.
3. Have less environmental impact during the disposal stage after use.
4. Comply with relevant laws, standards, regulations, etc. in terms of quality and safety.
5. Be preferably priced the same or lower than similar products (in consideration of longevity).

Version 2 of our "Green Procurement Guidelines (In-house Use)"

Green Procurement Guidelines

These guidelines explain the basic concept of our green procurement based on our environmental policies. We reviewed the list of related chemical substances in June 2013, and released version 8.02 of the guidelines. We ask our suppliers to study the guidelines and cooperate with our green procurement.

▶ Green Procurement Guidelines (Japanese version only)

With Local Communities and International Society

Social Contribution Policy

As a good corporate citizen, we at the NGK SPARK PLUG Group aim to contribute to society through the effective use of management resources.

【Action Guidelines】

- We focus on the following activities:
 - ・ Activities closely related to our business fields and also to local communities
 - ・ Activities that respect the cultures of individual countries and local communities, as well as activities that contribute to society such as traffic safety education programs
 - ・ Activities that contribute to the next generation society, focusing on environmental conservation, science, and education, as well as cultures to be bequeathed to the next generation, etc.
- We strive to create a corporate culture that encourages executives and employees to participate together in social contribution activities as a social citizen. We also respect and support their active involvement in society.

Basic Philosophy

We carry out various types of social contribution activities in areas where our production sites are located, aiming to enhance communication with local residents and help realize a more comfortable society. In conducting business operations throughout the world, we also respect the cultures and customs of local communities, aiming to contribute to the further development of local communities.

Social Contribution Activities Involving Areas and Regions Close to Us

Support for motor sports

NGK Spark Plugs (UK) Ltd. supports Motor Sports Endeavour, a group engaging in introducing motor sports to people with disabilities. As part of their efforts, we held a joint Special Track Day for mentally and physically disabled British veterans at the Donington Park Circuit in December

2012. About 50 people attended the event and were exhilarated to drive a super car at high speed with the support of an instructor, stimulating their enthusiasm for motor sports.



Social Contribution Activities Targeting Local Communities

Support for local communities in a disaster

We have made preparations to support local communities quickly in case of large-scale disasters. Our headquarters signed the memorandum with the Mitsurugi School District in Mizuho-ku, Nagoya City, agreeing to provide supplies and equipment. In

September 2012, a comprehensive emergency drill organized by Nagoya City was held in the Mizuho district and our company joined as a supporting company in the region.



Komaki Plant fire crews



Hosepipe drill

Our Komaki Plant concluded an agreement with Komaki City to dispatch our fire crews and fire engines to support relief operations. Our fire crews participated in the New Year ceremony of the Komaki City Fire Brigade and took part in hosepipe drills.

Traffic safety campaign

As a company engaged in the auto industry, we are responsible to society for ensuring traffic safety. We hold traffic safety campaigns on a regular basis, in which we use signboards and banners and call out to pedestrians on the street, including local citizens and our employees, to improve their attitude toward traffic safety.



Spark Tec Tono Co., Ltd.



Komaki Plant

Blood donation

We hold blood donation events on a regular basis in cooperation with blood centers of the Japan Red Cross to support people who need blood due to injuries or diseases. During fiscal 2012, NGK SPARK PLUG's blood donation events were held six times at four of our plants.



Reception for blood donation
(Headquarters)



Blood donation
at NGK Spark Plugs (India) Pvt. Ltd.

In addition, volunteers from our affiliates inside and outside the country, including NTK Ceramic Co., Ltd., Spark Tec Tono Co., Ltd., P.T. NGK Busi Indonesia and NGK Spark Plugs (India) Pvt. Ltd., also donated blood.

Cooperation with local events

Komaki City hosts the Komaki Industry Festival every year to introduce the companies that operate in the city and their businesses. NGK SPARK PLUG participated in the festival as a supporting entity, and organized a company introduction booth, free market, food stall and other events to entertain children and adults. On the day, we also offered participants use of our employee parking space in the vicinity of the venue.



Komaki Industry Festival

Participation in the Satsuma Town Summer Festival

Miyanojo Plant participates in the Satsuma Town Summer Festival every year. In 2012, 160 employees from the plant performed a Teodori dance to songs including the Satsuma Town People's dance song and the sound of the Itsutsu Daiko, Japan's traditional drums.



Teodori dance group

Lifesaving training

NTK Ceramic Co., Ltd. invited lecturers from the fire department to give training in basic lifesaving and use of the AED (automated external defibrillator). Employees were trained to be ready for emergencies inside and outside the company.



Lifesaving training

Community service

Woojin Industry Co., Ltd. participated in a free meals campaign organized by a local church, for which the employees prepared meals.



Meal preparation

Social Contribution Activities Envisioning The Development of The Next Generation and Future Society

Mathematics project

Ceramica e Velas de Ignicao NGK do Brasil Ltda. actively engages in capacity building. In fiscal 2012, we carried out a project to help teachers and students from public schools in Moji to learn more about mathematics using a book titled "Mathematics Game—Adventure in the Library." Believing that giving instructions to teachers is imperative in holding the interest of students, we held a workshop for teachers as part of this project. Ninety one teachers attended the workshop and brought the game back to their schools, introducing it to about 9,000 students in the fifth and sixth grades. We hope that students find mathematics interesting through this game and are motivated to learn more.



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Voice

We arranged this project to allow young people from as many communities as possible to participate and teachers and family members to be involved as project supporters because we believe that these are important factors for young people in forming a full character. As a result, the superintendent of schools in the city praised our project for producing better results than expected.



Fabiana Cunha
General Affairs and Human
Resources Dept.
Ceramica e Velas de Ignicao
NGK do Brasil Ltda.

Participation in TABLE FOR TWO to provide school lunches in developing countries

In October 2011, our Headquarters and Nagoya Plant started TABLE FOR TWO (TFT), a program providing school lunches in developing countries. The Komaki Plant and Ise Plant have participated in this program since 2012. For each "healthy choice" meal served in the cafeteria, 20 yen is donated. Total donations in 2012 were equivalent to 69,126 school lunches.



TFT (Table for Two) Day



"Healthy choice" meal

Voice

A report from the TFT secretariat on smiling children enjoying a school lunch always makes me happy. The TABLE FOR TWO initiative allows us to volunteer easily, thus facilitating a wide participation of a large number of people. I am proud of being a part of this initiative.



Yuki Sugiura
Human Resources Dept.

Scholarship granted to Asian students

Nittoku Asia Foreign Student Scholarship Public Trust is a charitable trust that we established in November 2006 to commemorate our 70th anniversary of the foundation. This Fund targets Asian students studying in the Aichi Prefecture. In its sixth year (fiscal 2012), the Fund granted scholarships to eight students.



Scholarship granting ceremony

Supporting vaccination through the donation of collected plastic bottle caps

Since July 2010, we have been participating in the movement for providing vaccines to children in developing countries, through collecting plastic bottle caps and donating them to NPO for children's vaccines. During fiscal 2012, we donated a total of 266,000 caps which would enable 287 children to receive the polio vaccine.



Cap collection box installed at
Our cafeteria

Rugby promotion event held by our rugby team

Miyanojo Plant's rugby club plays in the Top Kyushu League B under the motto "FULL THROTTLE - with all-out strength." To share in the fun of rugby, members organized a rugby school in June attended by 25 students from local primary schools. Participants had a good time together.



Rugby lesson

Donation to a school for disabled children

NGK Spark Plug Middle East FZE donated 53 CCTV cameras to the largest school for disabled children in Dubai. The CCTV cameras were installed in the aisles and classrooms to help ensure the security and safety of the children.



Eco Vision 2015

Environmental Policy

We positively promote actions for environmental conservation through all business activities to contribute to construction of a sustainable society with the participation of everyone concerned.

【Action Guidelines】

- Environmental management :
We will abide by all laws, regulations, protocols, and voluntary standards relating to environmental conservation to prevent environmental pollution. We also aim to manage both environmental conservation and business growth by continually trying to enhance our environment management system (EMS) and environmental performance from a global point of view.
- Business operation :
We will promote environmentally friendly business activity to contribute to prevention of global warming, resource recycling, and biodiversity conservation throughout the entire life cycle of our products from procurement of the materials to disposal.
- Cooperation with society :
We will try to disclose information and to enhance communication for improving the trust of our stakeholders and deepening cooperation with society. We also try to enhance environmental consciousness by positively enforcing participation of all the employees in environmental conservation activities.

Basic Philosophy

Environmental issues are a common challenge for all mankind. Every member of the NGK SPARK PLUG Group will work towards reducing environmental burdens from our business activities as much as possible and developing and providing products and technologies that contribute to improving the environment. We will also endeavor to communicate in greater depth with our stakeholders including our local communities so that we may all work together to contribute to creating a sustainable society.

Environmental Action Plan

■ Environmental Action Plan

	Item	Fiscal 2015 Target
Environmental Management	Promotion of globally united actions	Formulation of global ecological vision.
	Promotion of environmental activities relating to corporate management	Transparentization of energy and waste cost and construction of system to promote actions for reducing the costs
Business Activities	Reduction of CO ₂ emissions	Emissions: down 10% from 2007 Per unit production: down 8% from 2007
	Reduction of disposal of wastes and valuable materials	Per unit production: down 30% from 2007
	Reduction of water use	Per unit production: down 8% from 2007
	Reduction in PRTR emissions	Emissions: down 80% from 2007
	Development of environmentally friendly products	Expansion of LCA to all the company's operation sites
	Enhancement of the management of chemical materials	Construction of a management system on chemical materials including supply chains
	Promotion of green procurement	Expansion of the green supplier system
	Recycling of post-consumer products	Establishment of recycling technology for products and packaging materials
	Reduction of CO ₂ emissions in physical distribution	Domestic distribution energy per unit production: down 8% from 2007
	Environmentally friendly sales activities	Promotion of environmentally friendly sales activities
Social Cooperation	Improvement of disclosing information	Improvement of disclosing global environmental information
	Enhancement of communication	Enhancement of communication with communities
	Enhancement of social contribution	Enhancement of social contribution to communities
	Enhancement of actions for biodiversity preservation	Enhancement of actions for biodiversity preservation
	Enhancement of environmental consciousness	Enhancement of environmental education

▶ 2012 Targets and Results [37KB] [PDF](#)

Environmental Burdens from Business Activities

INPUT		Scope covered		
		NGK SPARK PLUG	Affiliates	Sales offices
Raw materials	Ceramic materials, metal materials, etc. Purchased volume of ceramic and metal materials; estimated volume of other raw materials used by departments ● 51,847tons	○	○	—
	Electricity Used in offices and plants ● 33,5370,000kWh	○	○	○
Energy	City gas Used in offices and plants ● 1,4520,000m ³	○	○	○
	LPG Used in offices and plants and for testing, travel and transportation ● 7570,000m ³	○	○	○
	Other fuels Used in offices and plants and for testing, travel and transportation ● 712kL[crude oil equivalent]	○	○	○
	Electricity generated in-house Generation by solar power generators and small hydroelectric generators ● 190,000kWh	○	—	—
	Tap water, well water Combined volume used ● 1540,000m ³	○	○	○
Water	Chemical substances (PRTR) Handled and notified by sites ● 810tons	○	○	—
Paper	Copy paper, other types of paper, cardboard, etc. Used in offices and plants ● 3,649tons	○	○	○
Logistics	Transportation fuels Used for transportation by trucks, ships, and aircraft ● 1,056kL [crude oil equivalent]	(Outsourced)		
		Suppliers		
		Research, Design, Manufacturing, Sales		
		Products		
		Logistics		
		Customers		
OUTPUT		Scope covered		
		NGK SPARK PLUG	Affiliates	Sales offices
Output into waters	Wastewater Released into sewerage systems and public waters; output from sites not equipped with water meters is equivalent to the total volume of tap and well water consumed. ● 1110,000m ³	○	○	○
	Chemical substances (PRTR) Released into waters and notified by sites ● 0.5tons	○	○	○
Output into air	Energy-derived CO₂ CO ₂ emissions due to electricity and city gas consumption ● 17.20,000tons-CO ₂	○	○	○
	Other GHG emissions Energy-derived GHG (other than CO ₂) emissions calculated on the basis of activities at sites ● 0.5tons-CO ₂	○	○	○
	Chemical substances (PRTR) Volume of substances released into air and notified by sites ● 140tons	○	○	○
Waste	Waste recycled, used for landfill or incinerated Total volume of waste recycled, used for landfill or incinerated ● 12,751tons	○	○	○
	Recycled Outsourced for recycling (including accounts receivable) ● 12,615tons	○	○	○
	Used for landfill or incinerated Outsourced for landfill and incineration ● 136tons	○	○	○
		Effective use rate ● 98.9%		
Logistics	CO₂ generated by external logistics CO ₂ emissions due to externally commissioned transportation ● 2,812tons-CO ₂	(Outsourced)		
Products	Products			
		Customers		

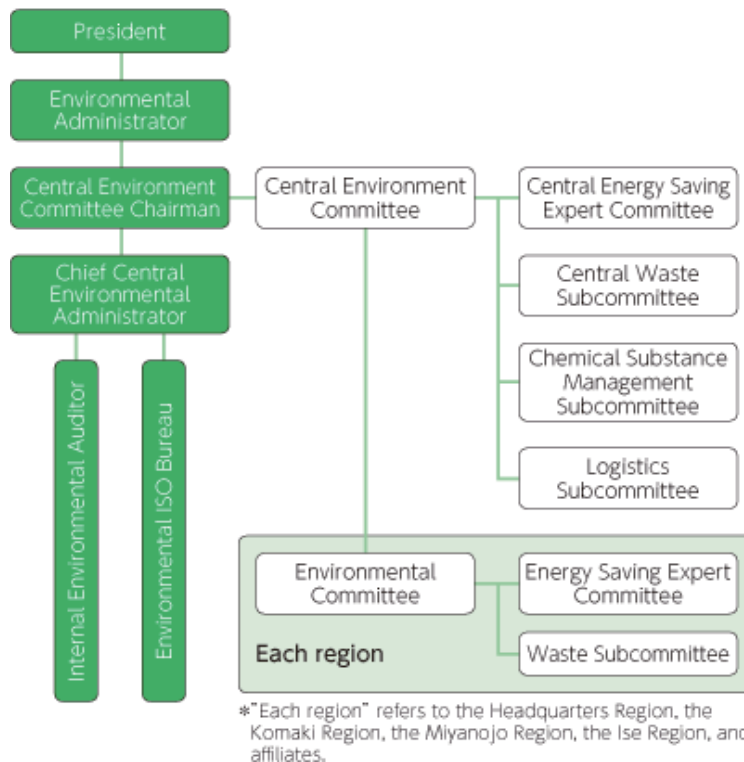
Environmental Management

Basic Philosophy

Our environmental management system, operating on the environmental policy shared by the entire Group, ensures systematic and effective environmental preservation activities. Under this system, all Group companies strive to achieve the Eco Vision.

The status of system operation is confirmed through internal audits. At the same time, the central and regional environment committees check progress towards achieving our goals and endorse challenges for each group, division, region, and department to facilitate continuous improvement.

Environmental Activity Promotion Organization



The Establishment Status of our Environmental Management System

We received ISO 14001 consolidated certification for NGK SPARK PLUG CO., LTD. and 10 domestic affiliates.

Overseas Group companies are also undergoing the ISO 14001 certification process. In FY 2012, NGK Spark Plugs (Thailand) Co., Ltd. and Bujias NGK de Mexico S.A. de C. V. obtained the certification. As of the end of FY 2012, 15 overseas Group companies are ISO 14001-certified. As a result, 98% of the entire worldwide Group employee body works at ISO 14001-certified sites.

▶ ISO 14001 Certified Locations [37KB] [PDF](#)

Voice

We formed a team and launched an important and challenging project to seek ISO 14001 certification in February 2012. We have improved our way of thinking and actions and continue to contribute to improving the environment. We are very proud of being a part of this improvement to leave future generations with a better environment.



Bujias NGK de Mexico S.A. de C.V.

Environmental Risk Management

Inherent in business activities are various risks including environmental incidents and pollution. NGK SPARK PLUG Group identifies these risks and endeavors to reduce and/or prevent them.

Soil Survey

We clarify our soil surveying method, auditing period, and evaluation standards to prevent soil or underground water pollution. We meet the accounting standards relating to asset retirement obligations, and comply with the Soil Contamination Countermeasures Act revised in April 2010.

PCB Control

Waste materials containing PCBs are stored at the Nagoya Plant, Komaki Plant and Nittoku Seisakusho Co., Ltd. We will continue to adhere to stringent control procedures until the day that waste containing PCB can be disposed of in a proper manner.

On-site Confirmation of Waste Material Treatment

We regularly visit our waste disposers to confirm that consigned waste materials are being processed in accordance with our agreement. In FY 2012, we visited 54 companies.

Preventing Chemical Leaks

To avoid the pollution of soil or water from chemical leaks, we take various measures at our facilities including double-layering storage tanks to prevent leakage and running pipes aboveground for prompt detection of leaks, and conduct regular inspections. We will also simultaneously enhance the operational and management aspects of our chemical substance handling.

Drills for Emergency Situations

We hold regular drills for emergency situations to prepare for unforeseen accidents, etc. Pollution is prevented by projecting possible incidents in each department as well as the impact of such incidents.



Drill on hydrochloric acid leakage
(Miyanojo Plant)

Handling of Asbestos

We have been taking appropriate measures to prevent health hazards from asbestos. All asbestos used in our facilities has been completely removed. Some asbestos is still present in buildings as insulators, and we will continue to adhere to stringent control measures.

Compliance Status

To ensure compliance with environmental laws and regulations as well as agreements with local municipalities, etc., we set stringent voluntary standards to prevent violations and complaints. In FY 2012, in Japan, there was one case in which the regulatory upper limits for wastewater were not observed, and one case of a request for noise and vibration-related improvement. These cases were promptly dealt with to prevent recurrence.

All our industrial sites conform to the water quality standards set under the revised Water Pollution Control Law that came into force in June 2012.

▶ Data on Atmosphere, Water Quality, Noise and Vibration [111KB] [PDF](#)

Numbers of Violations and Complaints (cases)

Fiscal year	Violations			Complaints		
	2010	2011	2012	2010	2011	2012
NGK SPARK PLUG CO., LTD.	0	1	0	3	2	0
Affiliates(Domestic)	1	1	1	1	1	1
Affiliates(Overseas)	—	—	0	—	—	—

Handling violations and complaints in fiscal 2012

Classification	Plant/Company	Situation	Countermeasures
Violations	Ceramic Sensor Co., Ltd.	Inadequate equipment repair resulted in release into the river of ammonium sulfate solution surpassing the upper limits set in agreement with Komaki City.	Notice was submitted to Komaki City; thorough education was conducted regarding equipment repair.
Complaints	Nittoku Seisaksho Co., Ltd.	Requests were received to reduce nighttime noise and vibration.	The section of the equipment found to have caused noise and vibration was relocated. Additional anti-noise measures are under consideration.

Voice

Following the revision of the Water Pollution Control Law, we had to check the metal fitting plating line, to see if it conformed to the newly applicable structural standards. As a result, we decided that the equipment had to be improved. Currently, improvement work is underway. Once the improvement work is finished, we will ensure thorough inspection to prevent underground water contamination.



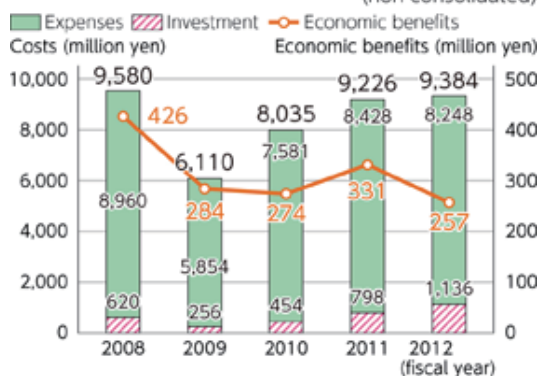
Yoshiaki Furusato
Production Dept.,
Komaki Plant,
Spark Plug Div.

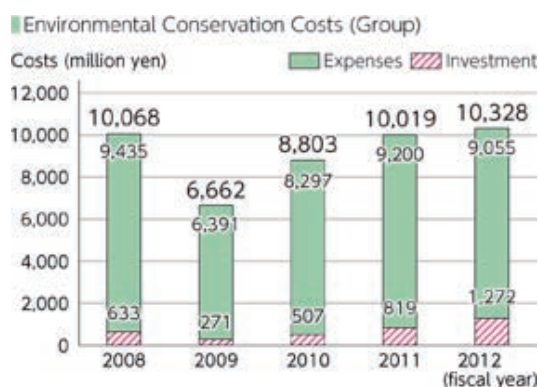
Environmental Accounting

What is important in promoting environmental management is to gain a grasp of the costs and effectiveness of environmental preservation activities. We have been adopting environmental accounting since 1999, and in 2003 the accounting scope was expanded to include the entire Group.

In FY 2012, environmental conservation costs amounted to 9,384 million yen on a non-consolidated basis and 10,328 million yen for the Group, an increase of 3.1% from FY 2011. The economic benefit associated with environmental conservation activities totaled 257 million yen on a non-consolidated basis.

Environmental Conservation Costs and Economic Benefits (non-consolidated)





► Environmental Accounting [41KB] [PDF](#)

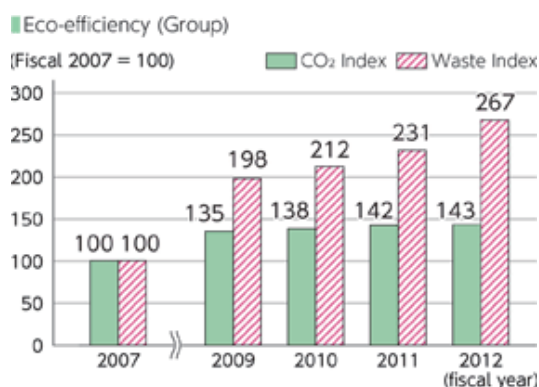
Eco-efficiency

We calculate eco-efficiency by determining net sales per unit of CO₂ emissions and generated waste, and endeavor to improve it.

Fiscal 2012 saw an increase in both the CO₂ index and the waste index compared to the previous fiscal year.

$$\text{CO}_2 \text{ Index} = \frac{\text{Net sales}}{\text{CO}_2 \text{ emission volume by production}}$$

$$\text{Waste Index} = \frac{\text{Net sales}}{\text{Volume of waste}}$$



Environmental Education

Environmental education is conducted to raise the employees' environmental awareness. In FY 2012, in the framework of environmental education, courses on the basics of environmental preservation, environmental burden calculation methods, and the environment management system were newly established. Environmental education will be continued in FY 2013 and onward, to improve the overall level of the environmental consciousness of the Group employees.



Environmental Education

Voice

Energy-saving efforts have been mainly on an individual basis, including reducing the volumes of paper used, turning off computer monitors and decreasing waste and electricity consumption. In the Basic Environmental Course, I learned that improving process, also contributes to environmental conservation. I continue promoting environmental activities in my daily tasks.



Kazutaka Tanaka
Engineering Dept.,
Semiconductor Div.

Products

Basic Philosophy

The NGK SPARK PLUG Group aims to contribute to improving the global environment through its products by making efforts to reduce the environmental burden throughout the lifecycle of its products, from raw material procurement to product disposal.

Aside from efforts to reduce CO₂ emissions and waste during the manufacturing and distribution processes, we are also endeavoring to produce environmentally friendly products by controlling the amount of energy involved in using and disposing of the product by customers and ensuring that they do not contain substances of environmental concern.

Product assessment

To reduce the environmental burden from procuring of raw materials and using and disposing of products, it is important to predict the environmental impact at the design stage, and to take prompt countermeasures when any negative impact is foreseen. To ensure this, we conduct product assessments when we develop new products or change the specifications of existing products.

During a product assessment, the existence of substances of environmental concern, the amount of energy used, etc. are confirmed at each of the design, manufacturing/distribution, use, and disposal stages. If the assessment determines that there is a significant environmental impact, countermeasures will be taken before development is continued.



Reducing environmental burden throughout the lifecycle

To reduce the environmental burden throughout the entire lifecycle of a product, we conduct an LCA (life cycle assessment) on our key products.

LCA is a method of providing an objective assessment on the impact on global warming and resource depletion throughout the entire lifecycle of a product. Making a more comprehensive, scientific and quantitative assessment allows us to clarify present problems and their magnitude, and reflect the results into designs, process, etc.

In the future, we intend to further promote assessment using product models so as to better reflect assessment results in product designs.

Substances of Environmental Concern

Basic Philosophy

We have a three-step management system for handling substances of environmental concern: [1] Answering requests from customers, [2] Handling within the Group, and [3] Procurement from suppliers.

Naturally we ensure compliance with laws and fulfill customer requests. More than that, we aim to reduce the use and emission of substances of environmental concern so as to minimize their effect on the environment and human health.

Answering requests from customers

With the reinforcement of regulations on chemical substances contained in products, requests from customers in the automobile, electrical and electronics industry regarding improved compliance are increasing. The REACH Regulation of the EU has triggered an increase in the status of chemical substances contained in products; we are taking all the appropriate measures including submission of Non-Containing Declarations, IMDS and JGPSSI survey and response tools, submission of various data with AIS, etc., and handling investigations and audits regarding our management systems.

Handling within the Group

We conduct non-containment management for products and control the use of substances of environmental concern in our plants.

Non-containment management for products

To satisfy customer requests and regulation such as the ELV Directive, RoHS Directive and REACH Regulation of the EU, we assign hazard ranks to substances of environmental concern. With handling standards for each rank, we carefully manage non-containment and reduce their use.

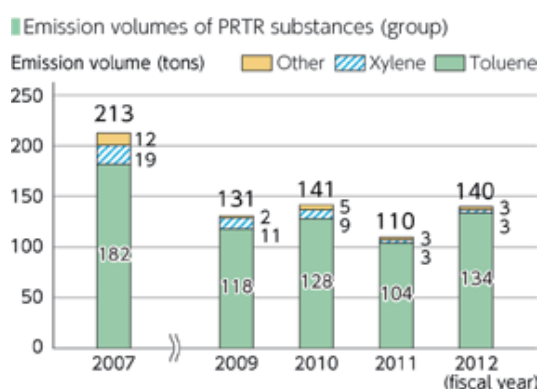
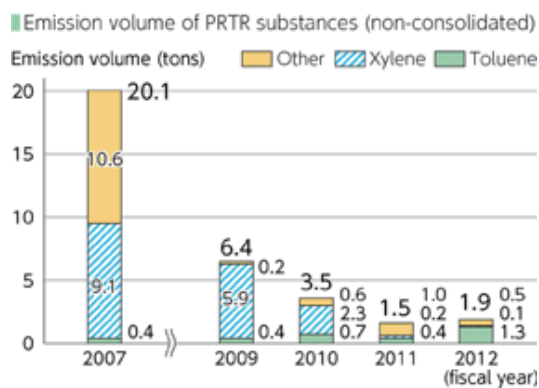


■ Hazard rank

Hazard rank	Handling standard	Substances covered
Prohibited substances	Use is prohibited.	Substances prohibited from use or strongly restricted by regulations.
Restricted substances	Safer substitutes will be sought, while making efforts to reduce the use of current substances.	Hazard level and toxicity are equivalent to prohibited substances, but an immediate changeover is impossible due to its special characteristics.
Monitored substances	Supplies need to be examined to find existence/non-existence of applicable substances.	Those not prohibited or restricted but that require monitoring.

Managing use in plants

Our plants aim to reduce emissions of PRTR substances. Eco Vision 2015 aims for emission reduction of 80% from 2007 (43 tons or less).



▶ PRTR data for Each Business Site [45KB] [PDF](#)

Procurement from suppliers

To manage chemical substances contained in products appropriately, it is imperative that we gain the cooperation of our suppliers. For this reason, we issue our Green Procurement Guidelines to request that our suppliers manage substances carefully and cooperate with green procurement.



Green Procurement Guidelines
(Japanese Only)

The green supplier system

Under this system, we designate suppliers who meet our system and material standards as Green Suppliers and given them priority in our order placements. As of the end of FY 2012, 256 suppliers have been named Green Suppliers.

In FY 2012, the scope of the system was extended to cover the entire Group.

Certification standards



Support for our suppliers

We support our suppliers in their green efforts by organizing seminars on related themes and assisting them in establishing their environmental management systems. We have thus far received requests for assistance from 40 suppliers, and 36 of them have already acquired ISO 14001 or EcoAction 21 certification. At present, we are continuing our support for four suppliers in the process of constructing their environmental management systems.

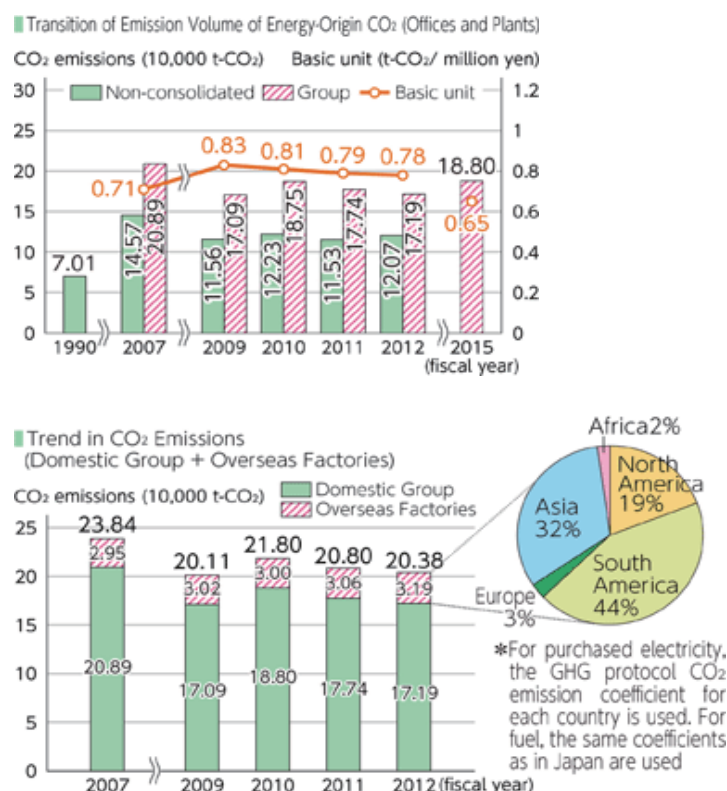
Global Warming

Basic Philosophy

Major climate change could hinder the establishment of a sustainable society. To contribute to the alleviation of climate change, Eco Vision 2015 sets CO₂ emission reduction targets for long-term efforts led by the Energy Conservation Promotion Office.

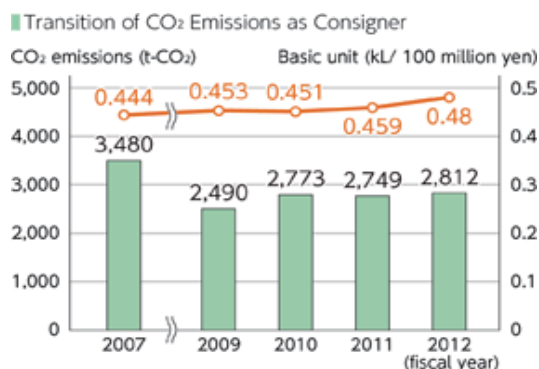
Trends in CO₂ emissions

In FY 2012, our CO₂ emissions figure was 171,900 tons (3.1% down from FY 2011), below the 2012 target of 176,800 tons. The target was attained mainly through energy-saving measures applied to the manufacturing process such as exhaust heat recovery and combustion air preheating and isolation, as well as power conservation (peak reduction).



Energy conservation during transportation

As a Specified Consigner designated under the Act on the Rational Use of Energy, we endeavor to reduce CO₂ emissions during transportation. In FY 2012, our per unit energy consumption was 0.480 kL/100 million yen, which exceeded the target of 0.422 kL/100 million yen. We are continuing our effort to reduce CO₂ emissions and attain the FY 2013 target of 0.417 kL/100 million yen.



Energy conservation in the office

We implement daily energy-saving measures in our workplaces, including turning off lights and computers during breaks and keeping office air conditioning at moderate levels, 28°C in summer and 20°C in winter, to which we adjust by dressing lightly or adding layers of clothing.

Since FY 2008, Miyanojo Plant has been growing bitter gourds, pumpkins, and gourds on the southern side of the administrative building, thereby creating green curtains. In FY 2012, arched sunshades were installed, and the outdoor units of air conditioners

have been shielded to reduce power consumption for air conditioning in summer.

Green curtains have also been adopted by Kamioka Ceramic Co., Ltd. and the Satsuma Plant of Nittoku Seisakusho Co., Ltd.



Shielded air-conditioner outdoor unit



Arched sunshade

Green curtain at Satsuma Plant,
Nittoku Seisakusho Co., Ltd.Green curtain
at Kamioka Ceramic Co., Ltd.

Use of natural energy

We promote the use of solar power, a natural energy source.

The Nagoya Plant has three solar power generator units and one solar water heater. The Komaki Plant has a large-scale solar power generator unit that can generate a maximum of 107 kW of electricity. In FY 2012, we generated a total of 170,000 kWh, equivalent to a reduction of 56 tons of CO₂.



Solar panels (Komaki Plant)

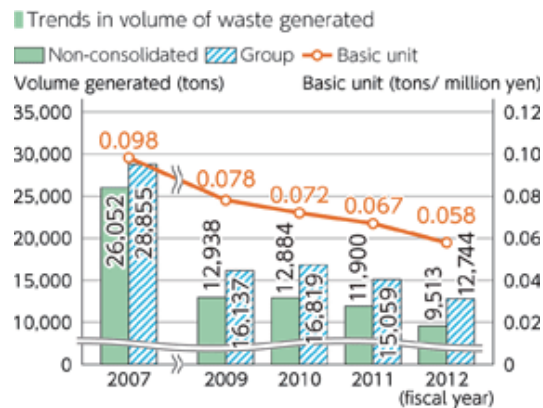
Waste

Basic Philosophy

The NGK SPARK PLUG Group aims to use resources effectively, and therefore works first and foremost to reduce the volume of waste generated, and to recycle what is generated.

Trends in waste generated

In FY 2012, the per unit waste production was 0.058 tons/million yen, a 41% improvement from the FY 2007 level.



► Volumes of Waste Generated at Each Business Site [33KB] [PDF](#)

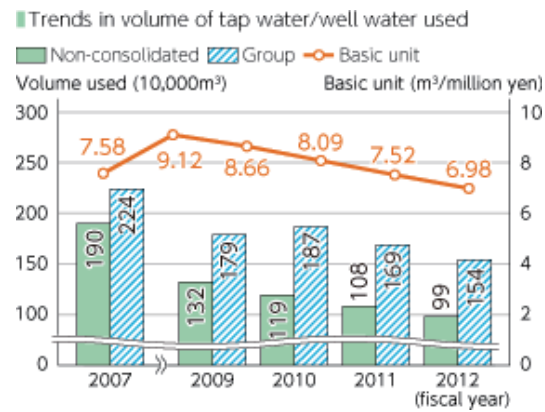
Water Resource

Basic Philosophy

The NGK SPARK PLUG Group recognizes that water is an important resource, and is making efforts to reduce the volume of tap water and well water used in our business activities.

Trends in water used

In FY 2012, the per unit water consumption was 6.98 m³/million yen, a 8.0% improvement from the FY 2007 level.



Environmental Communication

Basic Philosophy

For The NGK SPARK PLUG Group to continue its business operations, it is essential to improve our coordination with local communities and build trust with society. We feel that the best way to build this trust is to provide information on the Group's environmental activities, and we are endeavoring to disclose information in an accurate and easy-to-understand way to improve communication.

Observing environmental activities

We accept plant tours for observation of our environmental efforts and facilities. A deeper understanding of our Group's activities and better communication are achieved by seeing our facilities firsthand and engaging in question and answer sessions.

In FY 2012, we welcomed 382 visitors at our plants.



A plant tour
at Ise Plant Recycling Center

Environmental meeting

We host environmental meetings with local residents as a venue for communication. At these meetings, we explain our daily environmental activities as well as hear opinions and comments from participants on how we can improve things. In fiscal 2012, we hosted 10 such meetings, with a total of 49 participants.

Local clean-up activities

We regularly hold clean-up activities to preserve the local environment. We also continue to participate in beautifying activities hosted by local municipalities, etc. In fiscal 2012, a total of 909 people participated in such activities.

▶ Participation in clean-up activities
by each business site [33KB] [PDF](#)



Clean-up activity
(Komaki City clean-up walk)



Clean-up activity
(Kamioka Ceramic Co., Ltd)

Conservation of Biodiversity

The preservation of biodiversity is becoming increasingly important around the world. For the NGK SPARK PLUG Group as well, it is one of our environmental themes as important as the recycling of resources and global warming control. In April 2013, we published the Biodiversity Action Guidelines, which indicate our policy and action plan regarding biodiversity. The Guidelines have been drawn up to contribute to preserving biodiversity through environmentally responsible actions, including conserving energy and resources and reducing the output of environmental burdens throughout the product lifecycle, in consideration of the possible impact of our business activities on biodiversity.

Following the Guidelines, we intend to further promote our activities for environmental preservation in line with our business activities and preserve biodiversity.



Biodiversity
Action Guidelines
(Japanese Only)

Third-Party Review

Third-Party Review

Mr. Tomohiro Tokura
Verification Specialist
Sustainability Service Division
SGS Japan Inc.



NGK SPARK PLUG Group's CSR Report 2013 (digest version) has been prepared, as I understand from our interview, to enable the Group's stakeholders to "know better" and "feel closer to" the Group, in consideration of feedback to the previous reports and past experience. To this end, the Report was focused mainly on a wide-ranging presentation of the Group's business activities, which is the first attempt for the Group. Compared to the CSR Report 2012, I find this year's version easier to read, with less space given to numerical results (environment, occupational safety and health, etc.). I also find the report broader in content, as exemplified by the descriptions of how the Group worked to turn the negative into a positive, such as the environmentally problematic piezoelectric element (PZT) and solving this problem. The way the content is constructed, i.e., opening with the Message from the President, followed by the Corporate Philosophy and the presentation of key products, is suggestive of the Group's strong desire to let its stakeholders "know it better." Indeed, the Message from the President, placed at the beginning, carries the Group's strong message, which is expressed by various key phrases: "delving for true value"; "distinguished manufacturing company," "highly profitable company," "progressive company" and "personnel assets company," as its vision for 2020; "courageously challenging itself in new business spheres"; and "global-speed-fair," all of which concern the Group's organizational nature. In addition, the key phrases "CSR procurement," "Eco Vision 2015," "quality employment creation," and "diversity," relate to the Group's CSR activities. These key phrases plainly express the CSR activities that the Group wishes to communicate to the public, as well as the Group's characteristics. At the same time, however, in the digest version, the key phrases are not very clearly highlighted on the pages that follow the Message from the President about the presentation of products and the CSR activities classified by concerned stakeholders, thereby somewhat weakening the link between the key phrases and the activities. It is my opinion that the stakeholders could have perceived a clearer overall picture of the organization had the content after the Message from the President been more strongly connected with the Message.

The "Voices" in each activity category presenting respective activities by those directly involved give very good (friendly) impressions as direct feedback from stakeholders concerning the corresponding activities. The Group's organizational orientation and principles are therefore clearly presented. On the other hand, the current status in FY 2012, the progress (results) of activities in preparation for FY 2013 and later, and future strategies are not clearly indicated in some parts. For this reason, the digest version does not suffice in providing an overall view of the activities. Of course, the online version is available to those who wish to refer to the report in greater detail. In this regard, the report would have been even easier to read and understand with more consideration given to the way the CSR activities are presented (e.g., giving links to the pages of the website carrying relevant information).

In our interview, I learned that the Group has a large percentage of sales outside Japan. In the Message from the President, the importance of the global market is obvious, with the repeated use of the key word "global." Yet, the report mentions activities at the Group's overseas sites only in connection with contribution to local communities. An overall picture of the Group's CSR activities outside Japan is unclear. It is assumed that there is a strong interest in the Group's activities at overseas sites that are related to environmental protection, human rights, and labor practices. It would be important for the NGK SPARK PLUG Group, in view of its status as a global business group and the importance of its overseas sites, to cover its overseas CSR activities with a focus on their risk factors. Improvement is expected in the future.

On Receiving the Third-Party Review

Yukashi Ukai
General Manager, CSR Promotion Department
NGK SPARK PLUG CO., LTD.



On behalf of the NGK SPARK PLUG Group, I would like to express my gratitude to your assessment of our CSR Report 2013 (digest version), and your precious feedback on our activities.

We believe that presenting ourselves and our activities exactly as-is is essential to win our stakeholders' trust and have them continue to understand and appreciate our activities or work hand in hand with us. Accordingly, in preparing our CSR reports, we have attached importance to an easy-to-understand, accessible presentation.

As our CSR Report 2013, to meet the varying needs and requests of our respective stakeholders, we have prepared an online version which carries detailed information and a digest version which summarizes our activities. The progress of our CSR activities and future strategies, which are considered unclear in the third-party review, are presented in the online version for each of the areas. I hope that interested readers will consult the corresponding pages on our website.

We believe that designing and implementing clear CSR strategies that accurately respond to environmental changes will bring about our stakeholders' understanding, sympathy, and support. For the future, we intend to further improve the contents of the online and digest versions of our CSR reports to meet their respective purposes, enhance the coherence of content, and cover a greater scope of our CSR activities that include our overseas sites.

Sincerely responding to the review we have received, we continue to promote our CSR activities with renewed determination.

Environmental Action Plan

Fiscal 2012 Targets and Results

Evaluation standards ○ : achieved × : Not achieved

	Item	Fiscal 2012 Target	Fiscal 2012 Results	Evaluation	Fiscal 2013 Target
Environmental Management	Promotion of globally united actions	Analysis of EMS operational state in overseas factories	Questionnaire survey was conducted in FY 2011, but results were not analyzed.	×	Analysis of EMS operational state in overseas plants
		Drawing out standard for collecting reliable environmental data	Criteria were not adopted.	×	Verification of environmental performance data in overseas plants
	Promotion of environmental activities relating to corporate management	Application method examination of material flow cost accounting	Application methods were not examined.	×	Application method examination of material flow cost accounting
Business Activities	Reduction of CO ₂ emissions	Emissions: 187,935 tons (down 10% from 2007) Per unit production: 0.748 tons/ million yen (down 5.6% from 2007)	Emissions 171,885 tons (down 17.7% from FY 2007) Per unit production: 0.780 tons/million yen (up 10.2% from FY 2007)	×	Emissions: 182,130 tons (down 12.8% from FY 2007) Per unit production: 0.716 tons/million yen (down 5.4% from FY 2007)
	Reduction of disposal of wastes and valuable materials	Per unit production: 0.070 tons/ million yen (down 28.6% from 2007)	0.058 tons/million yen (down 40.8% from FY 2007)	○	Per unit production: 0.057 tons/million yen (down 41.8% from FY 2007)
	Reduction of water use	Per unit production: 8.30 m ³ / million yen (up 9.5% from 2007)	6.980 m ³ /million yen (down 7.9% from FY 2007)	○	Per unit production: 6.19 m ³ /million yen (down 18.4% from FY 2007)
	Reduction in PRTR emissions	Reexamination of recycling equipment of VOC	Recycling equipment was reexamined, which did not result in installation.	×	Reexamination of recycling equipment
	Development of environmentally friendly products	Implementation of LCA to model products	LCA was in operation with model products at all divisions.	○	Implementation of LCA to model products
	Enhancement of the management of chemical materials	Introduction of chemical management software	Software specifications were studied and finalized.	○	Storing data for chemical management software
	Promotion of green procurement	・Investigation / certificate audit implementation of original suppliers of domestic affiliates. ・Renewal audit implementation of the suppliers certified in 2009	・28 companies were examined. ・One company's certification was decided (out of 28 candidates). ・152 companies' certification was decided (out of 345 candidates).	○	Renewal audit implementation of the suppliers certified in 2009
	Recycling of post-consumer products	Examination of products recycling technology	Product recycling technologies were not examined.	×	Examination of products recycling technology
		Implementation of package materials reuse	No significant results were obtained.	×	Implementation of package materials reuse
	Reduction of CO ₂ emissions in physical distribution	Per unit production 0.422 kL/ 100 million yen (down 5% from 2007)	Per unit production 0.480 kL/100 million yen (up 8.1% from FY 2007)	×	Per unit production 0.417 kL/ 100 million yen (down 6% from 2007)
	Environmentally friendly sales activities	Proposal of environmentally friendly sales strategies	Sales of environmentally friendly products were expanded.	○	Proposal of environmentally friendly sales strategies
		Enrichment of PR relating to environmental efficiency of products	PR for environmentally friendly products was conducted at exhibitions and through catalogues.	○	Enrichment of PR relating to environmental efficiency of products
Social Cooperation	Improvement of disclosing information	Disclosure of state of law abidance in overseas factories	Investigation was conducted, but results were not published due to absence of supporting proof.	×	Disclosure of state of law abidance in overseas plants
		Acquisition of material data (procurement amount of raw materials and parts) in overseas factories	Material data were obtained from overseas offices as questionnaire survey items.	○	Disclosure of global material balance
		Disclosure of global material balance	Global material balance data were not published.	×	Disclosure of CO ₂ , waste and water reduction cases in overseas plants
	Enhancement of communication	Continual implementation of the environmental conferences	Environmental conferences were held, during which interactions with local residents took place.	○	Continual implementation of the environmental conferences
		Acceptance of plant tours of stakeholders	Ward mayors and local organizations were received at plants from neighboring districts.	○	Acceptance of visitors to factories by stakeholders
		Continual participation in EPOC international exchange subcommittee meetings	Continued participation in EPOC international exchange subcommittee meetings was assured.	○	Continual participation in EPOC international exchange subcommittee meetings
	Enhancement of social contribution	・Continual implementation of the clean-up activities ・Enhancement of beautification activities around plants ・Participation in a variety of environmental activities	Periodic clean-up campaigns were conducted around plants.	○	・Continual implementation of the clean-up activities ・Enhancement of beautification activities around factories ・Participation in a variety of environmental activities
	Enhancement of actions for biodiversity preservation	Examination of activities for Satoyama (planted/managed natural woodlots) preservation activities and cooperation with NPO/NGO and governments	Possible participation in <i>Satoyama</i> (planted/managed natural woodlots) preservation activities was examined.	○	Examination of activities for <i>Satoyama</i> (planted/managed natural woodlots) preservation activities and cooperation with NPO/NGO and governments
	Enhancement of environmental consciousness	Enhancement of level-specific training in the domestic Group	Education programs were continued, with three new seminars.	○	Enhancement of level-specific training in the domestic groups
		Drawing out educational materials for overseas factories	Educational materials for overseas plants were not produced.	×	Establishment of system which implements environmental education for employees transferred to overseas subsidiaries

Conditions for the Establishment of a System

ISO 14001 Certified Locations

Certification covering multiple units

Country	Name of factories and companies		Certified initially in:	Certification organization
Japan	NGK SPARK PLUG CO., LTD.	Headquarters and Nagoya Plant	'99. 8	JQA
		Komaki Plant, Miyanojo Plant, Ise Plant	'00.12	
		Takenami Plant	'07. 1	
	Nittoku Alfa Service Co., Ltd.		'99. 8	
	Nittoku Unyu Co., Ltd.		'00.12	
	Ceramic Sensor Co., Ltd.		'00.12	
	NTK Ceramic Co., Ltd.	Komaki Plant	'00.12	
		Nakatsugawa Plant, Iijima Plant, Kani Plant	'00.12	
	Nansei Ceramic Co., Ltd.		'00.12	
	Kamioka Ceramic Co., Ltd.		'04. 1	
	Nittoku Seisakusho Co., Ltd.	Head Office Plant, Oguchi Plant	'04. 1	
		Satsuma Plant	'09.12	
	Nichiwa Kiki Co., Ltd.		'04. 1	
	Nittoku Spark Tech Tono Co., Ltd.		'04. 1	
	Tokai Taima Kogu Co., Ltd.		'09. 1	

Certification obtained individually

Country	Name of factories and companies		Certified initially in:	Certification organization
U.S.A.	NGK Spark Plugs (U.S.A.),Inc.	WV Plant	'00. 7	TUV
Mexico	Bujias NGK de Mexico S. A. de C. V.		'12.11	FS
Brazil	Ceramica e Velas de Ignicao NGK do Brazil Ltda.		'01.12	ABS QE
France	NGK Spark Plugs (France)S.A.S		'00. 5	AFAQ
U.K.	NGK Spark Plugs (U.K.) Ltd.		'01.12	BSI
Germany	NGK Spark Plug Europe GmbH		'04.11	TUV
Thailand	Siam NGK Spark Plug Co.,Ltd.		'02.11	TUV NORD
	NGK Spark Plugs (Thailand) Co., Ltd.		'12.10	SGS
South Korea	Woo Jin Industry Co.,Ltd.		'05. 4	KFQ
	NTK Technical Ceramics Korea Co.,Ltd.		'06. 4	ISC
Malaysia	NGK Spark Plugs Malaysia Berhad.		'06. 3	SIRIM QAS
China	NGK Spark Plug (Shanghai) Co.,Ltd.		'07. 4	SGS
Indonesia	P.T. NGK Busi Indonesia		'07.10	Bureau Veritas
India	NGK Spark Plugs (India)Pvt.Ltd.		'10.12	ASR
South Africa	NGK Spark Plugs SA (Pty) Ltd.		'08. 4	Bureau Veritas

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

We measure regularly the atmosphere, the water, the noise, the vibration, and manage them to observe laws and regulations.

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
Head Office/ Plant	Atmosphere	Soot and dust	Boiler (No.10)	mg/Nm ³	50	—	40	3	3
			Boiler (No.11)		50	—	40	2	2
			Boiler (No.12)		50	—	40	Use discontinued	Use discontinued
			Firing furnace (PR-2)		150	—	120	6.5	7
		NOx	Boiler (No.10)	ppm	150	—	120	31	31
			Boiler (No.11)		150	—	120	42	42
			Boiler (No.12)		150	—	120	Use discontinued	Use discontinued
			Firing furnace (PR-2)		180	—	144	37	44
	Drain (sewer)	pH		—	5.0~9.0	—	5.2~8.8	6.7	7.5
		SS		mg/l	600	—	480	11.2	62
		BOD		mg/l	600	—	480	7.3	43
		n-hexane extract		mg/l	30	—	24	1.1	2.8
		Cyanogen		mg/l	1	—	0.8	0.1	0.3
		Total chromium		mg/l	2	—	1.6	0.07	0.18
		Hexavalent chromium		mg/l	0.5	—	0.4	0.04	0.05
		Zinc		mg/l	2	—	1.6	0.43	1.00
		Lead		mg/l	0.1	—	0.08	<0.02	<0.02
		Nitrogen		mg/l	120	—	96	16.20	41
		Phosphor		mg/l	16	—	12.8	0.38	1.10
		Fluorine		mg/l	8	—	6.4	0.27	0.5
		Boron		mg/l	10	—	8	<1	<1
	Noise	Morning	F spot	dB	60	—	58	60.7	60.7 ※
		Daytime	F spot	dB	65	—	63	62.9	62.9
		Evening	F spot	dB	60	—	58	58.7	58.7 ※
		Night	F spot	dB	50	—	49	58.2	58.2 ※
	Vibration	Daytime	F spot	dB	65	—	60	53.0	53.0
		Night	F spot	dB	60	—	55	53.0	53.0
Komaki Plant	Atmosphere	Soot and dust	Boiler (No.1-6)	mg/Nm ³	100	100	80	<2	<2
			Firing furnace (No.9-10)	mg/Nm ³	200	200	160	6.5	7.0
		NOx	Boiler (No.1-6)	ppm	150	—	120	20.0	20.0
			Firing furnace (No.9-10)	ppm	200	—	160	77.0	79.0
		SOx	Boiler (No.1-6)	Nm ³ /h	5.889	—	4.711	<0.9	<0.9
			Firing furnace (No.9-10)	Nm ³ /h	5.889	—	4.711	77.0	79.0
	Drain (public water area)	pH	East	—	6.0~8.0	6.0~8.0	6.2~7.8	7.4	7.6
			West					7.2	7.5
			North					No drainage	No drainage
		SS	East	mg/l	30	—	24	1.8	3.0
			West					0.7	4.0
			North					No drainage	No drainage
		BOD	East	mg/l	25	—	20	3.2	5.2
			West					1.1	3.3
			North					No drainage	No drainage
		COD	East	mg/l	—	—	—	4.2	5.4
			West					3.5	5.9
			North					No drainage	No drainage
		COD(total)	Komaki Plant total	kg/day	114.62	—	—	8.5	19.8
		n-hexane extract	East	mg/l	5.0	5.0	4.0	<0.5	<0.5
			West					<0.5	<0.5
			North					No drainage	No drainage
		Cyanogen	East	mg/l	0.5	0.5	0.4	<0.1	<0.1
			West					<0.1	<0.1
			North					No drainage	No drainage
		Total chromium	East	mg/l	2.0	1.0	0.8	0.0	0.1
			West					<0.04	<0.04
			North					No drainage	No drainage
		Copper	East	mg/l	1.0	1.0	0.8	0.0	0.0
			West					0.1	0.2
			North					No drainage	No drainage
		Zinc	East	mg/l	1.8	1.8	1.6	0.1	0.3
			West					0.0	0.1
			North					No drainage	No drainage

※: These values apply to the background noise level. The background noise level is the noise when machines, and so on, are not operating. It is affected by traffic noise, noise from adjacent factories, and so on.

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
Komaki Plant	Drain (public water area)	Lead	East	mg/l	0.1	—	0.08	<0.02	<0.02
			West					<0.02	<0.02
			North					No drainage	No drainage
		Nitrogen	East	mg/l	120	—	60	7.2	9.2
			West					4.5	6.1
			North					No drainage	No drainage
		Nitrogen(total)	Komaki Plant total	kg/day	94.31	—	—	14.6	52.2
		Phosphorus	East	mg/l	16	—	8.0	0.4	0.9
			West					0.6	1.2
			North					No drainage	No drainage
		Phosphorus(total)	Komaki Plant total	kg/day	9.251	—	—	0.9	5.1
		Nickel	East	mg/l	—	—	—	0.2	0.2
			West					<0.1	<0.1
			North					No drainage	No drainage
		Manganese	East	mg/l	10	—	8	<0.1	<0.1
			West					0.1	0.4
			North					No drainage	No drainage
		Fluorine	East	mg/l	8	—	6.4	0.6	1.0
			West					0.8	1.1
			North					No drainage	No drainage
		Boron	East	mg/l	10	—	8	0.6	2.0
			West					<1	<1
			North					No drainage	No drainage
	Noise	Morning	First spot	dB	65	—	63	55.4	55.4
			Second spot	dB	65	—	63	54.3	54.3
			Third spot	dB	65	—	63	50.0	50.0
			Fourth spot	dB	65	—	63	52.5	52.5
			Fifth spot	dB	65	—	63	52.3	52.3
			Sixth spot	dB	65	—	63	48.0	48.0
			Seventh spot	dB	65	—	63	50.5	50.5
		Daytime	First spot	dB	70	—	68	58.1	62.0
			Second spot	dB	70	—	68	55.6	58.0
			Third spot	dB	70	—	68	51.8	59.0
			Fourth spot	dB	70	—	68	51.8	54.0
			Fifth spot	dB	70	—	68	49.4	55.0
			Sixth spot	dB	70	—	68	48.8	52.0
			Seventh spot	dB	70	—	68	50.3	55.0
		Evening	First spot	dB	65	—	63	54.7	54.7
			Second spot	dB	65	—	63	52.2	52.2
			Third spot	dB	65	—	63	52.8	52.8
			Fourth spot	dB	65	—	63	54.8	54.8
			Fifth spot	dB	65	—	63	43.2	43.2
			Sixth spot	dB	65	—	63	47.1	47.1
			Seventh spot	dB	65	—	63	49.7	49.7
		Night	First spot	dB	60	—	58	54.0	54.0
			Second spot	dB	60	—	58	50.8	50.8
			Third spot	dB	60	—	58	50.0	50.0
			Fourth spot	dB	60	—	58	50.3	50.3
			Fifth spot	dB	60	—	58	42.9	42.9
			Sixth spot	dB	60	—	58	45.0	45.0
			Seventh spot	dB	60	—	58	47.0	47.0
	Vibration	Daytime	Fifth spot	dB	70	—	68	<45.0	<45.0
		Night	Fifth spot	dB	65	—	63	<45.0	<45.0
Takenami Plant	Drain (public water area)	pH		—	5.8~8.6	5.8~8.6	5.8~8.6	7.3	7.6
		SS		mg/l	200	200	100	3.3	9.0
		BOD		mg/l	160	160	130	9.4	17.0
		COD		mg/l	160	160	80	5.3	7.7
		n-hexane extract		mg/l	5	—	4	<0.5	<0.5
		Nitrogen		mg/l	120	—	—	5.0	8.8
		Phosphorus		mg/l	16	—	—	0.41	0.57
		Coli bacteria		counts/cm ³	3000	—	2000	1.8	4.0

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
Takenami Plant	Noise	Morning	Fourth spot	dB	50	50	—	42.9	45.5
		Daytime	Fourth spot	dB	55	55	—	43.4	46.0
		Evening	Fourth spot	dB	50	50	—	42.9	46.0
		Night	Fourth spot	dB	45	45	—	42.4	45.0
	Vibration	Daytime	Fourth spot	dB	55	55	—	<15	<15
		Night	Fourth spot	dB	50	50	—	<15	<15
Miyanojo Plant	Atmosphere	Soot and dust	Absorption heater/chiller	mg/Nm ³	300	—	240	N/A	N/A
			3T water boiler	mg/Nm ³	100	—	80	<0.007	<0.007
		NOx	Absorption heater/chiller	ppm	180	—	144	N/A	N/A
			3T water boiler	ppm	150	—	120	78.0	78.0
	Drain (public water area)	pH		—	6.0~8.0	6.0~8.0	6.5~7.8	7.3	7.6
		SS		mg/l	35	35	28	6.5	11.0
		BOD		mg/l	20	20	16	5.7	16.0
		COD		mg/l	160	—	128	12.0	12.0
		n-hexane extract		mg/l	5	≤5	4	<2.5	2.5
		Cyanogen		mg/l	1	—	0.8	<0.05	<0.05
		Hexavalent chromium		mg/l	0.5	—	0.4	<0.05	<0.05
		Copper		mg/l	3	—	2.4	<0.05	<0.05
		Zinc		mg/l	2	—	1.4	0.1	0.1
		Lead		mg/l	0.1	—	0.08	<0.01	<0.01
		Fluorine		mg/l	8	—	6.4	<0.2	0.3
		Boron		mg/l	10	—	8	2.3	3.7
		Coli bacteria		counts/cm ³	3000	—	2400	0.0	0.0
	Noise	Morning	A spot	dB	60	—	55	42.9	44.1
			B spot	dB	60	—	55	42.6	44.7
			C spot	dB	60	—	55	45.0	46.7
			D spot	dB	60	—	55	49.5	53.4
			E spot	dB	60	—	55	45.4	47.7
			F spot	dB	60	—	55	48.3	52.4
			G spot	dB	60	—	55	46.1	50.8
		Daytime	A spot	dB	65	—	60	47.6	48.7
			B spot	dB	65	—	60	48.5	50.4
			C spot	dB	65	—	60	50.4	52.3
			D spot	dB	65	—	60	52.1	53.1
			E spot	dB	65	—	60	48.3	47.9
			F spot	dB	65	—	60	54.6	55.9
			G spot	dB	65	—	60	52.8	53.5
		Evening	A spot	dB	60	—	55	43.5	48.3
			B spot	dB	60	—	55	46.2	51.4
			C spot	dB	60	—	55	48.3	53.5
			D spot	dB	60	—	55	49.9	54.0
			E spot	dB	60	—	55	46.2	49.8
			F spot	dB	60	—	55	47.5	52.2
			G spot	dB	60	—	55	46.3	48.4
		Night	A spot	dB	50	—	50	40.6	46.3
			B spot	dB	50	—	50	39.0	44.6
			C spot	dB	50	—	50	43.9	45.7
			D spot	dB	50	—	50	46.8	48.5
			E spot	dB	50	—	50	42.3	48.7
			F spot	dB	50	—	50	45.2	48.9
			G spot	dB	50	—	50	43.0	47.9
	Vibration	Daytime		dB	60	—	52	28.0	28.0
		Night		dB	55	—	48	30.0	30.0
Ise Plant	Atmosphere	Soot and dust	Firing furnace	mg/Nm ³	250	—	100	<5	<5
	Drain (public water area)	pH		—	5.8~8.6	—	6.0~8.4	7.5	7.7
		SS		mg/l	90	—	45	2.2	9.0
		BOD		mg/l	25	—	20	1.7	4.0
		COD		mg/l	25	—	20	5.5	8.0
		n-hexane extract		mg/l	30	—	15.0	<1	<1
		Phenols		mg/l	1	—	0.5	<0.1	<0.1
	Total chromium		mg/l	2	—	—	1	<0.04	<0.04

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
Ise Plant	Drain (public water area)	Copper		mg/l	1	—	0.5	<0.02	<0.02
		Zinc		mg/l	2	—	1	0.0	0.0
		iron		mg/l	10	—	5	0.0	0.0
		Lead		mg/l	0.1	—	0.05	<0.01	<0.01
		Nitrogen		mg/l	120	—	60	8.7	13.0
		Phosphorus		mg/l	16	—	8	1.3	3.7
		Manganese		mg/l	10	—	5	<0.02	<0.02
	Coli bacteria		counts/cm³	3000	—	1500	Not detected	Not detected	
	Noise	Morning	East	dB	55	—	55	44.5	44.5
		Daytime	East	dB	60	—	58	49.4	49.4
		Evening	East	dB	55	—	55	41.1	41.1
		Night	East	dB	50	—	50	38.7	38.7
	Vibration	Daytime (all directions)		dB	65	—	60	<50	<50
		Night (all directions)			60	—	55	<50	<50
NTK Ceramic Co., Ltd. (Iijima Plant)	Atmosphere	Soot and dust	Firing furnace: YA-5,6	mg/Nm³	250	—	250	<5	<5
			Firing furnace: YA-7,8					<5	<5
			Absorption heater/chiller: FGL		100		100	<5	<5
			Absorption heater/chiller: FGDL					<5	<5
		NOx	Firing furnace: YA-5,6	ppm	180	—	180	<10	<10
			Firing furnace: YA-7,8					<10	<10
			Absorption heater/chiller: FGL		150		150	32.5	37.0
			Absorption heater/chiller: FGDL					37.0	39.0
	Drain (public water area)	pH		—	5.8~8.6	5.8~8.6	6.0~8.0	7.4	7.6
		SS		mg/l	50	50	—	3.5	19.0
		BOD		mg/l	30	30	25	1.3	2.6
		COD		mg/l	30	30	—	3.0	4.9
		n-hexane extract		mg/l	5	5	5	<1	<1
		Cyanogen		mg/l	0.5	0.5	0.2	<0.01	<0.01
		Copper		mg/l	2	2	2	0.04	0.05
		Zinc		mg/l	3	3	3	<0.05	<0.05
		Lead		mg/l	0.1	0.1	0.1	<0.05	<0.05
		Fluorine		mg/l	15	15	15	0.4	0.5
		Boron		mg/l	50	50	50	0.93	1.80
		Phenols		mg/l	5	5	5	<0.02	<0.02
		Ammonia		mg/l	500	500	500	11.3	19.0
		Coli bacteria		counts/cm³	3000	3000	3000	12.5	50.0
	Noise	Morning	First spot	dB	65	65	—	47.5	47.5
		Daytime	First spot	dB	65	65	—	50.0	50.0
		Evening	First spot	dB	65	65	—	51.5	51.5
		Night	First spot	dB	55	55	—	52.5	52.5
NTK Ceramic Co., Ltd. (Nakatsugawa Plant)	Atmosphere	Soot and dust	Firing furnace(NN-1)	mg/Nm³	50	50	20	6.0	6.0
		SOx	Firing furnace(NN-1)	Nm³/h	—	0	—	0.0	0.0
	Drain (public water area)	pH	Factory 1&2	—	5.8~8.6	5.8~8.6	6.2~8.6	7.6	8.2
			Factory 3					7.1	8.0
		SS	Factory 1&2	mg/l	50	50	35	4.3	7.0
			Factory 3					<1	<1
		BOD	Factory 1&2	mg/l	15	15	13	2.9	8.5
			Factory 3					2.6	6.1
		COD	Factory 1&2	mg/l	40	40	30	9.3	16.0
			Factory 3					6.9	18.0
		n-hexane extract	Factory 1&2	mg/l	5	5	4	<0.5	<0.5
			Factory 3					<0.5	<0.5
		Nitrogen	Factory 1&2	mg/l	10	10	—	5.1	7.2
			Factory 3					5.0	9.5
		Phosphorus	Factory 1&2	mg/l	3	3	2.5	0.11	0.21
			Factory 3					0.76	1.5
		Coli bacteria	Factory 1&2	counts/cm³	3000	3000	1000	169.5	330.0
			Factory 3					1.1	13.0

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
NTK Ceramic Co., Ltd. (Nakatsugawa Plant)	Noise	Morning	First spot	dB	60	60	58	50.0	50.0
			Second spot	dB	60	60	58	48.5	50.0
			Third spot	dB	60	60	58	47.5	51.0
			Fourth spot	dB	60	60	58	48.5	49.0
		Daytime	First spot	dB	65	65	63	54.5	60.0
			Second spot	dB	65	65	63	50.5	53.0
			Third spot	dB	65	65	63	51.5	54.0
			Fourth spot	dB	65	65	63	51.0	53.0
		Evening	First spot	dB	60	60	58	53.0	54.0
			Second spot	dB	60	60	58	55.0	55.0
			Third spot	dB	60	60	58	55.0	55.0
			Fourth spot	dB	60	60	58	48.0	51.0
		Night	First spot	dB	50	50	50	49.0	50.0
			Second spot	dB	50	50	50	49.0	49.0
			Third spot	dB	50	50	50	48.8	49.0
			Fourth spot	dB	50	50	50	44.8	47.0
	Vibration	Daytime	Fourth spot	dB	65	—	63	24.0	24.0
		Night	Fourth spot	dB	60	—	58	24.0	24.0
NTK Ceramic Co., Ltd. (Kani Plant)	Atmosphere	Soot and dust		mg/Nm ³	100	—	90	8.0	8.0
		NOx		ppm	150	—	135	110.0	110.0
	Drain (sewer)	pH		—	5.8~8.6	—	5.9~8.5	7.5	7.5
		SS		mg/l	200	—	180	1.0	1.0
		BOD		mg/l	160	—	144	2.8	2.8
		COD		mg/l	160	—	30	3.6	3.6
		n-hexane extract		mg/l	5	—	4.5	1.0	1.0
	Noise	Morning	First spot	dB	50	—	50	49.7	49.7
		Daytime	First spot	dB	60	—	60	49.8	49.8
		Evening	First spot	dB	50	—	50	49.6	49.6
		Night	First spot	dB	45	—	45	44.7	44.7
Nansei Ceramic Co., Ltd.	Drain (public water area)	pH		—	—	—	5.8~8.6	7.0	7.1
		SS		mg/l	—	—	90	0.5	1.0
		BOD		mg/l	20	20	20	0.5	1.0
		COD		mg/l	—	—	40	1.0	2.0
		n-hexane extract		mg/l	—	—	1	<1	<1
		Lead		mg/l	—	—	0.1	<0.01	<0.01
		Nitrogen		mg/l	—	—	100	2.8	5.4
		Phosphorus		mg/l	—	—	16	0.2	0.5
		Coli bacteria		counts/cm ³	—	—	1000	<1	<1
	Noise	Morning	North	dB	55	—	55	52.3	52.6
		Daytime	North	dB	60	—	60	56.4	56.6
		Evening	North	dB	55	—	55	52.8	53.1
		Night	North	dB	50	—	50	48.1	48.5
Kamioka Ceramic Co., Ltd.	Drain (public water area)	pH	①	—	5.8~8.6	—	6.2~8.2	7.7	8.1
			②					7.3	7.5
			③					7.4	7.5
		SS	①	mg/l	200	—	50	1.6	2.2
			②					5.7	9.8
			③					9.0	12.0
		BOD	①	mg/l	160	—	40	<0.5	<0.5
			②					2.1	4
			③					11.0	13.0
		COD	①	mg/l	160	—	40	0.8	1.0
			②					7.0	13.0
			③					30.0	39.0
		n-hexane extract	①	mg/l	5	—	2.5	<0.5	<0.5
			②					<0.5	<0.5
			③					<0.5	<0.5
		Coli bacteria	①	mg/l	3000	—	3000	<30	<30
			②					—	46
			③					<30	<30
	Noise	Morning	Fourth spot	dB	60	—	60	42.0	42.0
		Daytime	Fourth spot	dB	65	—	65	42.0	42.0
		Evening	Fourth spot	dB	60	—	60	41.0	41.0
		Night	Fourth spot	dB	50	—	50	42.0	42.0

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
Nittoku Seisakusho Co., Ltd. (Head Office Plant)	Drain (sewer)	pH	① Office building	—	5.0以上	—	5.8~9.0	7.6	7.6
			② Head factory					8.1	8.1
			③ West factory					7.4	7.4
		SS	① Office building	mg/l	—	—	600	3	3
			② Head factory					86	86
			③ West factory					5	5
		BOD	① Office building	mg/l	—	—	600	1	1
			② Head factory					55	55
			③ West factory					2.0	2.0
		n-hexane extract	① Office building	mg/l	50	—	50	—	—
			② Head factory					1	1
			③ West factory					<0.5	<0.5
	Noise	Morning	Second spot	dB	60	—	60	61	62
		Daytime	Second spot	dB	65	—	65	64	64
		Evening	Second spot	dB	60	—	60	62	62
	Vibration	Daytime	Second spot	dB	65	—	65	46.0	46.0
		Night	Second spot	dB	60	—	60	48.0	50.0
Nittoku Seisakusho Co., Ltd. (Oguchi Plant)	Drain (public water area)	pH	Oguchi ①	—	5.8~8.6	—	5.8~8.6	7.7	7.7
			Oguchi ②					7.2	7.2
		SS	Oguchi ①	mg/l	—	—	200	60.0	60.0
			Oguchi ②					2.0	2.0
		BOD	Oguchi ①	mg/l	—	—	160	71.0	71.0
			Oguchi ②					0.6	0.6
		n-hexane extract	Oguchi ①	mg/l	5	—	5	1.0	1.0
			Oguchi ②					<1	<1
	Noise	Morning	First spot	dB	55	55	55	54.0	54.0
			Second spot	dB	55	55	55	51.0	51.0
			Third spot	dB	55	55	55	52.0	52.0
			Fourth spot	dB	55	55	55	53.0	53.0
			Fifth spot	dB	55	55	55	54.0	54.0
			Sixth spot	dB	55	55	55	53.0	53.0
		Daytime	First spot	dB	60	60	60	53.0	53.0
			Second spot	dB	60	60	60	52.0	52.0
			Third spot	dB	60	60	60	55.0	55.0
			Fourth spot	dB	60	60	60	56.0	56.0
			Fifth spot	dB	60	60	60	53.0	53.0
			Sixth spot	dB	60	60	60	52.0	52.0
		Evening	First spot	dB	55	55	55	54.0	54.0
			Second spot	dB	55	55	55	51.0	51.0
			Third spot	dB	55	55	55	53.0	53.0
			Fourth spot	dB	55	55	55	51.0	51.0
			Fifth spot	dB	55	55	55	54.0	54.0
			Sixth spot	dB	55	55	55	55.0	55.0
		Night	First spot	dB	50	50	50	50.0	50.0
			Second spot	dB	50	50	50	50.0	50.0
			Third spot	dB	50	50	50	49.0	49.0
			Fourth spot	dB	50	50	50	48.0	48.0
			Fifth spot	dB	50	50	50	49.0	49.0
			Sixth spot	dB	50	50	50	49.0	49.0
	Vibration	Daytime	First spot	dB	60	60	60	46.0	46.0
		Night	First spot	dB	60	55	55	48.0	48.0
Nittoku Seisakusho Co., Ltd. (Satsuma Plant)	Drain (public water area)	pH		—	—	—	—	7.2	7.2
		SS		mg/l	—	—	—	4.0	4.0
		BOD		mg/l	—	—	—	5.0	5.0
		n-hexane extract		mg/l	—	—	—	2.5	2.5
		Coli bacteria		counts/cm ³	—	—	—	200.0	200.0
	Noise	Morning	First spot	dB	50	—	50	64	64
		Daytime	First spot	dB	60	—	50	64	64
		Evening	First spot	dB	50	—	50	64	64
		Night	First spot	dB	45	—	45	65	65
	Vibration	Daytime	First spot	dB	60	—	55	43.0	43.0
		Night	First spot	dB	55	—	55	46.0	46.0

※: These values apply to the background noise level. The background noise level is the noise when machines, and so on, are not operating. It is affected by traffic noise, noise from adjacent factories, and so on.

Compliance Status

Data on Atmosphere, Water quality, noise and vibration

Name of factories and companies	Item	Type		Unit	Regulation value		Voluntary standard value	Average	MAX
					Low/Local regulation	Agreement with the city			
Nichiwa Kiki Co., Ltd.	Drain (sewer)	pH		—	5.0~	—	6.0~8.0	6.9	7.1
		n-hexane extract		mg/l	50	—	40	1.8	3.0
	Noise	Daytime	Cooling tower north side	dB	65	—	63	60.2	60.2
Nittoku Spark Tech Tono Co., Ltd.	Atmosphere	Soot and dust		mg/Nm ³	—	—	200	49.0	75.0
		NOx		ppm	—	—	400	24.0	26.0
	Drain (public water area)	pH		—	—	—	5.8~8.6	7.6	7.6
		SS		mg/l	—	—	200	1.0	1.0
		BOD		mg/l	—	—	160	2.4	2.4
		n-hexane extract		mg/l	—	—	5	0.5	0.5
	Noise	Morning		dB	50	—	50	44	46
		Daytime		dB	60	—	60	51	54
		Evening		dB	50	—	50	44	45
		Night		dB	45	—	45	43	44
Ceramic Sensor Co., Ltd.	Atmosphere	Soot and dust		mg/Nm ³	200	200	200	0.0	0.0
		NOx		ppm	—	—	—	53.7	64.0
	Drain (public water area)	pH		—	5.8~8.6	6.0~8.0	6.0~8.0	7.2	7.5
		SS		mg/l	150	18	18	2.2	7.0
		BOD		mg/l	120	18	18	2.7	9.0
		COD		mg/l	120	18	18	7.7	13.0
		n-hexane extract		mg/l	5	2	2	1.0	1.0
		Nitrogen		mg/l	60	30	30	4.7	16.0
		Phosphorus		mg/l	8	—	4	0.0	0.2
		Fluorine		mg/l	8	—	8	1.7	3.6
		Boron		mg/l	10	—	10	2.1	4.4
	Noise	Daytime	First spot	dB	75	70	70	55.9	57.0
			Second spot	dB	75	70	70	56.0	58.8
			Third spot	dB	75	70	70	57.9	60.3
			Fourth spot	dB	75	70	70	54.6	59.7
			Fifth spot	dB	75	70	70	53.6	56.3
			Sixth spot	dB	75	70	70	53.4	54.2
			Seventh spot	dB	75	70	70	57.3	59.8
		Night	First spot	dB	70	60	60	54.7	56.2
			Second spot	dB	70	60	60	54.8	58.2
			Third spot	dB	70	60	60	56.6	58.5
			Fourth spot	dB	70	60	60	53.7	57.2
			Fifth spot	dB	70	60	60	51.4	53.1
			Sixth spot	dB	70	60	60	51.6	52.7
			Seventh spot	dB	70	60	60	56.5	58.3
Tokai Taima Kogu Co., Ltd.	Noise	Morning	east	dB	75	—	60	43.2	43.2
		Daytime	east	dB	75	—	65	45.0	45.0
		Evening	east	dB	75	—	60	44.8	44.8
		Night	east	dB	70	—	50	42.8	42.8
	Vibration	Daytime	east	dB	75	—	65	48.0	48.0
		Night	east	dB	70	—	60	48.0	48.0

Environmental Accounting

Environmental Conservation Costs

(Unit: million yen)

Items			Non-consolidated				NGK SPARK PLUG Group*			
Classification	Major efforts		Investment		Expense		Investment		Expense	
			2011	2012	2011	2012	2011	2012	2011	2012
Costs within the business area	Pollution prevention cost	Air/water pollution prevention and noise reduction	35	58	696	519	40	101	1,146	988
	Global environmental conservation cost	Global warming prevention, energy conservation	92	47	417	395	106	129	477	448
	Resource circulation cost	Effective resource utilization, industrial waste treatment/disposal	9	12	301	276	12	22	452	466
Sub-total			136	116	1,414	1,190	157	251	2,075	1,902
Upstream & downstream cost			0	0	0	0	0	0	13	11
Management activity cost			16	8	328	286	17	9	420	363
R&D cost			645	1,012	6,517	6,580	645	1,012	6,517	6,580
Social activity cost			0	0	159	181	0	0	165	186
Environment damage correction cost			0	0	10	10	0	1	11	13
Other costs			0	0	0	0	0	0	0	0
Total			798	1,136	8,428	8,248	819	1,272	9,200	9,055

● Any inconsistency between an aggregate of all itemized figures and a "Total" figure is due to rounding of fractions.

*Excluding Nittoku Alpha Service Co., Ltd.

Economic Benefits Associated with Environmental Conservation Activities

(Unit: million yen)

Area of recognized effect		2011	2012
Revenue	Revenue generated from the recycling of waste generated in operations or used products	203	147
Cost saving	Energy cost saving achieved from energy conservation efforts	116	104
	Reduction of water expenses through water saving	4	2
	Waste disposal cost saving achieved by resource conservation and recycling efforts	8	4
Total		331	257

Quantity of Environmental Conservation Benefits

Classification			Non-consolidated			NGK SPARK PLUG Group		
Effect measured in the business area	Types of effect		2011	2012	Difference from the previous fiscal year	2011	2012	Difference from the previous fiscal year
Effect measured with respect to resource input into operations	Energy consumption	Purchased electricity (GWh)	22,109	22,338	229	34,941	33,503	-1,438
		Gas (million m³)	1,279	1,379	100	1,506	1,452	-54
		LPG(million m³)	333	341	8	751	757	6
	Water consumption	Tap water (m³)	681,298	604,770	-76,528	895,960	817,405	-78,555
		Well water (m³)	401,720	385,883	-15,837	794,088	719,490	-74,598
	Quantity of PRTR law-regulated substances handled (tons)		619	573	-46	823	811	-12
Effect measured with respect to environmental load and waste from business activities	CO₂ emission from energy consumption (tons)		115,312	120,786	5,474	176,083	172,021	-4,062
	Waste	Effectively utilized mass (tons)	11,745	9,407	-2,338	14,887	12,611	-2,276
		Buried, incineration (tons)	155	106	-49	172	132	31
	PRTR law-regulated substances released into air and water (tons)		1.5	1.9	0	112	140	28

Hazardous Substances

PRTR data for Each Business Site The table contains the substances that each business location was required to report

(kg)

Name of factories and companies	Cabinet order No.	Name of chemical substance	Quantity handled	Quantity released			Quantity transferred			Quantity processed		Quantity taken out
				Atmosphere	Public water area	Soil	Public sewer	Buried and incineration	Effective use	Incineration on the premises	Disassociation reaction	
Headquarters and Nagoya Plant	53	Ethylbenzene	4,156	0							4,156	
	80	Xylene	17,808	0							17,807	
	87	Chromium and chromium (III) compounds	15,666				1		419			15,246
	144	Inorganic cyanide compounds (except complex salts and cyanates)	1,084				8				1,076	
	296	1,2,4-trimethylbenzene	7,967	0							7,967	
	297	1,3,5-trimethylbenzene	2,240	0							2,240	
	300	Toluene	51,861	12							51,849	0
	308	Nickel	107,412						88			107,324
	392	n-hexane	4,044	0							4,044	
	400	Benzene	2,122	0							2,121	
	405	Boron compounds	2,060					2	396			1,662
Komaki Plant ※Including NTK ceramic (Komaki Plant)	412	manganese and its compounds	1,043						6			1,038
	20	2-aminoethanol	8,383						8,057		326	
	53	Ethylbenzene	2,886	28					756		2,102	
	80	Xylene	13,900	137					4,245		9,518	
	87	Chromium and chromium (III) compounds	3,752					0	709			3,043
	132	Cobalt and its compounds	1,751					0	24			1,727
	144	Inorganic cyanide compounds (except complex salts and cyanates)	3,890						193		1,947	1,749
	272	Copper salts (water-soluble, except complex salts)	11,821		37				2,954		8,831	
	297	1,3,5-Trimethylbenzene	1,231	1					0		1,230	
	300	Toluene	29,707	113					6		29,589	
	308	Nickel	30,780					9	285			30,485
	309	Nickel compounds	4,713		87				1,888		2,739	
	400	Benzene	669	0							669	
	405	Boron compounds	33,664		302			15	2,525		71	30,751
	407	poly (oxyethylene) alkyl ether (alkyl C=12-15)	1,093						853		240	
Miyanojo Plant	411	Formaldehyde	2,338						2,315		23	
	412	Manganese and its compounds	5,745		34			0	5,341		1	368
	87	Chromium and chromium (III) compounds	12,395					0	1,703			10,692
	144	Inorganic cyanide compounds (except complex salts and cyanates)	1,962						30		1,931	
	308	Nickel	138,991									138,991
Ise Plant	405	Boron compounds	9,554		20				207			9,327
	412	manganese and its compounds	1,108									1,108
	305	Lead compounds	32,920						3,143			29,777
Takenami Plant	300	Toluene	1,573	1,163					251		158	
	309	Nickel compounds	643						146			498
Subtotal			572,933	1,456	479		10	27	36,539		150,635	383,786
NTK Ceramic (Iijima Plant)	53	Ethylbenzene	7,353	1,600					5,753			
	80	Xylene	3,959	862					3,098			
	87	Chromium and chromium (III) compounds	4,219						467			3,752
	144	Inorganic cyanide compounds (except complex salts and cyanates)	2,150		0				1,591		183	376
	300	Toluene	52,994	52,994								
	308	Nickel	1,229									1,229
	309	Nickel compounds	932						932			
NTK Ceramic (Nakatsugawa Plant)	354	di-n-butyl phthalate	6,546						573		5,973	
	80	Xylene	5,640	2,107					3,356			177
	87	Chromium and chromium (III) compounds	4,982						2,562			2,420
	300	Toluene	82,758	79,770					2,988			
	305	Lead compounds	1,940						928			1,012
	354	di-n-butyl phthalate	19,998						9,214		3,751	7,033
NTK Ceramic (Kani Plant)	355	bis (2-ethylhexyl) phthalate	2,445						2,033		185	227
	453	Molybdenum and its compounds	1,818						382			1,436
	354	di-n-butyl phthalate	2,257						1,399		857	
Nansei Ceramic	305	Lead compounds	6,934						1,481			5,453
	384	1-bromopropane	2,806	1,052								1,754
Nittoku Seisakusho (Oguchi Plant)	308	Nickel	13,056									13,056
Ceramic Sensor	333	Hydrazine	11,223						10,073		1,146	4
	374	Hydrogen fluoride and its water-soluble salts	2,497						2,448		50	
Subtotal			237,735	138,383	0				49,277		12,144	37,929
Total			810,668	139,840	479		10	27	85,816		162,779	421,716

Waste

Volumes of Waste Generated at Each Business Site

The volume of waste generated in fiscal 2013 in the factories and the affiliated companies is listed in the table as follows.

Name of factories and companies		Volume of emissions (tons)	Volume effectively Recovery rate used (tons)	Volume of buried and incineration (tons)	Recovery rate (%)
NGK SPARK PLUG CO., LTD.	Headquarters and Nagoya Plant	786	776	9.1	98.8%
	Komaki Plant	5,210	5,135	75	98.6%
	Miyanojo Plant	3,291	3,272	18	99.4%
	Ise Plant	218	216	1.4	99.4%
	Takenami Plant	8.4	6.7	1.7	79.4%
	Subtotal	9,513	9,407	106	98.9%
Affiliates	NTK Ceramic Co., Ltd. (Iijima Plant)	527	518	9.5	98.2%
	NTK Ceramic Co., Ltd. (Nakatsugawa Plant)	314	313	1.3	99.6%
	NTK Ceramic Co., Ltd. (Kani Plant)	53	53	0.0	100%
	NTK Ceramic Co., Ltd. (Komaki Plant)	766	755	10.9	98.6%
	Nansei Ceramic Co., Ltd.	5.2	5.2	0.0	99.6%
	Kamioka Ceramic Co., Ltd.	89	89	0.3	99.7%
	Nittoku Seisakusho Co., Ltd.	269	267	1.4	99.5%
	Nichiwa Kiki Co., Ltd.	6.1	6.1	0.0	99.2%
	Nittoku Spark Tech Tono Co., Ltd.	44	44	0.5	98.9%
	Ceramic Sensor Co., Ltd.	1,153	1,151	2.3	99.8%
	Tokai Taima Kogu Co., Ltd.	4.9	4.6	0.3	93.4%
	Nittoku Unyu Co., Ltd.	0.3	0.3	0.0	100.0%
	Subtotal	3,231	3,205	27	99.2%
Total		12,744	12,611	132	99.0%

Local clean-up activities

Clean-up Activities around our Business Sites

(people)

Name of factories and companies		Number of operations implemented	Total number of participants
NGK SPARK PLUG CO., LTD.	Headquarters and Nagoya plant	5	67
	Komaki Plant	4	152
	Miyanojo Plant	3	96
	Ise Plant	2	41
	Subtotal	14	356
Affiliates	NTK Ceramic Co., Ltd.	Iijima Plant	40
		Nakatsugawa Plant	25
		Kani Plant	32
		Komaki Plant	10
	Nansei Ceramic Co., Ltd.		50
	Kamioka Ceramic Co., Ltd.		36
	Nittoku Seisakusho Co., Ltd.	Head Office Plant	45
		Oguchi Plant	26
		Satsuma Plant	46
	Nichiwa Kiki Co., Ltd.		52
	Nittoku Spark Tech Tono Co., Ltd.		38
	Ceramic Sensor Co., Ltd.		75
	Tokai Taima Kogu Co., Ltd.		12
	Subtotal		487
Total		49	843

Clean-up activities initiated by a local government, etc.

(people)

Name of factories and companies	Event name	Held by	Location	Number of participants
NGK SPARK PLUG CO., LTD. (Komaki Plant), Ceramic Sensor Co., Ltd.	Komaki Citizens' Anti-Littering Action Day Komaki City Clean-up Walk for COP10	Komaki City, Komaki City Committee for Beautiful and Clean Local Environment	Around Komaki City Auditorium	16
NTK Ceramic Co., Ltd. (Iijima Plant)	Picnic for the Environment of the Tenryu River System	Ina Techno Valley Regional Center of the Nagano Techno Foundation, etc.	Area where the Ohtagiri River and the Tenryu River meet	23
NTK Ceramic Co., Ltd. (Kani Plant)	Kani River mass cleanup (Pre-Event of Kani City Environmental Festa)	Kani City	Kani River	14
Nittoku Seisakusho Co., Ltd. (Oguchi Plant)	Clean-up Campaign for the Kojo, Aise and Yado Rivers	Oguchi Town	Oguchi Town	13