

ECO report 2004

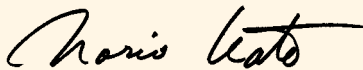


Thinking for tomorrow's sake

Message from the President



Chief Environment Administrator
President



Against the current social background of IT advances and economic globalization and amid rapid changes in environmental management, the quality of companies' social responsibility is being increasingly put to the test. Rather than simply searching for profit, it has become important to position legal compliance and environmental consciousness at the center of corporate management, and carry out activities that can contribute to our country, society and industry from a global point of view.

In this social climate, our company has planned a new environmental policy and established Eco Vision 2010 to set out our vision for the future. We have also created an environmental action plan and implemented business activities towards the realization of Eco Vision 2010, but the important thing now is for everyone to think about and identify which of the various measures are necessary. We will then link the accumulated results to the operational approach of the entire group of companies, including our affiliates.

Our company has obtained combined ISO14001 certification for the whole NGK Spark Plug Group including our Japanese affiliate companies. In the future we aim to implement global environmental management, including in our overseas offices, in order to bring about a synergistic effect from shared environmental information and integrated data management based on a common worldwide environmental policy.

Creating a sustainable circulation type society requires focusing on business that aims to reduce the environmental load throughout the entire lifecycle of products manufactured by companies. Regarding waste product treatment, all four NGK Spark Plug factories achieved zero emissions in FY2003 due to the implementation of waste separation and recycling. In FY2005, the aim is to achieve zero emissions throughout the NGK Spark Plug Group.

Regarding environmental restrictions, particularly on organic waste matter, we are keeping an eye on trends in environmental restrictions in other parts of the world such as Europe. While carrying out our manufacturing activities, we intend to refine our environmental technologies which will lead to improved environmental efficiency such as environmentally friendly eco-products and conservation of resources and energy.

The issue facing our company is acknowledging the emission of greenhouse gases from the firing process that is a necessary characteristic of our business. To counter the problem of global warming, we will strive to reduce the emission of greenhouse gases while at the same time consider the utilization of measures such as the Kyoto mechanism.

We release our ECO report 2004 covering FY2003 here. Although the activities of the factories of each group company are also issued in individual site reports, ECO report 2004 shows the achievements of our overall activities aimed at sustainable growth with the main emphasis on environmental conservation. We sincerely hope it will help you to better understand our company, and look forward to receiving your frank opinions.

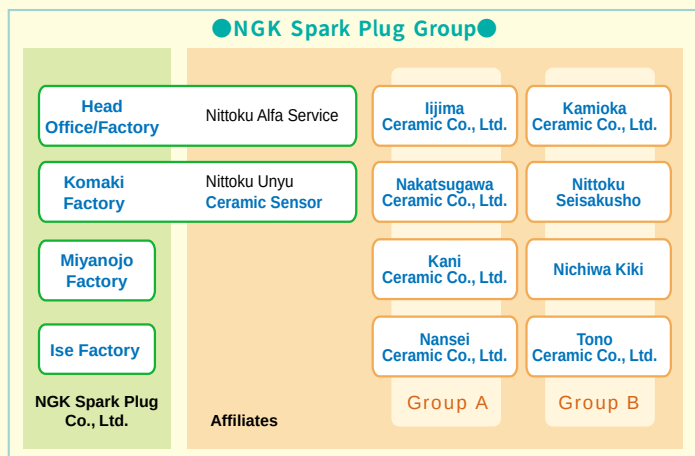
Editorial Policy

ECO report 2004 has been created with the purpose of clearly and simply describing the NGK Spark Plug Group's activities to reduce environmental load.

Intended readers All stakeholders including customers, investors, shareholders, residents of neighboring communities, business associates and employees.

Period covered **Data** : Actual figures recorded from April 1, 2003 to March 31, 2004
Activities, cases etc. : Including most recent ones

Scope covered NGK Spark Plug Co., Ltd. and its 11 domestic affiliate companies



□ represent a block (joint acquisition of ISO14001).

Factories and companies in blue have issued site reports.

※Where a different definition applies, such as for environmental accounting, the scope of coverage is specified in each article.

Reference guidelines 「Environmental Reporting Guidelines」 (Ministry of Environment)

Issued August 2004 (Japanese edition) ; October 2004 (English edition)
※This is the fifth annual report since the first one was issued in 2000.

Next publication schedule August 2005

Publishing director Norio Kato (Chief Environment Administrator)

Editor in chief Shunichi Takagi
(General Manager, Environment & Safety Management Dept.)

Site reports Details of environmental action at NGK Spark Plug's various factories and affiliated companies have been put together in the form of site reports.
※For inquiries about the various site reports, please refer to page 33.

Communication **Questionnaire**
We received many responses to the ECO report 2003 questionnaire. The following subjects were of particular concern to respondents and are reflected in ECO report 2004.

- Reduction and effective use of waste products
- Promotion of energy conservation
- Environmentally friendly product development

Website
ECO report 2004 and back issues can be read on our website.

<http://www.ngkntk.co.jp/environment/>

E-mail
Comments or questions on ECO report 2004 or the NGK Spark Plug Group's environmental actions can be sent to the following e-mail address.

eco@mg.ngkntk.co.jp

Guidelines published by the Ministry of the Environment

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Corporate profile

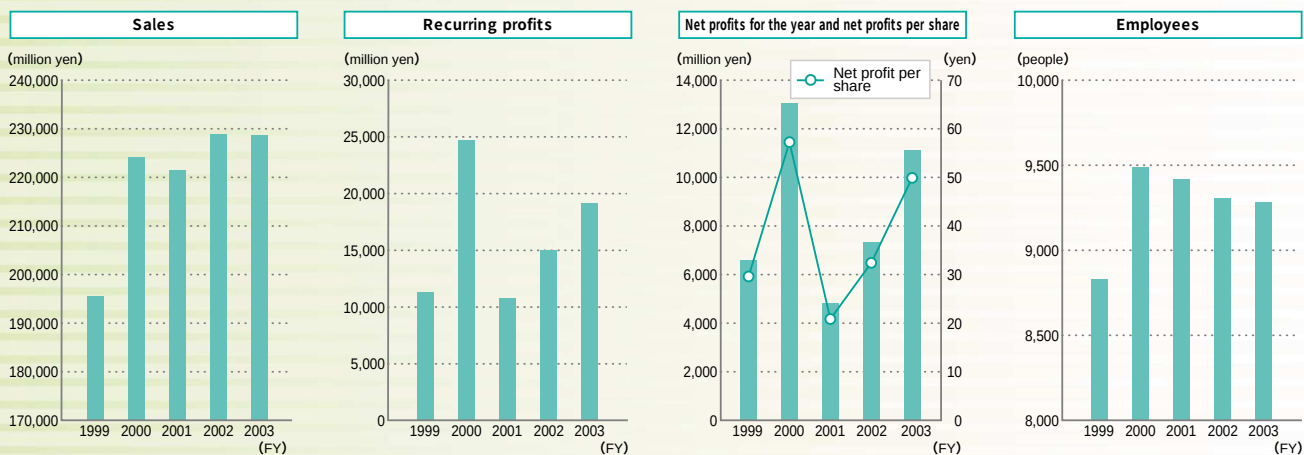
Corporate date

- Corporate name ● NGK Spark Plug Co., Ltd.
 Head Office ● 14-18, Takatsuji-cho, Mizuho-ku, Nagoya
 Foundation ● October 26, 1936
 Capital ● 47,869,270,000 yen
 Business ● (1) Manufacturing and sales of spark plugs and related products for internal combustion engines
 (2) Manufacturing and sales of new ceramics
 Group companies ● 34 subsidiaries (10 in Japan, 24 overseas), 7 affiliates

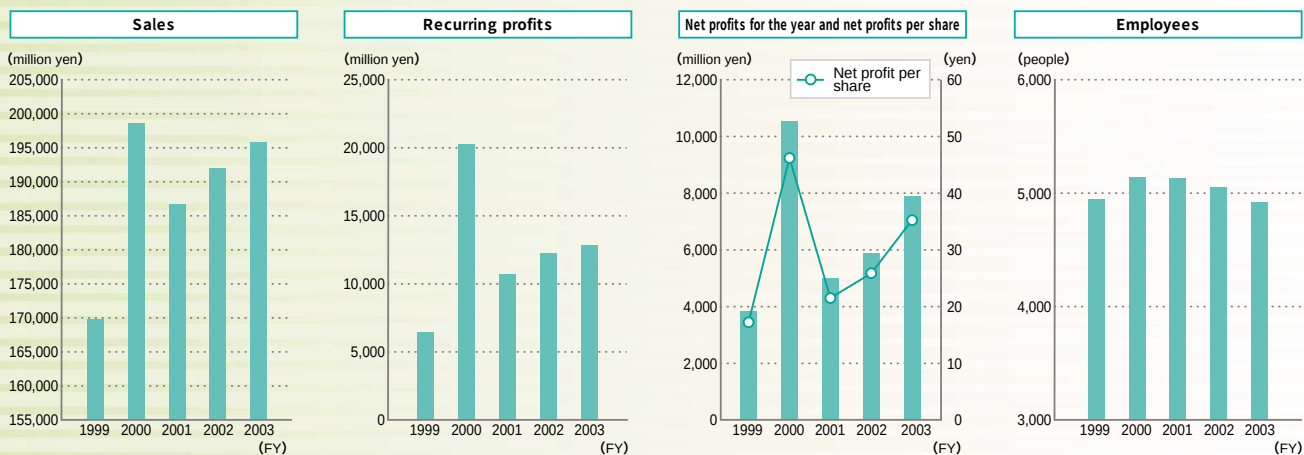


Corporate performance index graphs

Consolidated



Non-consolidated



Corporate performance (FY2003)

	Consolidated	Non-consolidated
Sales	228,776	195,784
Recurring profits	19,163	12,788
Net profits for the year	11,117	7,872
Net profits per share	49.84	35.21
Number of employees	9,284	4,916

※ Sales, recurring profit and net annual profit are expressed above in units of one million yen. Net profit per share is expressed in yen.
 ※ The number of employees as of March 31, 2004.

Products supporting the world



Spark plugs & glow plugs

These are essential parts for automobile engines. NGK spark plugs have developed alongside the history of our company. The current development emphasis is placed on an environmentally conscious design ensuring consistent efficiency, better exhaust quality and energy saving.



Sensors

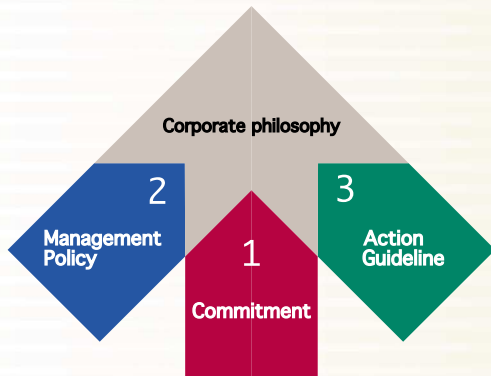
We have developed and marketed various types of sensors that are indispensable in controlling emissions and improving the fuel efficiency of vehicles, conserving energy and preventing global warming. Of course we also have sensors to protect people's comfortable living spaces.

Corporate philosophy

《Aiming to become a proposal-making corporation,
we continue to present new values to the world.》
With global views and ideas, we pursue new values
linking technology and people.

《Slogan》

With established trust and confidence inside and outside
the company, we aim to contribute to the peoples of the world by
creating and putting at their disposal new values for the future.



Management Policy

We offer a working
environment in which each
one of us is encouraged to
make full use of his or her
personality and capability.
With all our power we are
dedicated to pursue
management based on
trust and confidence.

Commitment

With full use of the most
suitable technology and
our accumulated
experience, we continue
striving to offer new
values to the peoples of
the world.

Action Guideline

Ever onward!
Always mindful of what is
the best course, we swiftly
put it into action.

Adopted in November 1966

Corporate activity principles

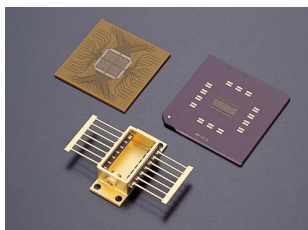
NGK Spark Plug Co., Ltd. will behave with social decency in accordance with the following ten principles in order to put into practice our corporate philosophy expressed in our slogan: "Contributing to the people of the world by offering new value that deepens mutual trust and looks to the future."

1. We will respect human rights and abide by all laws and international rules as well as the spirit of the law, whether in Japan or overseas.
2. We will apply our best technology and accumulated experience in order to provide socially useful and safe products and services that satisfy consumers and customers and gain their trust while giving due consideration to the protection of individual information and customer information.
3. We will perform business transactions properly based on fairness, transparency, and free competition. We will also maintain healthy and correct relations with governments and public administrations.
4. We will place importance on communication not only with stockholders but also with the wider society, and release corporate data through our everyday public relations activities
5. We recognize that dealing with environmental problems is an issue for all mankind that absolutely requires the presence and action of corporations, and we will take action in an autonomous, proactive and speedy manner.
6. We will contribute to society and always behave as a good corporate citizen.
7. We will respect the diversity and individuality of our employees and provide them with a safe and pleasant working environment that utilizes their abilities.
8. We will staunchly oppose antisocial movements and organizations that pose a threat to the order and safety of civil society.
9. We will respect local cultures and customs during our international corporate activities and carry out business that contributes to the growth of host countries.
10. Our top management will lead by example in the spirit of these principles, striving to cultivate a philosophy of logic by disseminating them throughout the company, publicizing them among group companies and customers, and incorporating them into the company structure.

History of environment conservation activities

Feb. 1973	Safety and Environment Section (present Environment & Safety Management Dept.) was established. Safety and Sanitation Committee and Antipollution Committee were established.
Mar. 1974	Antipollution agreement was concluded between Komaki Factory and Komaki City.
Apr. 1980	Antipollution agreement was concluded between Miyanajo Factory and Miyanajo Town. Energy Conservation Expert Committee was established.
Nov. 1980	Miyanajo Factory introduced a closed wastewater treatment system to its plating plant.
Nov. 1993	Antipollution agreement was concluded between Ise Factory and Ise City.
Apr. 1994	Ise Factory introduced a closed wastewater treatment system to its plating plant.
Apr. 1999	Environment declaration was announced.
Jun. 1999	Reorganization of Antipollution Committee into Environment Committee. Environmental management system was reviewed and Energy Conservation Expert Committee was organized.
Aug. 1999	Head Office/Factory obtained ISO14001 certification.

Oct. 1999	Waste Sub-Committee, Green Procurement Sub-committee, and Chemical Materials Sub-committee were established.
Sep. 2000	The first edition of ECO report was issued.
Dec. 2000	Combined ISO14001 certification covering the company's entire operation sites (Head Office/Factory, Komaki, Miyanajo and Ise)
Jun. 2001	The first environment convention was held.
Jul. 2001	Cogeneration plant was installed in Miyanajo Factory and utilization of plating plant waste heat was commenced.
Sep. 2002	Miyanajo Factory achieved zero emissions.
Dec. 2002	Combined ISO14001 certification covering NGK Spark Plug Group with Group A affiliates
May. 2003	Voluntary soil survey and soil improvement was performed on the company premises and reported to Nagoya City. Head Office/Factory and Komaki Factory achieved zero emissions.
Sep. 2003	Ise Factory achieved zero emissions.
Jan. 2004	Combined ISO14001 certification covering NGK Spark Plug Group with Group B affiliates



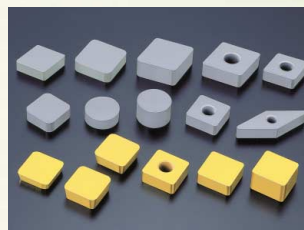
Semiconductor components

Our ceramic and organic packages fulfill the diverse requirements of semiconductor components which sustain the evolution of the IT industry, allowing them to attain higher integration, larger throughputs and smaller size for better environmental compliance.



Electronic components

Mobile phones have become indispensable in people's lives today. Working inside them are our dielectric filters and antennas, essential for sending and receiving radio waves. Our never-ending challenge is to achieve clearer voice communication and lighter weight.



Cutting tools

Our advanced cutting tools developed with our unique technologies enjoy a high reputation. The ceramic series is suitable for the high-speed cutting of cast iron and heat-resistant alloys, while the cermet series is used for semi-finishing and finishing of various steel works.



Ceramic application products

We also offer a variety of products that take advantage of the features of new ceramics. They cover a wide range of product areas from industrial machinery parts and eco-product such as ozonizers, to artificial bones and consumer products like ceramic heaters.

Business activities and environmental impact

How our business is linked to the environment

Attention in the automotive field is firmly on the utilization of fuel cells as a clean energy resource, and our company is pursuing the development of technologies such as hydrogen gas leakage sensors as a safety measure when using fuel cells. At present, fossil fuel-burning engines drive motorization throughout the world, and we are always looking to maximize efficiency and minimize emissions. For example, NGK spark plugs bringing out the best performance from engines at low or high speeds, and our oxygen sensors support the control of engine operation and exhaust gas purification.

In the computerization and telecommunication fields, we are continuing to work steadily on hardware for the IT industry, indirectly supporting every kind of industrial activity with our products and components such as high-precision packages utilizing ceramic metallization and multilevel interconnection technologies, high-precision packages utilizing resin materials, LTCCs (low temperature cofired ceramics) with excellent electrical characteristics, and SAW filters. The improvements we are making to eco-efficiency include redesigning small components to be even smaller, reducing power consumption, and enhancing computing speed.

Environmental effect of our operations

NGK Spark Plug's products are composed mainly of ceramic and metal parts. The difficult thing about ceramics is the huge amount of energy required in the firing process, and so we have switched from grade A crude oil to city gas, a clean energy source, in an effort to reduce air pollution. In our manufacturing processes, we continue to abolish or reduce the use of harmful pollutants. With metal products, we strive to minimize resource losses from the raw material stage through to the final product, while in the plating process, we try to reduce waste products by extending the life of chemicals and recycling plating sludge.

By promoting "reduce, reuse and recycle", we are aiming for the efficient, circulatory use of resources and trying to alleviate the burden our operations place on the environment. In 2003, zero emissions were achieved at NGK Spark Plug's four factories.

Looking at our input in terms of material balance, we manufacture products using ceramic materials, metals and other materials. We also use a large amount of energy for firing, a characteristic of our industry, which results in the emission of large amounts of CO₂. As for our output, we produce an increasing amount of waste material in proportion to the mass of products shipped. We also reuse a small amount of waste water and ceramic materials.

Material balance

INPUT

Energy

Electricity	288,760,000 KWH	(182,310,000 KWH)
Gas	15,070,000 m ³	(14,470,000 m ³)
LPG	3,510,000 m ³	(1,680,000 m ³)
Grade A crude oil	3,056 KL	(2,793 KL)
Gasoline	841 KL	(822 KL)
Diesel oil	104 KL	(59 KL)

Paper

Photocopy paper	56 tons	(44 tons)
Other paper	2,800 tons	(2,157 tons)

Staple raw materials

Ceramic materials	12,755 tons	(12,755 tons)
Metal materials	20,791 tons	(20,791 tons)
Reused elements	11,502 tons	(9,189 tons)

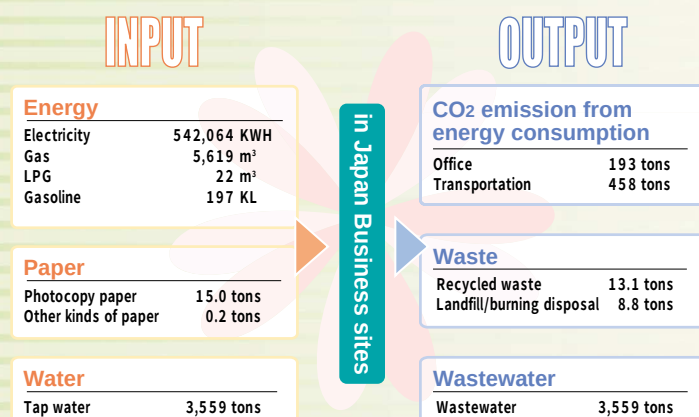
Other materials/auxiliary materials

Gases	19,466 tons	(9,491 tons)
Plastics	1,841 tons	(880 tons)
Chemical substances	8,739 tons	(5,833 tons)
Oils	756 tons	(708 tons)
Others	1,226 tons	(451 tons)

Water

Tap water	911,540 tons	(728,127 tons)
Well water	1,020,111 tons	(893,326 tons)
Recycled water	921,343 tons	(851,646 tons)

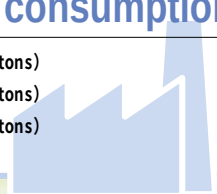
Material balance (business sites in Japan)



OUTPUT

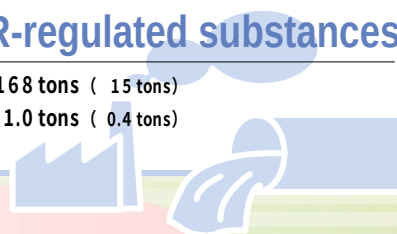
CO₂ emission from energy consumption

Production	163,919 tons	(114,928 tons)
Test	1,857 tons	(1,857 tons)
Transportation	330 tons	(205 tons)



Release of PRTR-regulated substances

Air	168 tons	(15 tons)
Water	1.0 tons	(0.4 tons)



Product shipment

Product shipment	26,289 tons	(26,289 tons)
Wrapping/packaging		
Plastics	571 tons	(309 tons)
Paper	1,201 tons	(1,150 tons)
Cardboard	1,357 tons	(962 tons)



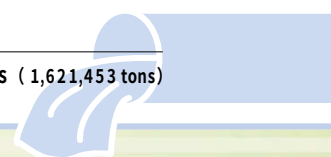
Waste

Recycled waste	16,596 tons	(14,327 tons)
Landfill/burning disposal	587 tons	(105 tons)



Wastewater

Wastewater	1,931,652 tons	(1,621,453 tons)
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Data for four NGK Spark Plug factories is shown in brackets.

※Since some operation sites have no installations to measure discharged volume, the combined volume of tap water and well water was taken as wastewater volume.

※Not including energy consumption and CO₂ emissions due to transportation outsourcing.

Basic philosophy on environment

Environmental declaration

(revised April 2004)

The NGK Spark Plug Group will strive for harmony with society and the global environment while serving the people of the world, offering new values based on the principle of high quality throughout the entire life cycle of our environmentally friendly NGK spark plugs and NTK new ceramic products.

To achieve this, we have formulated an environmental action plan based on our environmental policy as a way of accepting our social role and responsibility as a trusted corporation. With the participation of everyone concerned, we will pursue the development of a sustainable society and business operations.

Environmental policies (revised April 2004)

Management

We will abide by all laws, regulations, protocols and voluntary standards relating to environmental conservation. We also aim to increase our environmental efficiency by continually trying to enhance our environmental management system (EMS) and performance.

Factories/Offices

We will remain constantly aware of the need for environmental harmony, working to prevent air, earth and water pollution, use energy and resources more effectively, and reduce waste materials.

Products

We will work towards the development, design, procurement, manufacture, sale, distribution and disposal of environmentally friendly products.

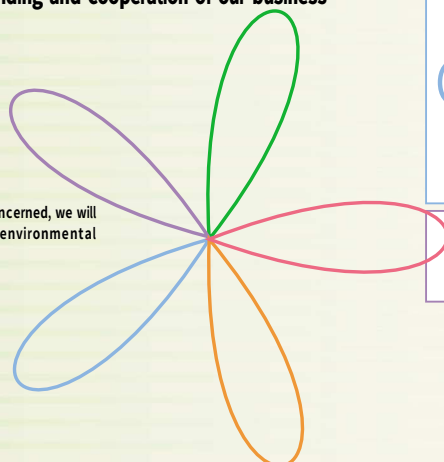
Communication

We will promote communication with stakeholders through clear disclosure of information. We will also contribute not only to local communities but to the wider society through consideration for the natural environment as well as participation and support for environmental conservation activities.

Mind

We will strive to raise awareness of environmental conservation through environmental education and publicity activities as well as the dissemination of these policies among all our employees. We will also seek the understanding and cooperation of our business associates.

With the participation of everyone concerned, we will keep to these five newly issued environmental policies until they bloom.



Environmental action plan and NGK Spark Plug Group Eco Vision 2010

(drawn up April 2004)

	Item
Management	Environmental management system
	Environmental operations
	Environmental accounting
	Environmental risk
	Compliance
Factory/Office	Energy
	Waste matter
	Water resources
	Green purchasing
	Hazardous substances
Products	Eco-design
	Green procurement
	Distribution
Communication	Disclosure
	Community
	Natural environment
Mind	Education and instruction

The NGK Spark Plug Group's stance towards environmental activity is shown in "NGK Spark Plug Group Eco Vision 2010", which describes the ideal way things will have changed by 2010.

Targets for 2004–2005	NGK Spark Plug Group Eco Vision 2010
Achieve 2004–2005 targets ahead of Eco Vision 2010 Promote certification of Japanese offices and overseas affiliates Promote combination with QMS and OHSMS Introduce eco-efficiency to prevent global warming Investigate and research Kyoto mechanism Promote construction of environmental management data system Introduce environmental accounting to Group B Investigate and research material flow cost accounting Zero environmental accidents and environmental complaints Zero environmental law violations Construct CSR management system	● Sharing of environmental policies by affiliate companies ● Centralization of environmental management data control ● Construction of total management system (QMS, EMS, OHSMS) ● Promotion of CSR management ● Reflection of environmental performance in business evaluation ● Integration of environmental accounting and management accounting
Reduction of 1% in CO₂ emissions (compared with FY2001) • FY2005 → Manufacturing divisions : emissions per unit of resources down 4% → Non-manufacturing divisions : emissions down 4% Introduce clean energy Achieve zero emissions (min. 98% rate of effective utilization) • FY2005 → Groups A and B Reduce waste emissions (compared with FY2003) • FY2005 → Four NGK Spark Plug factories : Total emissions down 10% → Groups A and B : Total emissions down 5% Investigate and research the reuse and recycling of used products Study changing to internal treatment of waste matter Reduce use of tap water and well water (compared with FY2003) • FY2005 → Four NGK Spark Plug factories : Total used down 10% → Groups A and B : Total used down 5% Improve eco-efficiency of office supplies etc. • FY2005 → 90% Reduce emissions of substances subject to PRTR law • FY2005 → Four NGK Spark Plug factories : Total emissions 8.3 tons (down 50% on 2002) → Groups A and B : Total emissions per unit of resources down 20% on 2001	● Compliance with Kyoto Protocol ● Total greenhouse gas emissions in Japan of 150,000 tons or less (down 10% on 2001) ● Zero emissions achieved by affiliate companies ● Efficient use of resources in circulation type society ● Waste emissions of 12,000 tons or less (down 30% on 2003) ● EPR (extended producer responsibility) operations ● Total emissions of substances subject to PRTR law of 36 tons (down 80% on 2002)
Disuse all substances harmful to the ozone layer : end of 2005 ※1 Not use prohibited substances ranked as hazardous Spread LCA procedures throughout company Introduce eco-efficiency Introduce environmental labels Introduce clean supplier system Centralize transportation fuel management Promote replacement with eco-cars	● Construction of management system for environmental pollutants ● Environmentally friendly design and product creation ● Development of eco-business ● Green supplier system of identification and registration of all our business associates ● Construction of efficient distribution system
Social environmental reports : Issue annually Site reports : Issue annually Hold stakeholder meetings Promote acceptance of environmental visits to factories Exchanges with NGO and NPO organizations Continuous implementation of regional clean-up activities Participate in environmental exhibitions and environment-related events Promote greening of factories	● Disclosure of clear environmental data ● Continuous issue of CSR reports ● Support and participation in NGO and NPO activities ● Promotion of nature conservation and social contribution
Promote introduction of environmental education programs Environmental conferences : Hold annually Environment page in company magazine : Include every month	● Employee education full of environmental ideas

※1 Although we are carrying out R&D into substitute materials, we have extended the target from FY2004 to FY2005 due to technological difficulties.

2003 Environmental action plan and performance

(drawn up April 2003)

Item	Targets for FY2003	Achievements in FY2003	Rating	Related pages
EMS construction	To pursue certification for major domestic affiliates by FY2003.	January 2004 Certification of four Group B factor - Kamioka Ceramic - Nittoku Seisakusho - Nichiwa Kiki - Tono Ceramic		11
Air, soil and water pollution prevention	- To promote thorough control of the use, release and transfer of hazardous substances. - To disuse ozone depleting substances totally by FY2004. ★ To disuse chlorinated organic solvents totally by FY2004.	- Although we are carrying out R&D to find replacements for substances harmful to the ozone layer, we extended the target from FY2004 to FY2005 due to technological difficulties. ★ Disused chlorinated organic solvents.		19 20
Energy conservation promotion	- Our manufacturing divisions to reduce total CO₂ emissions per unit of resources by 2% from FY2001 (1% from FY2002) . - Non-manufacturing divisions to reduce total CO₂ emissions by 2% from FY2001 (1% from FY2002) .	● Manufacturing divisions (unit of resources) Down 7.4% on FY2001 Down 5.6% on FY2002 ● Non-manufacturing divisions (total emissions) Up 2.9% on FY2001 ※ Down 1.8% on FY2002		15 16
Waste reduction and recycling promotion	● To promote reduction and achieve zero emissions at four NGK Spark Plug factories by the end of FY2003.	● Zero emissions achieved May 2003 Head Office/Factory and Komaki Factor September 2003 Ise Factory		17 18
Development of environmentally conscious products	- To further enhance the line of environmentally friendly products. - To construct and operate an environmental assessment system for product design and development. - To promote procurement of environmentally friendly materials. - To achieve the following eco-product procurement rates by FY2003. Four NGK Spark Plug factories: 85% or more Groups A and B: 70% or more	Eco-efficiency of office supplies Targets achieved in all sectors Four NGK Spark Plug Factories 89.1% Groups A and B 70~93%		23 24 25 26
Respect for the environment of local communities	- To promote cleaning and greening activities in areas around factories. - To participate proactively in regional environmental conservation activities. - To conduct information disclosure and risk communication.	- Implemented cleaning activities at each factory at least twice a year. - Participated proactively in government sponsored events.		27

※We redefined in FY2003 which workplaces come under manufacturing divisions.

● : Items relating to four NGK Spark Plug factories

★ : Items relating to affiliate companies



In order for corporations to continue their businesses, they have to be responsible to their shareholders, partners and suppliers. In addition to these economic responsibilities, it is also becoming increasingly important to be socially and environmentally responsible to stakeholders such as consumers, employees and local communities in terms of compliance with social ethics and contribution to environmental conservation.

The results of efforts in "environment, society, and economy" (triple bottom line) have been focused mainly in Europe and North America, and so it is also getting more desirable in Japan to maintain environmental management balance between social and economic issues.

In order to evaluate the reality of the environmental management of corporations from a logical and objective perspective to build a sustainable society, an "environmental management rating" has been conducted since FY2002 by the Sustainable Management Rating Institute (SMRI), an external bureau of the Sustainable Management Forum.

NGK Spark Plug participated in the second environmental management rating in FY2003 for the first time in order to obtain an objective evaluation as a sustainable company.

Survey Content

- Interview with corporate executives
- Answer to survey sheet
(Three categories, 21-evaluation phases and 189 questions)
- Hearing (Confirmation of the items described in the survey sheet)

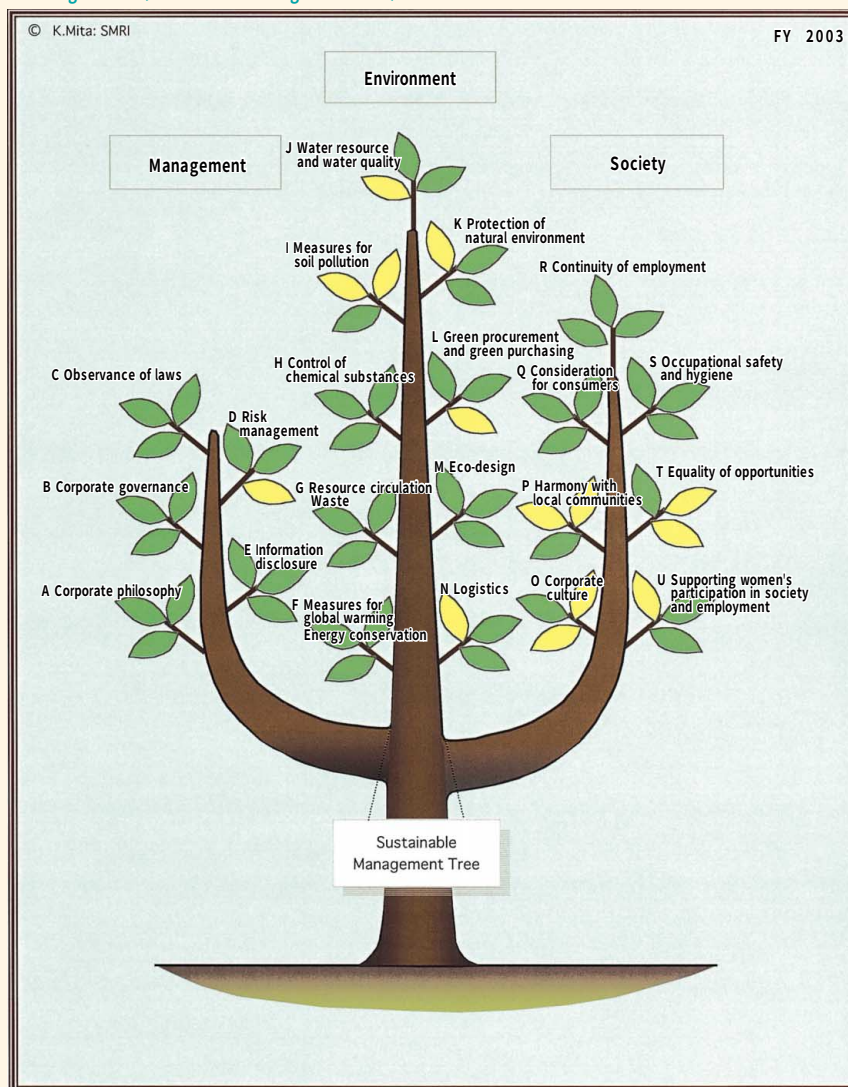
Rating result (Sustainable Management Tree)

The interview and the hearing were conducted with our president on November 27, 2003, and the result was announced on February 26, 2004. The result is illustrated in the colors of leaves to make it understandable. If the tree has more green leaves, it means that the company is well managed environmentally.

NGK Spark Plug's tree had 49 green leaves (excellent), 14 yellow leaves (good), but no red leaves (pass) or fallen leaves (fail) were found. The evaluation points described by two yellow leaves are as follows.

- Measures for soil pollution
- Harmony with local community
- Corporate culture
- Equality of opportunity

The rating survey and the graphically described leaves of the tree have revealed the issues that NGK Spark Plug is facing. We will acknowledge these as the tasks ahead and try to enhance them in our aim for better environmental management.



※ Out of the 98 applicant corporations, 67 companies reached the final evaluation and publicly announced their results. They are called "Green top runners", and NGK Spark Plug is introduced as one of them.
<http://www.smri.jp/>

Out of 63 leaves
 49
 14

Excellent Good Pass Fail
 Fallen leaf

Strategy Mechanism Strategy
 Result Result

1 Management

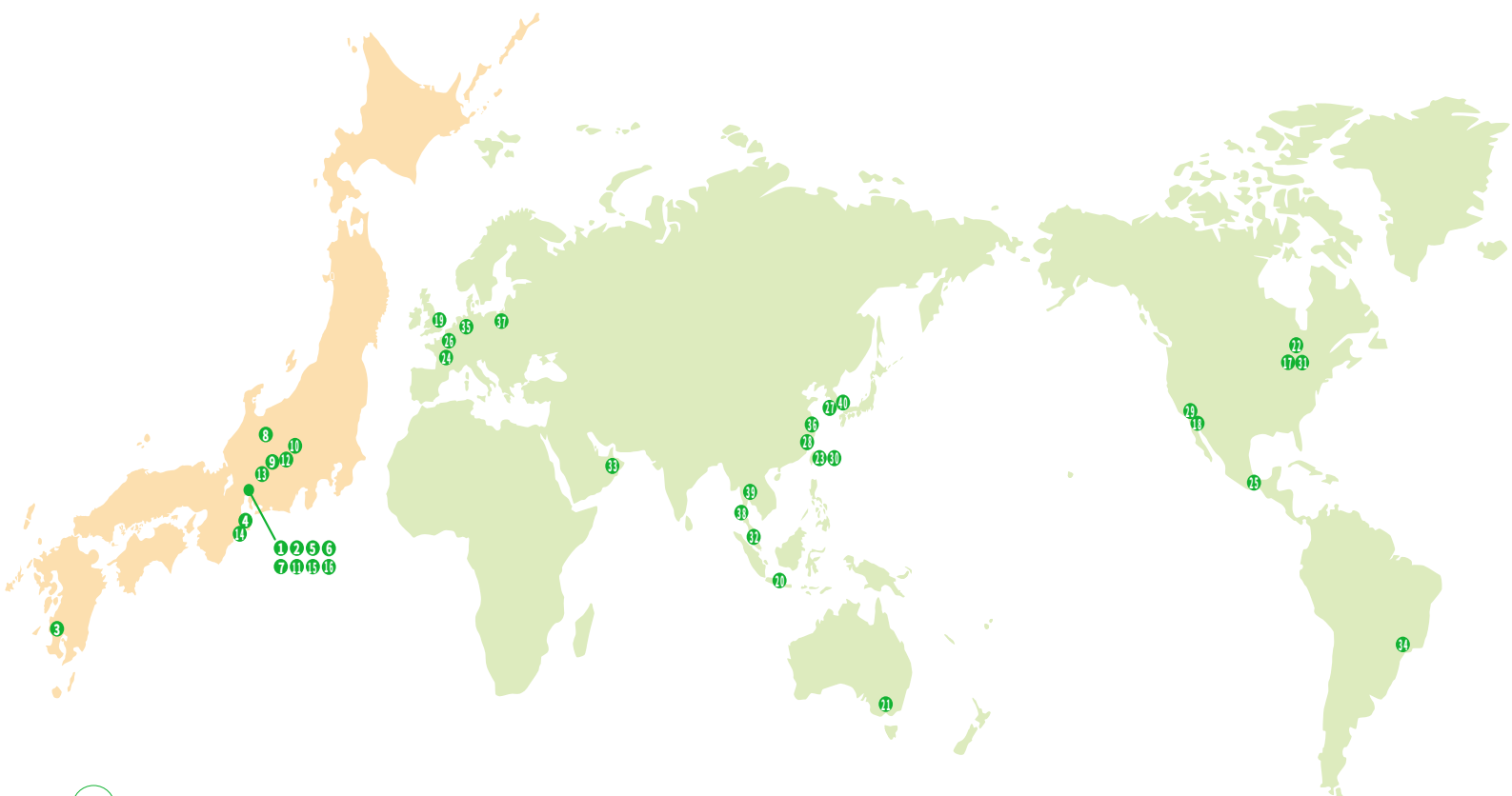
Environmental management system

NGK Spark Plug is taking advantage of the ISO14001 environmental management system (EMS) as an important tool to drive forward our environmental management. Both our environmental protection system and performance (goal attainment) have been improving continually since the integrated certification of four NGK Spark Plug factories in December FY2000.

As for our domestic consolidated subsidiaries, 11 companies have been included in the expansion of our ISO14001 integrated certification as of January 2004, and we are pursuing uniform management to share common goals and information. Our overseas consolidated subsidiaries are currently preparing for certification independently, although we will develop our EMS under a common environment preservation policy.

[Status of ISO 14001 certification]

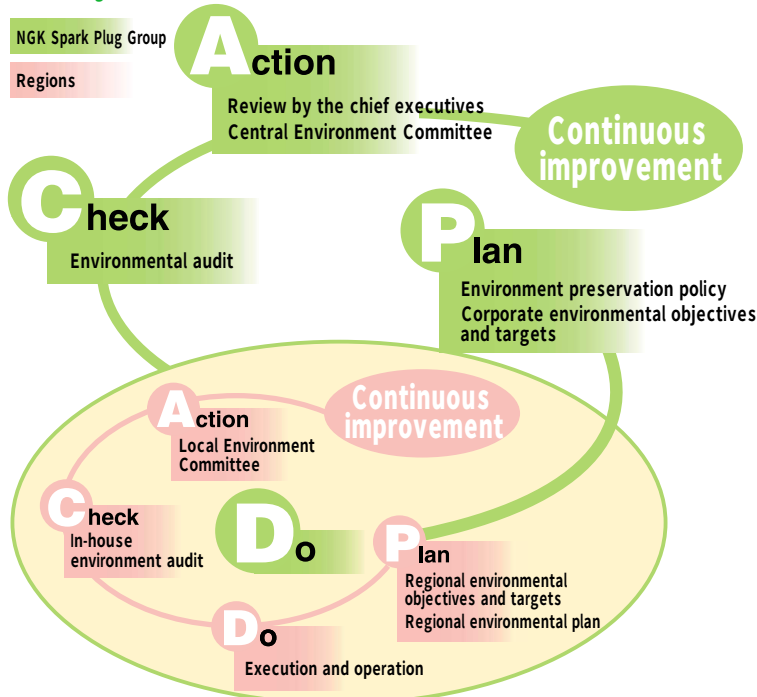
	Name of factories and companies	Timing of certification	Certification organization	Number of employees		Name of factories and companies	Timing of certification	Certification organization	Number of employees
NGK Spark Plug	① Head Office/Factory	'99. 8	TÜV Rheinland Japan	1004	Consolidated subsidiaries (overseas)	① NGK Spark Plug (Australia) Pty.Ltd.			36
	② Komaki Factory	'00.12		2757		② NGK Spark Plugs Canada Limited			37
	③ Miyanojo Factory	'00.12		554		③ Taiwan NGK Spark Plug Co.,Ltd.			28
	④ Ise Factory	'00.12		394		④ NGK Spark Plug Industries Europe S.A.S.	'00. 5	AFAQ	48
Consolidated subsidiaries (domestic)	⑤ Nittoku Seisakusho	'04. 1	TÜV Rheinland Japan	96		⑤ Bujias NGK de Mexico S.A. de C.V.			50
	⑥ Nittoku Unyu	'00.12		19		⑥ NGK Spark Plugs (France) S.A.S.			43
	⑦ Nichiwa Kiki	'04. 1		60		⑦ NTK Cutting Tools Korea Co.,Ltd.			59
	⑧ Kamioka Ceramic Co.,Ltd.	'04. 1		146		⑧ NTK Technical Ceramics H.K. Ltd.			2
	⑨ Kani Ceramic Co.,Ltd.	'02.12		163		⑨ NTK Technologies,Inc.			49
	⑩ Iijima Ceramic Co.,Ltd.	'02.12		462		⑩ NTK Technical Ceramics (Taiwan) Ltd.			6
	⑪ Nittoku Alfa Service	'99. 8		122		⑪ NGK Spark Plugs (U.S.A.) Holding, Inc.			—
	⑫ Nakatsugawa Ceramic Co.,Ltd.	'02.12		466		⑫ NGK Spark Plugs Singapore Pte Ltd			9
	⑬ Tono Ceramic	'04. 1		82		⑬ NGK Spark Plug Middle East FZE			10
	⑭ Nansei Ceramic	'02.12		39		⑭ Ceramica e Velas de Ignicao NGK do Brasil Ltda.	'01,12	ABS QUALITY EVALUATION INC.	1091
	⑮ Ceramic Censor Co.,Ltd.	'00.12		416		⑮ NGK Spark Plug Europe GmbH			168
	⑯ Tokai Taima Kogu			38		⑯ NGK Spark Plug (Shanghai) Co.,Ltd.			57
Consolidated subsidiaries (overseas)	⑰ NGK Spark Plugs (U.S.A.), Inc. WV Factory	'00. 7	TÜV RHEINLAND OF NORTH AMERICA	493		⑰ NTK Technical Ceramics Polska sp.zo.o.			52
	⑱ NGK Spark Plugs (U.K.) Ltd.	'01.12	BSI (British Standard Institute)	73		⑱ NGK Spark Plugs Malaysia Berhad.			107
	⑲ NGK Spark Plugs (U.K.) Ltd.	'01.12	BSI (British Standard Institute)	73		⑲ Siam NGK Spark Plug Co.,Ltd.	'02.11	TÜV	174
	⑳ P.T. NGK Busi Indonesia			362		⑳ Woojin Industry Co.,Ltd.			214



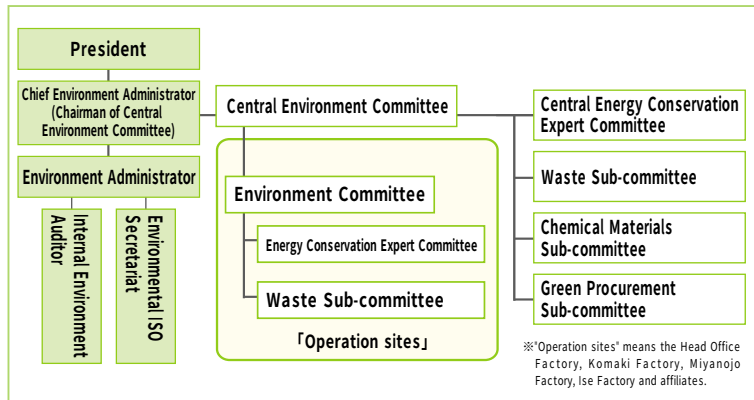
System operation

NGK Spark Plug's environmental management system is based on the participation of all our employees in order to implement our activities. We operate a PDCA (Plan-Do-Check-Action) cycle throughout the entire group and in each region, and verify the performance status of the objectives and the goals of the entire group as well as each region during a management review conducted by the chief executives. An internal environmental audit is conducted annually to verify and evaluate the compliance of our self-regulation in addition to the operating status of the system and the observance of the law.

PDCA Diagram



Environmental Activity Promotion Organization



Number of ISO14001 auditors (NGK Spark Plug Group)

ISO14001 assistant examiners	7
ISO14001 Internal auditors	401



Environmental audit



Skill-maintenance training for in-house environmental auditors

Environmental risk

To prevent air pollution, water pollution, and soil pollution, we have concluded an agreement on pollution control with municipalities and implemented self-regulation that is stricter than the law, with which we comply. In addition to periodical monitoring and measurement, we take environmental risk measures in various emergency cases. We have also conducted an educational/training program for emergencies, just in case of an accident.

Training in preparation for leakage of chemical substances

In October 2003, we conducted training in which it was assumed that waste fluid was flowing out into a side ditch at the Ise Factory.



Ise: Training in preparation for leakage of chemical substances

Above-ground piping

Because it is difficult to detect if a pipe buried underground has been damaged, pipes are laid aboveground at the Miyanojo Factory.



Miyanojo: Aboveground piping

Compliance

Taking the compliance of laws for granted according to the environment measures listed in the corporate code of conduct, we will strive to act adequately and speedily, even to any legal change, in order to ensure thorough compliance in our corporate activities.

There are two regions (three cases) in NGK Spark Plug Group that exceeded regulation values and standard values in FY2003.

There were no claims from stakeholders.

Four NGK Spark Plug factories

	FY2001	FY2002	FY2003
Number of violations, penalties, and lawsuits	0	0	0
Number of claims made by stakeholders	※1 2	0	0

Affiliates

	FY2001	FY2002	FY2003
Number of violations, penalties, and lawsuits	※2, ※3 2	※2 1	※4 3
Number of claims made by stakeholders	0	※5 3	0

- ※1 A claim was made to the Komaki Factory requesting an improvement in noise level.
- ※2 The noise level exceeded the restricted value at Nitto Seisakusho.
- ※3 The nitrogen content of the water at Ceramic Sensor exceeded the value listed in the agreement with Komaki City on pollution control.
- ※4 The noise level exceeded the restricted value at Kani Ceramic and Nitto Seisakusho (2 cases).
- ※5 In Ceramic Sensor, Iijima Ceramic, and Kani Ceramic, requests were made to improve the noise levels.

Environmental accounting

Environmental accounting was introduced from FY1999, because it is important to measure the environmental preservation cost and its effect in a quantitative manner to promote environmental management more effectively. In FY2003, we expanded our consolidated subsidiaries to Group B affiliates.

The total environmental conservation cost incurred by NGK Spark Plug in FY2003 was 8,025 million yen on a non-consolidated basis and 8,556 million yen on a consolidated basis, a 3% increase on FY2002. The breakdown shows that more than 60% of spending went towards R&D, while the second largest cost item was the cost in the business area.

The cost saving effect of environmental preservation measures taken in FY2003 was 221 million on a non-consolidated basis. The period covered was from April 1, 2003 to March 31, 2004.

[Effect of environment conservation measures shown in yen] Unit: million yen

Area of recognized effect		Amount
Revenue	Revenue generated from the recycling of waste generated in operations or used products	76
Cost saving	Energy cost saving achieved from energy conservation efforts	85
	Waste disposal cost saving achieved by resource conservation and recycling efforts	60
Total		221

[Environment preservation cost]

Unit: million yen

Items			※1 Consolidated		Non-consolidated			
Classification	Major efforts		Investment	Expense	Investment		Expense	
			2003		2002	2003	2002	2003
Costs within the business area	Pollution prevention cost	Air/water pollution prevention and noise reduction	243	1,279	142	180	1,109	1,064
	Global environmental conservation cost	Global warming prevention, energy conservation	9	95	6	2	128	70
	Resource circulation cost	Effective resource utilization, industrial waste treatment/disposal	31	584	27	28	495	424
	Sub-total		283	1,958	175	211	1,732	1,557
Upstream & downstream cost			0	4	0	0	5	4
Management activity cost			5	393	9	4	253	345
R&D cost			529	5,199	601	529	4,726	5,199
Social activity cost			0	182	0	0	114	173
Environment damage correction cost			0	3	0	0	※2174	3
Total			817	7,740	785	743	7,004	7,282

■ Environmental conservation cost has been classified into subsets according to the guidelines published by the Ministry of the Environment, while proportional allocation based on rules set by the NGK Spark Plug Group was applied in calculating each amount on the basis of actual investment costs and expenses recognized as being of a direct nature.

※1 Consolidated companies: Nine affiliated companies (Groups A and B, and Ceramic Sensor)

※2 Expenses associated with voluntary soil survey and soil improvement work undertaken on the company's premises following the legislation of a soil pollution countermeasure law

[Environmental conservation effect measurements]

Classification		Consolidated	Non-consolidated			
Effect measured in the business area	Types of effect	2003	2002	2003	Year-on-year (%)	Rating
Effect measured with respect to resource input into operations	■ Energy consumption					
	Electricity (10,000 KWH)	28,876	19,031	18,231	-4.2	🌸
	Gas (10,000m³)	1,507	1,552	1,447	-6.8	🌸
	LPG (10,000m³)	351	344	168	-51.2	🌸
	A oil (KL)	3,056	3,148	2,793	-11.3	🌸
	■ Water consumption					
	Tap water (tons)	911,540	747,364	728,127	-2.6	🌸
	Well water (tons)	1,020,111	913,037	893,326	-2.2	🌸
	PRTR law-regulated substance consumption (tons)	732	510	453	-11.3	🌸
	Photocopy paper consumption (tons)	56	50	44	-11.3	🌸
Effect measured with respect to environmental load and waste from business activities	CO ₂ emission from energy consumption (tons)	163,919	121,384	114,928	-5.3	🌸
	Emission per unit production (tons CO ₂ / output added value) (tons/million yen)	—	1.204	1.143	-5.1	🌸
	Recycled plant wastewater (tons)	921,343	683,242	851,646	24.6	🌸
	■ Waste					
	Recycled mass (tons)	16,596	16,072	14,327	※1-10.9	🌸
	Landfill, incineration (tons)	587	591	105	-82.2	🌸
	PRTR law-regulated substances released into air and water (tons)	169	17	16	-8.1	🌸

※1 Recycle volume has decreased due to the reduction of waste.

Environmental management

Eco-efficiency

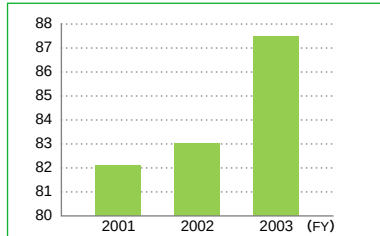
The improvement of environmental efficiency is "to minimize the environmental load in association with the business activities of a corporation as well as to maximize the generated economic value", which is a crucial challenge for the sustainable development of our company. In the promotion of environmental management, we will establish an index that can evaluate the balance between productivity and reduction in environmental load such as CO₂ emission and waste discharge.

NGK Spark Plug's Eco-efficiency

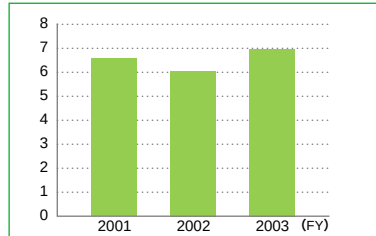
$$\text{Eco-efficiency} = \frac{\text{Output added value}}{\text{Environmental load (Volume of CO}_2 \text{ emission and waste discharge)}}$$

※The output added value is calculated by subtracting material costs and the costs of outsourced processing from sales.

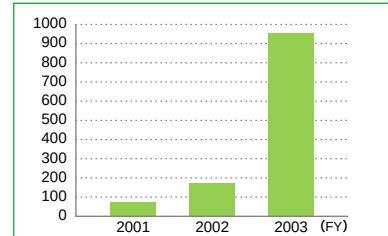
[CO₂ index from production]



[Waste index from production]



[Landfill/incineration index from production]



COLUMN Challenges and eco-words surrounding NGK Spark Plug Group

The world has started moving toward the establishment of a sustainable and recycling-oriented society. This is evidenced by trends in legislation concerning the Kyoto Protocol and restrictions on chemical substances in Europe. "Environmental management" means creating new economic value through continuous environmental conservation activities in order to pursue the future growth and development of a corporation.

Here we will show environmental terminology and illustrate our environmental conservation activities toward Eco Vision 2010.

Challenges surrounding business activities

Influence of production of raw materials of alumina

- Tremendous energy use upon refining
- Discharge of red mud to sea

Influence of abandonment and disposal of products used in the market

- Landfill disposal

Influence of fossil fuel used to transport products

- Emission of CO₂

Stakeholders

Communication will enhance mutual understanding.
⇒See P27.

Red mud

This is generated when refining alumina, which is a raw material of ceramic. The discharge of red mud to the sea is becoming an international problem, and there is a threat that alumina may no longer be produced.

Cogeneration

This is a system of generating electricity with turbines and engines, taking advantage of the heat simultaneously developed for air-conditioning systems and hot water systems. It enables higher total energy efficiency. It has been established at the Miyanajo Factory, where electricity and heat have been utilized.

Clean energy

This is a type of energy that has relatively lower level emissions of toxic substances, such as water power and wind power.
⇒See P16.

INPUT

Water resources

"Reducing water usage as much as possible is fundamental" (Japan Automobile Manufacturers Association). According to the goal of the Action Schedule for Environment 2004-2005, we will address the reduction of the water supply and the well water.
⇒See P7.

RoHS directive

This is one of the European directives concerning the limited use of specific toxic substances included in electric / electronic equipment. It will basically be prohibited as of July 2006 to contain lead, cadmium, hexavalent chromium, and brominated flame retardants (PBB, PBDE). Substitution by other substances has been introduced.

Manifest

This is a slip introduced to prevent the illegal disposal of industrial waste. It enables absolute confirmation of processing. We also conduct site surveys of industrial waste disposal processors.
⇒See P18.

EPR

Extended producer responsibility. This is the idea that there is a certain level of responsibility on the side of corporations in terms of proper recycling and disposal even of used products.

Sustainability

It is to grow and develop the society continuously without sacrificing living standards in the future.

Eco Vision 2010

OUTPUT

Kyoto Protocol

Adopted in December 1997. Advanced countries are now responsible for the reduction of greenhouse gases (carbon dioxide, methane, dinitrogen monoxide, HFC, PFC, and sulfur hexafluoride). Japan will reduce these by 6% in comparison to 1990. We will aim for a 10% reduction of CO₂ emission (in comparison to FY2001) in accordance with Eco Vision 2010.
⇒See P8 and P15.

ELV directive

This is one of the European directives concerning vehicles that have reached the end of their useful life. It has been basically prohibited as of July 2003 for them to contain lead, cadmium, hexavalent chromium and mercury. Substitution by other substances has been taking place.
⇒See P25.

CSR

Corporate Social Responsibility. This is the concept that corporations should take responsibility for the three aspects: environment, economy, and society. It is required that corporations conduct environmental management with a good balance of these three elements.

Compliance

This means to observe regulations.
⇒See P12.

2 Factory/Office

Energy

CO₂ reduction target

NGK Spark Plug Group has set a target each year up until FY2005 to address this issue and to employ measures.

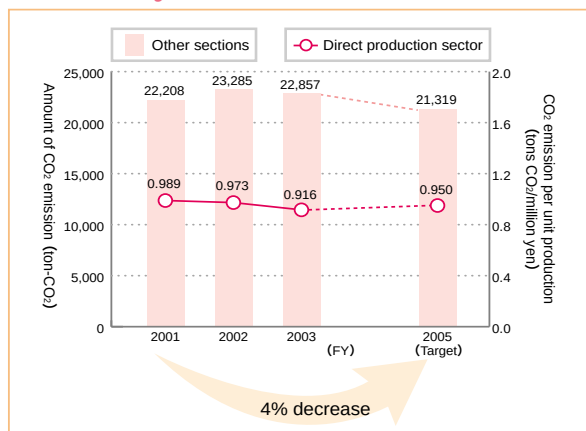
• FY2005

Direct production sector	Emission per unit production	Down 4% (on FY2001)
Other sections	Emission	Down 4% (on FY2001)

• Each FY

Direct production sector	Emission per unit production	Down 1% (on the previous year)
Other sections	Emission	Down 1% (on the previous year)

[CO₂ reduction target]

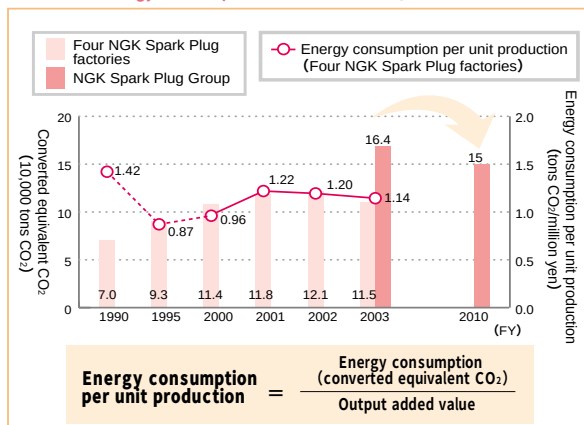


Decrease of CO₂ emissions

The amount of CO₂ emissions in NGK Spark Plug Group was 164,000 tons in FY2003. In Eco Vision 2010, we aim to reduce CO₂ emissions to 150,000 tons (down 10% on FY2001).

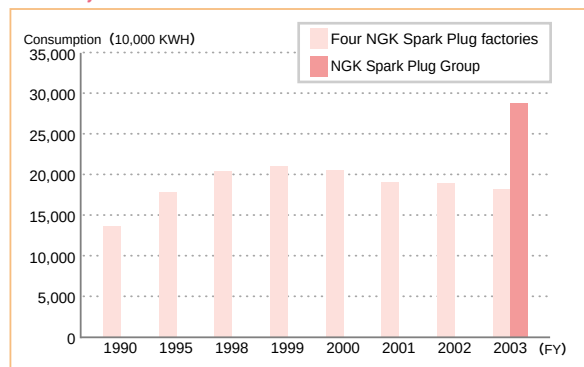
As for CO₂ emissions in four NGK Spark Plug factories, in chronological order, emissions have increased by 64% since production was increased by 85% even though emissions per unit production have decreased by 20% on FY1990. In comparison to FY2002, emission per unit production in our manufacturing divisions has decreased by 5.6%, while other divisions have decreased emissions by 1.8%.

[Amount of energy used in production (Converted equivalent CO₂)]

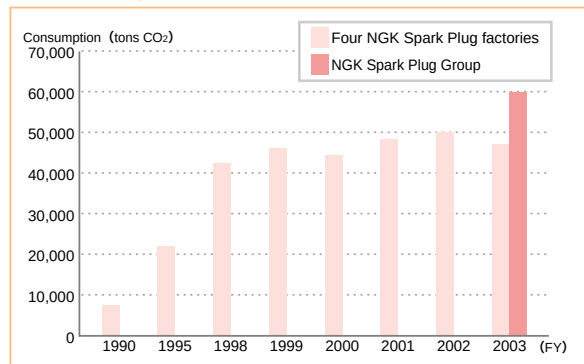


Trends observed in our energy consumption

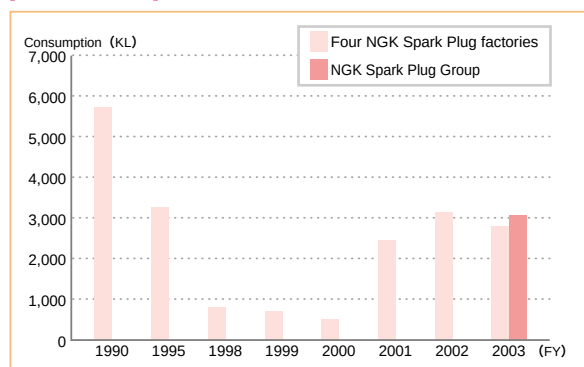
[Electricity]



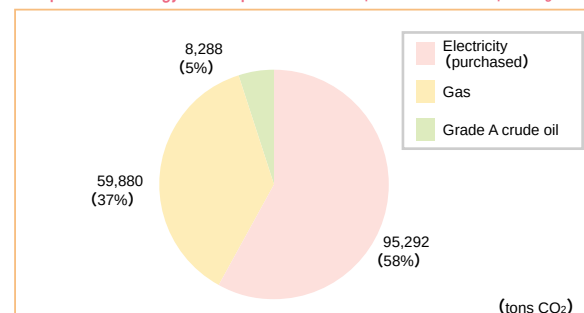
[Gas (converted equivalent CO₂)]



[Grade A crude oil]



[Composition of energy consumption (converted equivalent CO₂) - NGK Spark Plug Group]



Examples of energy conservation

Energy conservation in large-size dust collector (Industrial Products Dept. FineCeramics Div.)

The production of ceramic products has quite a lot of processes that generate powder dust because they use a powdery raw material. A dust collector is installed in factories to collect powder dust generated, since it may have a harmful effect when inhaled in large quantities.

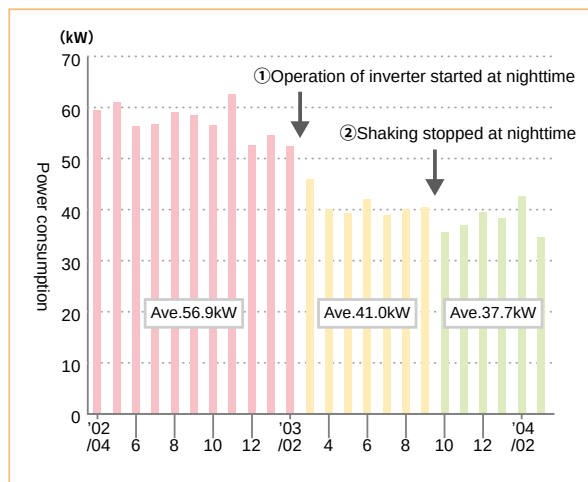
In the Industrial Products Section of the Ceramic Application Products Division, electric power reduction measures were introduced from FY2000, focusing on nighttime when the operation level of the dust collector is lower.

- 1 The dust collector is controlled by an inverter, and is operated according to the volume of powder dust.
- 2 Shaking (shaking the powder dust stuck to the filter) is not conducted at nighttime.



Large-size dust collector

	Average power consumption(kW)	Reduction ratio (%)
Before measure	56.9	—
① Operation of inverter started at nighttime	41.0	27.9
② Shaking stopped at nighttime	37.7	33.7



Energy Conservation by continuous sintering of ceramic (Cutting Tool Division)

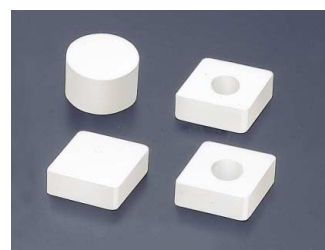
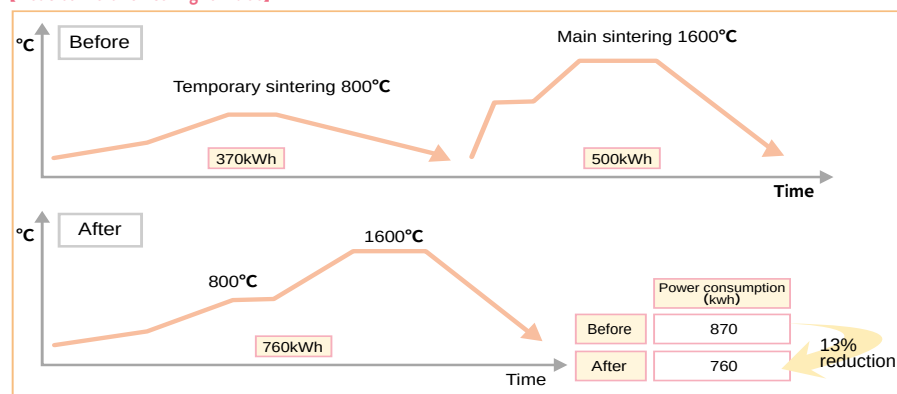
In the production process of ceramic cutting tools, there are two sintering stages including temporary sintering and main sintering.

From the perspective of the heat curve based on the process of main sintering after temporary sintering, there is an energy loss since the temperature of the

furnace is reduced then raised again. An energy conservation measure has been introduced to process temporary sintering and main sintering in one furnace continuously.

As a result, continuous sintering enabled a 13% reduction in power consumption.

[Heat curve of sintering furnace]



Cutting tool made of ceramic

Clean energy

We installed photovoltaic generation panels on the rooftop of the main building of our Head Office in October 2003. The electric power generated is used to illuminate the product exhibition panel in the showroom on the first floor of the main building.

[Outline]

Power generation capacity (maximum sustained power)	10kW
Estimated power generation	10,835kWh/year
Estimated CO ₂ reduction	3,575 kg CO ₂ /years
Battery module	167w-60 panels



Photovoltaic generation panels

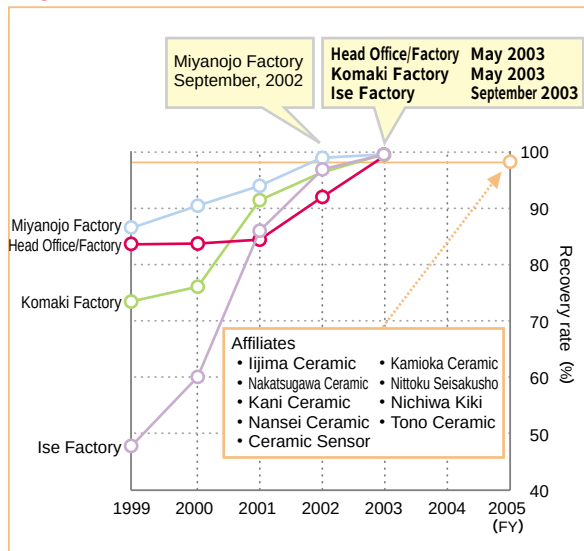
Waste

Zero emissions

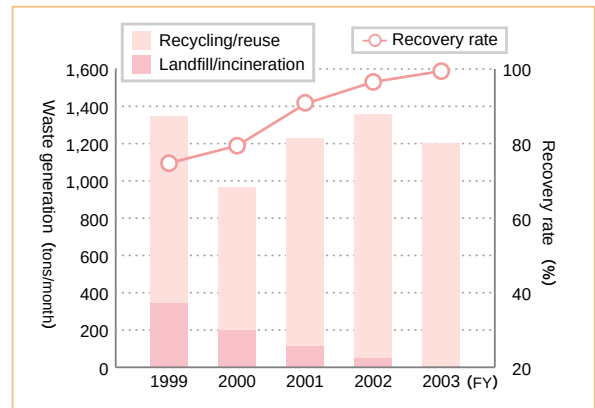
We have been conducting thorough sorting and recycling of waste generated during the various steps of the raw material, design and production processes. As a result, four NGK Spark Plug factories achieved zero emissions with a recovery rate exceeding 98%. Our Group A and B affiliates and Ceramic Sensor are working towards achieving the same result by FY2005.

Those factories that have already attained zero emissions will change their stance and concentrate their efforts to minimize input mass by promoting "Reduce" and "Reduction" of raw materials and waste within our company (including waste consigned to recycling vendors), trying to understand the material flow of the processes as a whole from the point of view of "material balance".

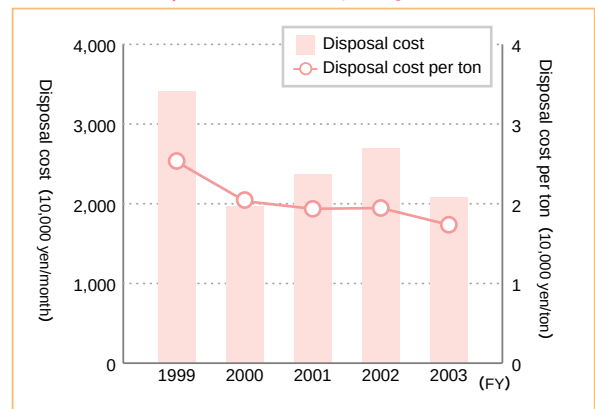
[Target and result of zero emissions achievement]



[Trends in waste generation and recovery rate (four NGK Spark Plug factories)]



[Trends in waste disposal cost (four NGK Spark Plug factories)]



Definition of zero emissions

In the NGK Spark Plug Group, zero emissions is defined as the state in which the quantity of waste, including both industrial waste and general waste from our operations, that is buried or incinerated is reduced to a level that makes the recovery rate 98% or higher. Setting the border line at 98% for zero emissions is to avoid excessive energy

consumption that would result from perfectionism to recover garbage such as cigarette butts and tea leaves, which is most suitably incinerated.

The recovery rate is the percentage of waste that is reused or recycled.

Five ideas at the recycle center

In addition to the routine process of collecting, separating and compacting waste, the recycle center at each factory implements a number of ideas for utilizing or reducing waste.



Improving efficiency by centralized control of waste



Collecting



Recycling resources by separating waste



Separating

Implementation of on-the-spot inspection of waste-disposal service providers

The Waste Disposal Law obligates operators to confirm on-site the correct intermediary and final treatment of waste generated. NGK Spark Plug Group sent 121 representatives to 62 waste-disposal service providers (at four NGK Spark Plug factories, 86 representatives to 39 service providers) during FY2003 to check that their facilities and operation methods were legal and satisfactory.



On-the-spot inspection

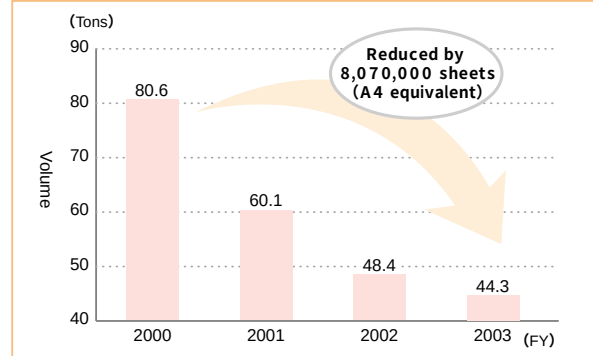
Cases of successfully reduced waste

In order to utilize photocopy paper effectively, we have been steadily working on reduction activities.

The main approach

◎Two-sided printing ◎Reduced printing size ◎Electronic distribution of documents

[Trends in photocopy paper usage (four NGK Spark Plug factories)]



Cases of recycling (MIYANOJO Manufacturing Dept. Spark Plug Div.)

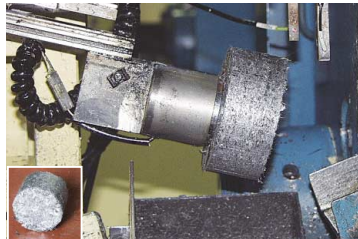
In the spark plug manufacturing process, waste is generated from the cutting of metal parts, and so a pressing machine is used to press this waste and turn it into small blocks prior to the delivery to recycling vendors.

Cutting oil stuck to the cutting waste is collected in the pressing process. However, we found the following problems recently.

- ① There is a tendency for the collection rate to decrease and the purchased amount of cutting oil to increase.
- ② Upon transportation, the oil which cannot be completely collected is scattered.



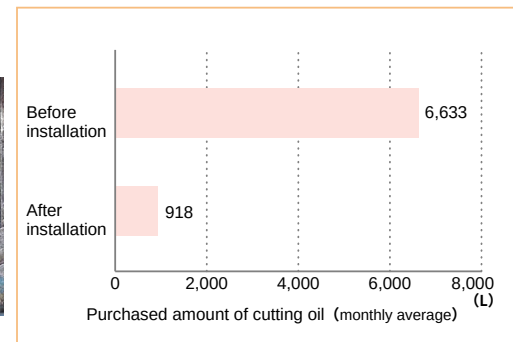
Piles of cutting waste before the introduction of a pressing machine



Pressed cutting waste

In order to collect as much cutting oil as possible, we have installed a centrifugal oil separator that enables 92% of the cutting oil to be collected. Moreover, the purchased amount of cutting oil has decreased by as much as 86% due to filtering and reusing the collected cutting oil.

[Change in purchased amount of cutting oil before and after the installation of an oil separator]



Reducing volume to improve transportation efficiency



Compacting



Learning ways to improve our operations



Learning



Sharing environmental information and ideas



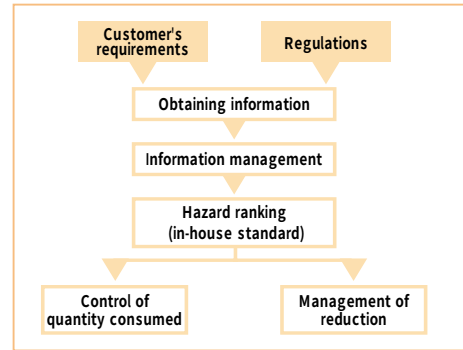
Communicating

Hazardous substances

System to control hazardous substances

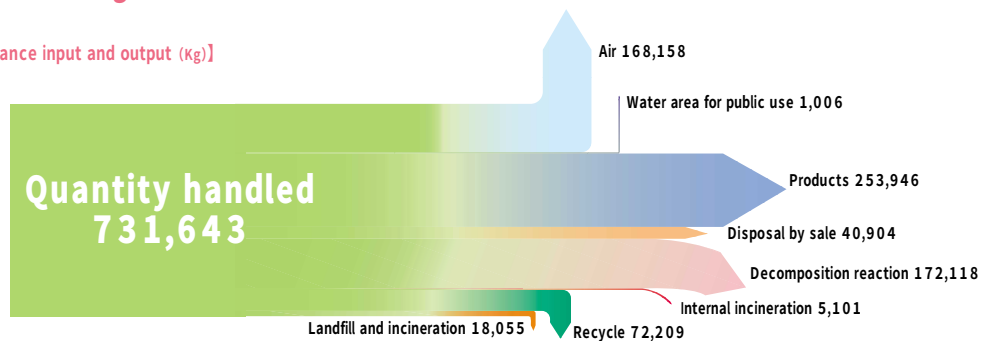
Based on the environmentally hazardous substances ranking, NGK Spark Plug Group checks and controls the chemical substances it uses in order to prevent environmental pollution. In accordance with our control system, we address the reduction of emissions of hazardous substances from the production process, as well as substitution with less hazardous substances as hazardous substances contained in the products and hazardous materials used during the course of the production process.

As for the emission of PRTR law-regulated substances, we are working towards the goal of an 80% reduction by FY2010 in comparison to FY2002. In FY2003, NGK Spark Plug Group handled 27 substances with a volume of 732 tons and emissions of 169 tons. The emission from our four domestic factories was 16 tons, representing a 6% decrease from the previous year.



Control of PRTR law-regulated substances

[PRTR law-regulated substance input and output (Kg)]



[Result of PRTR law-regulated substance total (April, 2003 - March, 2004)]

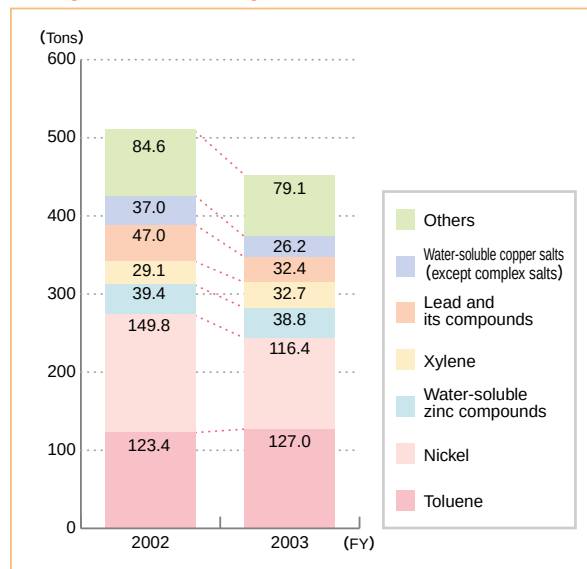
Ordinance No.	Name of chemical substances (Reporting required)	Quantity handled	Release quantity			Removal/disposal quantity	Volume of waste transferred			Volume (four NGK Spark Plug factories) 2002	Quantity released and rating (four NGK Spark Plug factories)		
			Air	Public water area	Soil		Decomposition reaction	Landfill/incineration	Effective use (recycling)		2002	2003	Rating
1	Water-soluble zinc compounds	38,828		72		17			6,452	39,393	9	72	✳
25	Antimony and its compounds	1,326						1	154				
30	Condensation polymer of 4,4'-isopropylidenediphenyl and 1-chloro-2,3-epoxypropane (also called bisphenol A epoxy resin) (liquid form only)	1,328						0	32	1,206			
40	Ethyl benzene	5,958	235			3,089			2,634	2,520	303	235	✳
43	Ethylene glycol	1,456							1,456	1,440			
63	Xylene	32,723 (55,838)	3,074 (14,915)	0 (0)	0 (0)	24,392 (24,392)			5,255 (8,840)	29,092	1,732	3,074	✳
64	Silver and its water-soluble compounds	(2,277)							(276)	2,528			
68	Chromium and trivalent chromium compounds	3,492 (17,132)						(3,898)	1,907 (1,916)	6,846			
100	Cobalt and its compounds	2,632			0	0			175	2,568			
108	Inorganic cyanogens compounds (except complex salt and cyanate)	8,167 (12,147)	0 (0)	0 (0)	0 (0)	5,414 (5,763)			64 (2,351)	7,178			
144	Dichloropentafluoropropane	10,800	10,800							10,410	10,410	10,800	✳
207	Water-soluble copper salts (except complex salt)	26,209		30					729	36,974	38	30	✳
211	Trichloroethylene	(1,951)	(1,701)							1,085	1,085		✳
227	Toluene	126,951 (266,942)	1,114 (140,488)	0 (0)	0 (0)	125,750 (125,750)	0 (0)		87 (675)	123,397	2,032	1,114	✳
230	Lead and its compounds	32,413 (43,247)	0 (0)	0 (0)	0 (0)	0 (0)			8,122 (12,289)	46,972	3	0	✳
231	Nickel	116,363 (125,029)							0 (0)	149,767			
232	Nickel compounds	7,801 (8,893)	0 (0)	112 (112)	0 (0)	0 (0)			1,799 (2,891)	9,717	6	112	✳
253	Hydrazine	(8,175)	(0)	(0)	(0)	(2,011)	(0)		(6,164)				
270	Di-n-butylphthalates	(47,042)				(4,444)	(11,890)		(7,214)				
272	Bis (2-ethylhexyl) phthalates	(3,239)							(2,752)				
283	Hydrogenfluoride and its water-soluble salts	(2,445)	(0)	(393)	(0)	(0)	(0)		(2,052)				
299	Benzene	6,632	19			6,613				5,727	13	19	✳
304	Boron and its compounds	16,173 (17,348)	0 (0)	80 (312)	0 (0)	0 (0)		(0)	1,228 (1,228)	8,766	619	80	✳
309	Poly (oxyethylene) nonylphenoether	1,366				15			1,351	6,510			
310	Formaldehyde	4,600	0			23			4,577	6,911	238	0	✳
311	Manganese and its compounds	5,489	0	86	0	0		1	5,238	8,530	2	86	✳
314	Methacrylic acid									1,342	133		✳
346	Molybdenum and its compounds	1,900 (13,313)						(2,265)	129 (763)	1,287			
Total		452,608 (731,643)	15,243 (168,158)	381 (1,006)	0 (0)	165,315 (172,118)	3 (18,055)		41,388 (72,209)	510,164	16,623	15,623	✳

Data of the entire group shown in brackets.

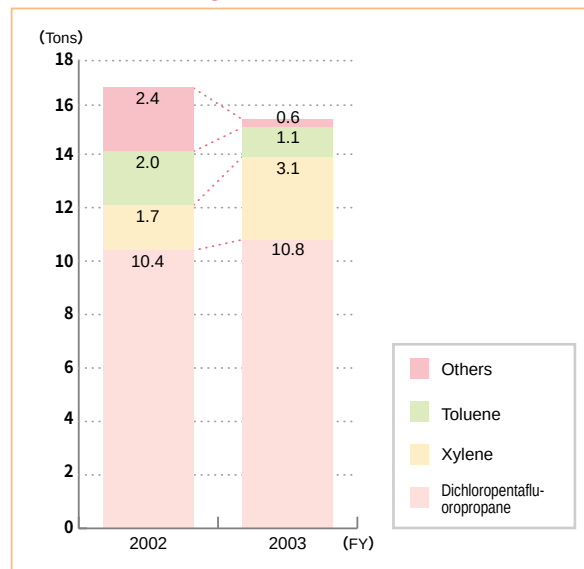
Substances of which over 1 ton/year is handled are listed.

Trends in PRTR law-regulated substances

[Handling volume of PRTR law-regulated substances (four NGK Spark Plug factories)]



[Emission of PRTR law-regulated substances (four NGK Spark Plug factories)]



Hazard ranking

The hazardous substance ranking classifies substances into three levels: prohibited, restricted, and controlled. Prohibited substances are prohibited from use. Restricted substances require a proposal for a substitution program.

Hazard ranking	Handling standard	Substances covered
Prohibited substances	Use is prohibited.	Substances prohibited from use or strongly restricted by regulations.
Restricted substances	A substitution program shall be proposed and the substances replaced.	Hazard level and toxicity are equivalent to prohibited substances, but an immediate changeover is impossible due to its special characteristics.
Controlled substances	Emission into the environment and substance manipulation are controlled.	Mainly PRTR law-regulated substances.

Major efforts to reduce the use of hazardous substances

Hazardous substances	Content of approach
Chlorinated organic solvents	Four NGK Spark Plug factories : Abolished in March 2003 Affiliates : Abolished in May FY2004
PCB	High-voltage equipment and ballast for fluorescent lamps containing PCB are properly stored.
Ozone-depleting substances/ greenhouse gases	Dichloropentafluoropropane Tests are underway on HCFC-225 to pursue complete abolition by the end of FY2005.

Example to reduce xylene (Semiconductor Parts Division)

Since Xylene is a detergent and quick-drying, it is used to clean equipment in the semiconductor manufacturing process. However, xylene is a PRTR law-regulated substance, as well as an organic solvent restricted by the Industrial Safety and Health Law.

The No.2 Manufacturing Division, Ise Manufacturing Section assumed that the volume of xylene could be reduced if ethanol (a non-PRTR law-

regulated substance/non-organic solvent) was mixed with xylene, and carried out tests on three types of compound liquids, A to C.

As a result, they found that a mixture of 75% xylene and 25% ethanol can replace 100% xylene and thus reduce consumption of xylene by 25%.

Compound	Mixture ratio (wt%)		① Swelling of emulsion	② Easiness to wipe off	③ Dryness	Assessment
	Xylene	Ethanol				
Compound	100	0	OK	OK	Moderate	○
A	75	25	OK	OK	Moderate	○
B	50	50	OK	OK	Quick-drying	△
C	25	75	OK	OK	Quick-drying	×

Green purchase

Shift to eco-products promoted for office supplies

The entire NGK Spark Plug Group is promoting a shift to environmentally conscious eco-products by the purchase of stationery and daily necessities that cause less environmental load.

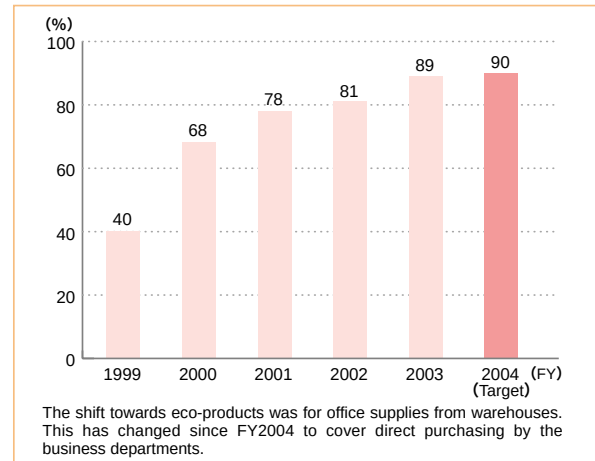
In our four domestic factories, the "Green Procurement Guidelines (In-house Use)" have been revised to promote employee consciousness of eco-products.

As for four NGK Spark Plug factories, the ratio of eco-products to total purchases reached 89.1% in FY2003, an 8 point increase on the previous year.

As for our affiliates, the ratio of eco-products has exceeded their target of 70%.



[Percentage of eco-products in office supplies (NGK Spark Plug)]



Eco-friendly cars

When replacing any vehicles to be used for NGK Spark Plug Group, we choose low-emission vehicles in order to reduce the environmental load. These vehicles produce considerably less emissions in comparison to regular cars in terms of the nitrogen oxide and carbon dioxide content of the exhaust gas.

Four NGK Spark Plug factories and sales office had 96 low-emission vehicles in FY2003, an increase of 37 vehicles on FY 2002.

[Number of low-emission vehicles (according to exhaust gas standards in 2000)]

	(No. of cars)	
	End of FY 2002	End of FY 2003
Extremely low-emission☆☆☆ (75%-decreased level)	17	40
Excellent low-emission☆☆ (50%-decreased level)	16	23
Good low-emission☆ (25%-decreased level)	26	33
Total	59	96

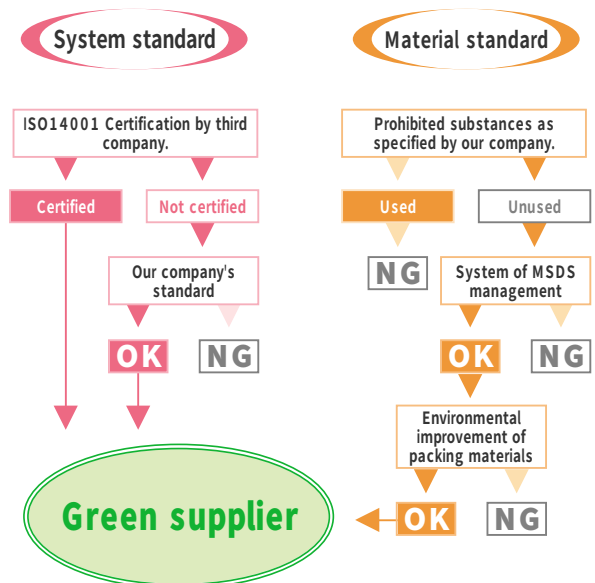


Green procurement

Green procurement guidelines

The "Green Procurement Guidelines (for Partners and Suppliers)" will define the environmental activity standards of our partners and suppliers and the selection standards of raw materials, parts, and wrapping materials. In response to the February 2003 revision of the hazardous substance ranking, the "Green Procurement Guidelines" were also reviewed in June.

We have also conducted an "Environmental Management Status Survey" of our 432 main partners and suppliers, and requested them to build the framework of an environmental management system and check for hazardous substances. We plan to define a "Green Supplier System" which will require our partners and suppliers to adopt the system and material standard in the future.



Note: Our Materials Division will address raw materials, parts, and packing materials from FY 2004.

Noise measures

As per the policy of our Head Office's Manufacturing Department, "Create good products in a good environment", we have proactively addressed the issue of noise to promote the improvement of the working environment.

Noise measures by NAGOYA Manufacturing Dept. Spark Plug Div.

In a spark plug manufacturing factory, there is a lot of equipment that generate loud noise, such as metal coil cutting and processing equipment, or ceramic and metal parts assembly equipment. These have proven to be a challenge in terms of the working environment, since the noise made by these requires the use of earplugs. The Head Office's Manufacturing Department and the Environmental Safety Department jointly set up the Noise Measures Committee in October 2002 to implement noise reductions measures. Below is one example of a measure that was taken on the oscillating parts feeder (SYNTRON).

Example of measure 1

Installed a soundproofing sheet.



Before >> 88.8dB on average



After >> 85.6dB on average

Example of measure 2

Installed a soundproofing cover.



Before >> 91.7dB on average



After >> 87.3dB on average

Example of measure 3

The steel bowl at the bottom was replaced with a damping steel sheet.

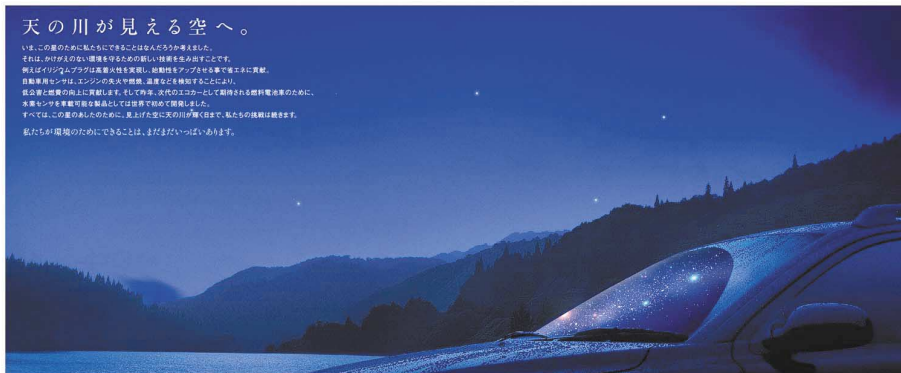
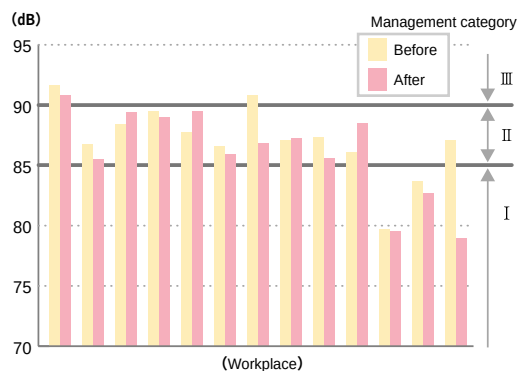


Before >> 97dB on average



After >> 85dB on average

【Change in noise level in each workplace】



We published newspaper and magazine advertisements under the theme of "Environment". The advertisement on the left is titled "The Milky Way visible in the sky", in which we express our wish not to pollute the atmosphere.

3 Products

Eco-design

Environment-friendly technology

One of NGK Spark Plug Group's main products is the spark plug, which holds the No.1 position in the world with 25% market share. With our spark plugs, we have achieved a reduction of engine gas emissions and lower fuel costs by increasing electrode durability through the use of an iridium alloy at the tip of the center electrode which enhances ignitability, start-up, and acceleration. Moreover, generally smaller and lighter plugs contribute to resource savings. At the same time, we have eliminated hexavalent chromium from the surface treatment material of the main metal fittings in plug production, and developed a material which does not use lead in the glazing of the surface of the ceramic insulator. Glow plugs for diesel engines have contributed to the alleviation of environmental load, such as the reduction of smoke and smell upon start-up, the improvement of fuel costs and the reduction of the battery consumption.

Vehicle sensors help the car reach optimum operating conditions by feeding back various types of information to the on-board computer. The sensors help improve combustion and emissions performance and hence play an important role in environmental preservation. In the challenge of developing new clean vehicles, we have taken the first step of developing sensors that may be used in fuel cell vehicles. Our aim is to develop products with technology that will be at the core of future exhaust purification systems.

In developing our semiconductor and electronic parts to be smaller and have lower power consumption, we are contributing towards resource conservation directly through less material used and indirectly by saving power, such as with IC packages and filters used in miniaturizing computers and cellular phones. We have also developed organic packages supporting high-density flip-chip bonding of multi-terminal ICs such as MPUs, etc., using highly reliable, low permittivity, low dielectric loss resin materials, and support products ever advancing in performance, compactness and light weight.

In the ceramic application area, we have developed a ceramic heater by utilizing our IC package technology. It represents a downsizing and weight reduction of conventional metal heaters, while providing better chemical resistance and durability. Our artificial ceramic bone products, have also been well received by medical specialists.

Cutting tools made of alumina and silicon nitride-based ceramics and cermet cutting tools permit dry cutting, which means cutting without oil. Ceramic cutting tools and cermet cutting tools are used for machining cast iron and steel, respectively. The advantage of these cutting tools is that they permitting machining operation without cutting fluid, which turns to industrial waste, without any reduction in their useful life as a tool.



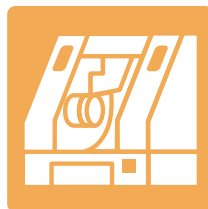
Bathroom Products



Ceramic Heaters

Composed of resistance wires encased in ceramic bodies, these heaters have excellent chemical resistance, reliability and longevity.

Machinery



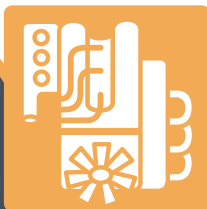
Ceramic Cutting Tools

These ceramic cutting tools are capable of dry cutting (i.e. cutting fluid is not required) which results in less environmental load.

Computers



eco technology



Engines

Iridium Plugs

The adoption of a high-melting-point iridium alloy in the center electrode realizes excellent combustion efficiency and good fuel economy.

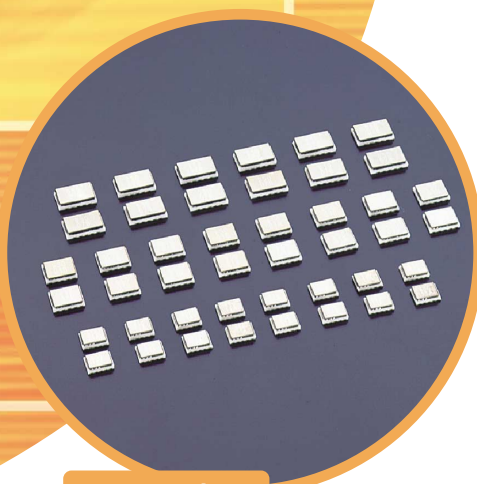


Wide Range Oxygen Sensors

Leading edge automotive sensors capable of measuring a wide range of air-to-fuel ratios from exhaust gas.



Exhaust Manifolds

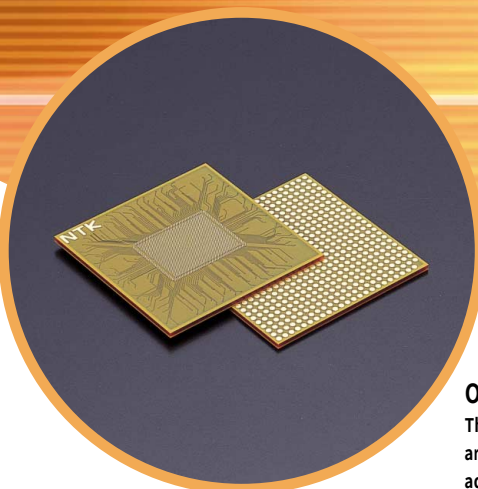


Antenna Switch Modules

With high integration, minimal loss and high damping performance, these components facilitate both low-profile and high-density packaging as well as a reduction in size and weight of mobile communications terminals.



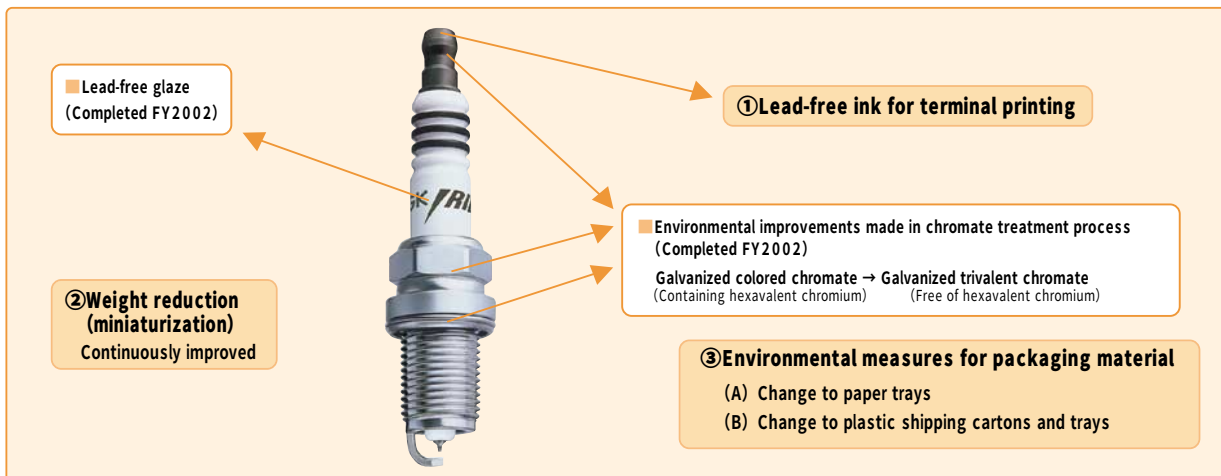
Mobile Phones



Organic Packaging

This is packaging where special plastics are used for MPU containers. They are advanced in performance, compactness and lightweight.

Eco-design of spark plugs

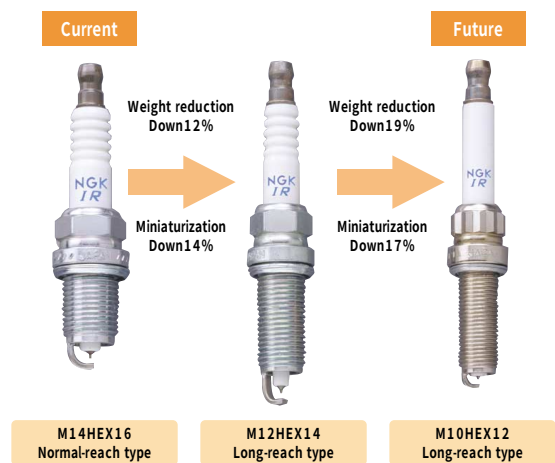


1 Lead-free ink for terminal printing

	Orange	Yellow	Green	Black	Blue
Current products					
Developed products					

We tested the brightness and opacity of colors, and switched to lead-free pigments.

2 Weight reduction (miniaturization)



Production of light-weight plugs is increasing. The average weight of a spark plug has decreased by 6.3% in the past six years.

3 Environmental measures for packaging material

Existing type



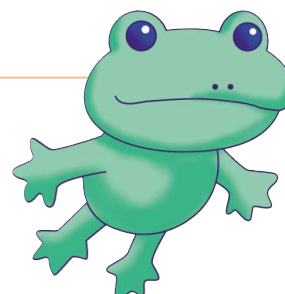
(A) Change to paper trays

Trays for corrugated cardboard shipping cartons have been changed from styrene foam to paper.



(B) Change to plastic shipping cartons and trays

We have changed to plastic shipping cartons and trays so that they can be used repeatedly for overseas manufacturers.



■ LCA in NGK Spark Plug

NGK Spark Plug has evaluated the influence of products on the environment in the design phase for product assessment. In order to conduct a more practical evaluation, we introduced an LCA in FY2002.

We performed an LCA of IC packages in FY2002, and of spark plugs in FY2003.

LCA (life cycle assessment) is a method of quantitatively evaluating the impact on the environment in a series of lifecycles, from the collection of resources to manufacturing, use, disposal, and recycling.

LCA of spark plugs

■ Outline

We conducted an LCA of NGK Spark Plug's leading products, NGK spark plugs (standard type and lightweight types) and NGK platinum plugs (lightweight and long-life types), in order to measure the impact per plug on the environment and to specify any factors that make the impact more significant.

Environmental Issues

- Consumption of resources
- Global warming
- Destruction of ozonosphere
- Acidification
- Solid waste

■ Result

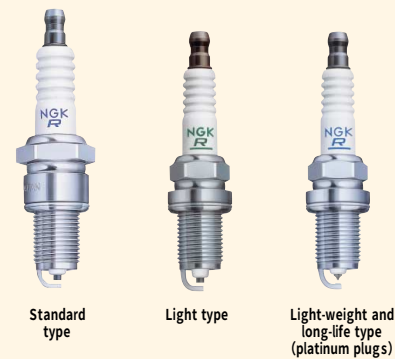
We conducted an analysis of the environmental load and its impact on the above-mentioned environmental concerns. Following we show the impact on global warming.

1 Looking at the influence on global warming per plug, CO₂ conversion was 240g in standard plugs, 210g in lightweight plugs, and 226g in platinum plugs. This reveals that lightweight plugs have a 13% smaller load in comparison with the standard plugs.

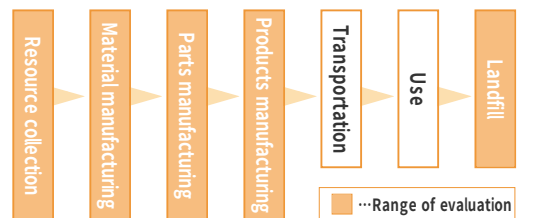
2 An LCA was executed in consideration of the longevity of the plugs. Assuming operation for 100,000 km: One platinum plug or five standard spark plugs are required, a fivefold decrease to the environmental load. This reveals that platinum plugs have the least influence on global warming when the longevity of the plug is taken into account.

■ Additional survey

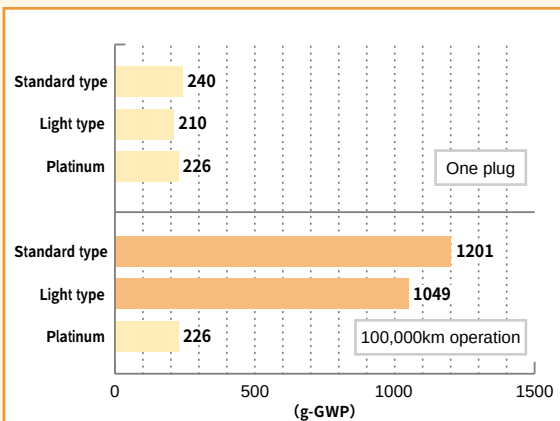
Platinum spark plugs provide fuel savings by way of better ignitability performance. With an assumption of a 2% saving in fuel, we conducted an LCA. Platinum spark plugs, which use less gasoline, were found to positively contribute to the global warming issue through a reduction of fossil fuels.



Life cycle of spark plugs



[Influence on global warming]



Longevity of plug

Spark plug (standard and lightweight)	20,000km
Platinum plug (long life)	100,000km

4 Communication

Disclosure

Publication of ECO report

NGK Spark Plug has published ECO report every year since 2000. From ECO report 2003, we enhanced the content to include Group A affiliates. We have also issued a site report which has the details of the activities of four NGK Spark Plug factories and Group A affiliates towards decreasing environmental load.



Factory Visits

In order to broaden the cycle of environmental preservation in society, we strongly believe in the need for mutual opportunities to visit and study each other's environmental efforts.

We have participated in Re-STEP (a mutual study system of corporate environmental activities), in response to a request by the Chubu Bureau of Economy. We have also increased the number of visitors to our factories in order to revitalize environmental activities together with other local corporations.



Plant tour

「Re-STEP」 <http://restep.zttc.or.jp/>

Community

Cleaning activity in the local community

Head Office/Factory



Jun. 2003 (3 people)
Clean campaign Nagoya 2003
Sep. 2003 (28 people)
Clean-up around the factory and along the trunk road.
Oct. 2003 (3 people)
Clean campaign Nagoya 2003
Nov. 2003 (15 people)
Nagoya Chamber of Commerce's "No litter campaign"
Mar. 2004 (28 people)
Clean-up around the factory and along the trunk road.

Komaki Factory



Apr. 2003 (7 people)
Komakiyama clean-up campaign
Sep. 2003 (46 people)
Clean-up of public roads around the factory
Oct. 2003 (8 people)
Komaki City residents' rally to stop litter
Mar. 2004 (45 people)
Clean-up of public roads around the factory

Miyanojo Factory



August 2003 (103 persons)
Cleaning of town roads around the factory
(including participation in the clean-up
operation of Romantic Street)
Oct. 2003 (74 people)
Clean-up of local roads around the factory

Ise Factory



Aug. 2003 (34 people)
Clean-up along the trunk road and school-designated commuting roads in Enza-cho
Aug. 2003 (35 people)
Clean-up along the trunk road in Ueno-cho

Iijima Ceramic

Jul. 2003 (13 people)
Dec. 2003 (14 people)

Nakatsugawa Ceramic

Sep. 2003 (9 people)
Mar. 2004 (9 people)

Kani Ceramic

Jun. 2003 (18 people)
Nov. 2003 (17 people)
Feb. 2004 (19 people)

Nansei Ceramic

Jun. 2003 (16 people)
Sep. 2003 (14 people)
Dec. 2003 (17 people)
Mar. 2004 (19 people)

Kamioka Ceramic

Jul. 2003 (20 people)
Oct. 2003 (20 people)

Nittoku Seosalisho

Jun. 2003 (24 people)
Sep. 2003 (22 people)
Dec. 2003 (22 people)
Mar. 2004 (28 people)

Nichiwa Kiki

Jun. 2003 (18 people)
Sep. 2003 (23 people)
Dec. 2003 (23 people)
Mar. 2004 (10 people)

Tono Ceramic

May. 2003 (6 people)
Jun. 2003 (52 people)

Ceramic Sensor

Apr. 2003 (2 people)
Sep. 2003 (6 people)
Oct. 2003 (2 people)
Mar. 2004 (6 people)

Natural environment

Excellent Greening Factory

The Miyanojo Factory won the Director of Kyushu Bureau of Economy's Excellent Greening Factory Award in October 2003.

During the selection process, we were highly regarded for opening natural woods and grounds with paved walking trails to the public; our greening management which creates compost from the garbage of the company cafeteria; and our efforts to create beautiful scenery with cherry blossoms.



Ceremony



Grand golf rally

Education and enlightenment

Environmental Convention

We organized the Third Environmental Convention on June 5th, 2003 and presented environmental lectures by guest lecturers, environmentally friendly products, and case studies of environmental improvements.

As for event participation by our employees, we asked for their "environmental proposals" for environmentally friendly products, environmental improvements, and global-scale environmental preservation. We also gave the President's Award to the best idea.



Measures to encourage the acquisition of official qualifications

To ensure the continual improvement of environment conservation activities along the company's environment policy, we develop, train and nurture dedicated staff such as pollution control managers, according to the needs identified for each operation site.

		Four Nittoku factories	Affiliates
Pollution control manager	Air	29 (6)	2 (0)
	Water	54 (7)	14 (2)
	Noise	34 (6)	2 (0)
	Vibration	24 (6)	2 (0)
Work environment measurement engineer		14 (0)	1 (0)
Environment measurement engineer		2 (0)	0 (0)
Energy manager	Heat	18 (2)	4 (0)
	Electricity	18 (4)	9 (3)
Specially controlled industrial waste manager		25 (5)	14 (9)

※ The figures in parentheses indicate the number required under laws.

※ The numbers shown are based on the number of holders of each qualification.

Environmental newsletter

As part of our environmental training and education effort directed at individual employees, we issue "Environmental News" periodically to provide information on our ISO14001-based activities, environment preservation activities and various related events.



Employee magazine "Nittoku"

We have pages dedicated to the environment in our monthly employee magazine "Nittoku." The magazine deals with environment-related events and topics both in Japan and overseas, and the impact of environment-related regulations on NGK Spark Plug's activities, etc., in order to help raise our employees' environmental awareness.



Environment card

We distribute an environment card to every employee of the NGK Spark Plug Group so that they are aware of and understand the main points of our environment policy and the priorities of our environmental effort.

The environment card is designed to enhance employees' commitment to environmental conservation by showing the purpose and objectives of the organization's efforts and the themes of the individual's own efforts.



Proposals for improvement

NGK Spark Plug has a proposal system in which employees can propose plans to improve the various jobs and tasks they do in their daily work.

In FY2003 there were 36,718 proposals, many of which included ideas for environmental improvements. Every employee is making an effort, however small, to contribute to energy and resource conservation by improving their daily jobs.

Basic policies

The target of safety and hygiene activities is zero-disaster, zero-disease, and zero-accident.

1. In order to prevent industrial accidents and occupational diseases, all managers and supervisors including the president will ensure uninterrupted operation of the safety and hygiene management system, and obtain cooperation from all employees, to develop comfortable and safe workplaces.
2. Meanwhile, all employees will consider safety and hygiene as their own issues, comply with basic rules, practice preventive safety and hygiene precautions, and endeavor to maintain and improve their own health.
3. We will strive to promote our risk management activities and the prevention of industrial accidents.

Management system of occupational safety and hygiene

Under the guidance of the Risk Assessment and Measures Committee, we conduct the risk assessment of emergencies, unsafe conditions and activities, and any facilities or tasks in which similar accidents have occurred since April 2004. We identify risk sources by risk assessment and evaluate risks quantitatively according to the possibility of injury and the significance of the injury.

We have been working on the construction of an occupational safety and hygiene management system (OHSAS18001) since October 2004 by utilizing the results of our risk assessment.

Mental health

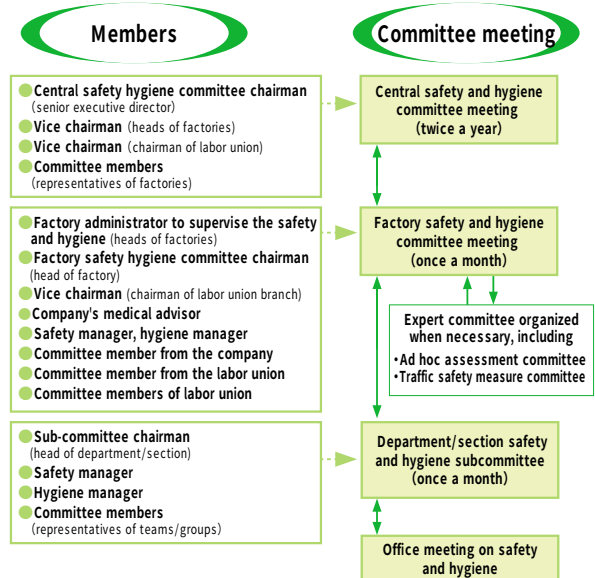
Recently, as social life becomes increasingly complex, more and more people are suffering from mental illness due to worries, stress and personal relationships.

In FY2001 NGK Spark Plug opened a mental counseling network center outside the company in an effort to take care of our employees' mental health. The center provides mental care through telephone counseling and interviews with particular attention paid to the important issue of privacy.

Earthquake disaster prevention committee

We have established an Earthquake Disaster Prevention Committee to prepare us for a large-scale earthquake based on sound precautions and a risk management system that can protect employees. We also organize various activities to prevent disaster and minimize damage including the improvement of buildings and evacuation drills.

Safety and hygiene management organization

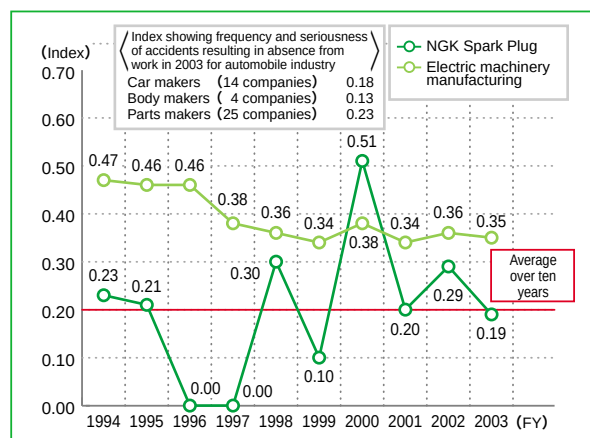


Trends of index showing frequency and seriousness of accidents resulting in absence from work

NGK Spark Plug's average index over the past ten years in the frequency and seriousness of accidents resulting in absence from work is 0.2, and it fluctuates significantly year by year. We have analyzed the cause of accidents resulting/not-resulting in absence from work, and found that many are attributable to unsafe activities or conditions. In addition, we conducted a risk questionnaire in May, 2004 on the entire group to eliminate disaster occurrences. We hope to link the analyzed results and future activities.

$$\text{Index showing frequency and seriousness of accidents resulting in absence from work} = \frac{\text{Number of accidents resulting in absence from work}}{\text{Total working hours}} \times 1,000,000$$

	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03
Number of accidents resulting in absence from work	2	2	0	0	3	1	5	2	3	2



Employment and personnel management system

Equality of opportunities

After the revision of the Equal Employment Opportunity Law in 1999, NGK Spark Plug has strived to achieve a work environment that balances work and childcare or work and nursing-care, by introducing a childcare/nursing-care leave system. Also, in order for women to be able to work a three-shift, 24-hour system, we have reorganized the workplace by renovating the facilities and providing alarms, etc.

Number of users of childcare or nursing-care leave

Childcare leave 278 people

Nursing-care leave 8people (Total number of users as of the end of June, 2004)

Message from a user of the childcare leave system

Mrs. Keiko Yoshida

Personnel Dept.

I used the childcare leave system for the first time. I was worried about having to quit my job upon having a child, but I decided to apply for the system to continue work as long as possible. I think that I have spent most of my time at home, while I was taking leave to focus on child-rearing and housekeeping. I returned to the office after one year, but it was tough since my job had changed and I had to start from scratch. I managed thanks to the help of my co-workers. Sometimes I was almost too worn out to continue, but the lovely beaming and sleeping face of my child encouraged me to keep going. I appreciate that I have been balancing my job and my housekeeping thanks to the cooperation of my co-workers and my family. It is harder now than one year ago when I could stay mostly at home, but my life is more enriched now. I am glad that I could take advantage of the system. I hope that many will use the system to enjoy a more active life in society.



Sexual harassment

In order to establish a comfortable workplace for women without unnecessary concerns, the Sexual Harassment Measures Committee is playing a central role to take measures such as enlightenment activities through in-house publication, manager training, and opening a consultation desk via the intranet and telephone.

Behavioral norm set by the Sexual Harassment Measures Committee

- (1) **Preventive measures**
enlightenment of people to prevent harassment cases (manager training ⇒ application to workplaces)
- (2) **Prompt action against harassment cases**
if a harassment case occurs, prompt action should be taken to investigate and enforce proper instructions to prevent further detrimental development of the case or recurrence of a similar case.
- (3) **Disciplinary action against serious offenders**
in case of an offence, the case should be reported to the Disciplinary Committee with recommendations for an appropriate penalty.

Re-employment system of ex-employees who retired at the retirement age

In view of the possible upward revision of the Koseinenkin annuity system's qualifying age, there is a growing social need for enterprises to increase employment opportunities for those who are over 60. Under these circumstances, in April 2001 we introduced a re-employment system of ex-employees who have retired in order to effectively utilize the knowledge, skills and experience cultivated by our employees in their careers.

Happy Life Seminar

In 1994 we launched the Happy Life Seminar to help employees who become 50 years old to pursue a more fruitful and enriched life after retirement. It is an opportunity to make them think about a second life, encouraged by lectures and group discussions focusing on three perspectives: the purpose of living, health, and finance.

Participants in the Happy Life Seminar

FY2003 86people

Total to date 815people

(The number of participating employees as of the end of March 2004)

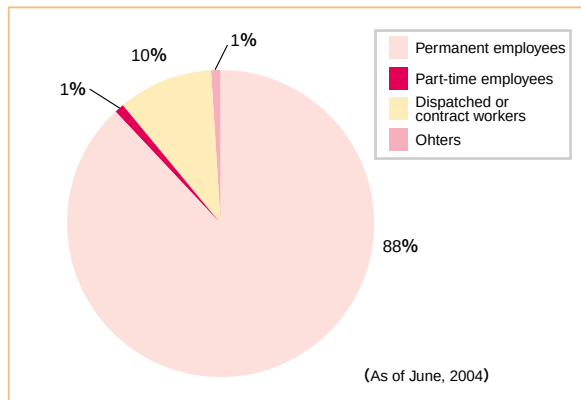
Support for volunteer activities

It is of benefit to and can be a valuable asset for both company and employees for our employees to participate in voluntary activities and cultivate their personality. To support our employees' voluntary public welfare activities, we introduced volunteer leave (approximately 10 days a year) and temporary retirement system (an employee is entitled to take leave for a consecutive period of two years and four months or less, once during his/her employment) in October 1996.

Labor force structure

In response to quickly changing social conditions along with technical advancement and informatization, we now have more opportunities to hire non-permanent employees. Permanent employees make up 88% of NGK Spark Plug's labor force structure.

[Labor force structure]



[PRTR]

Unit: kg

	Ordinance No.	Substance name (substance to be reported)	Quantity handled	Release quantity			Removal/disposal quantity	Volume of waste transferred	
				Air	Public water area	Soil	Decomposition reaction	Landfill/incineration	Effective use (recycling)
Head Office /Factory	1	Water-soluble zinc compounds	7,098.0						1,679.7
	40	Ethyl benzene	1,501.7				1,501.7		
	63	Xylene	16,096.2	23.6			16,072.6		0.0
	68	Chromium and trivalent chromium compounds	2,096.5						587.8
	108	Inorganic cyanogens compounds (except complex salts and cyanate)	1,210.7				1,194.0		
	144	Dichloropentafluoropropane	3,625.0	3,625.0					
	227	Toluene	115,856.8	367.0			115,489.8		
	231	Nickel	33,493.5						0.1
	299	Benzene	5,618.2	14.9			5,603.3		
	304	Boron and its compounds	1,109.7						9.5
Komaki Factory	1	Water-soluble zinc compounds	6,189.5		72.0		17.4		45.7
	25	Antimony and its compounds	1,325.9					1.5	153.9
	30	Condensation polymer of 4,4'-isopropylidenediphenyl and 1-chloro-2,3-epoxypropane (also called bisphenol A epoxy resin) (liquid form only)	1,328.0					0.1	31.9
	40	Ethyl benzene	4,456.5	235.4			1,587.6		2,633.5
	63	Xylene	14,750.7	1,209.8	0.0		8,319.7		5,219.7
	100	Cobalt and its compounds	2,632.0				0.0		175.5
	108	Inorganic cyanogens compounds (except complex salts and cyanate)	4,451.0	0.0	0.0		1,715.4		63.5
	207	Water-soluble copper salts (except complex salts)	26,209.4		30.0				728.8
	227	Toluene	11,094.5	747.1	0.0		10,260.6	0.0	86.8
	230	Lead and its compounds	4,509.4	0.0			0.0		550.8
	232	Nickel compounds	7,800.9	0.0	112.4		0.0		1,798.9
	299	Benzene	1,013.7	4.0			1,009.3		
	304	Boron and its compounds	11,957.8	0.0	76.3		0.3		1,141.3
	309	Poly (oxyethylene) nonylphenoether	1,366.1				14.7		1,351.4
	310	Formaldehyde	2,320.4	0.0			23.2		2,297.2
	311	Manganese and its compounds	4,247.6	0.0	86.1		0.0		4,136.8
	346	Molybdenum and its compounds	1,900.5						128.9
	Miyanojo Factory	1	Water-soluble zinc compounds	25,541.0					
68		Chromium and trivalent chromium compounds	1,395.9						1,319.5
108		Inorganic cyanogens compounds (except complex salts and cyanate)	2,505.0				2,505.0		0.0
144		Dichloropentafluoropropane	7,175.0	7,175.0					
231		Nickel	82,869.4						
Ise Factory	304	Boron and its compounds	3,105.6		4.0				77.1
	43	Ethylene glycol	1,456.0						1,456.0
	63	Xylene	1,875.8	1,841.0					35.0
	230	Lead and its compounds	27,903.6						7,570.8
	310	Formaldehyde	2,280.0						2,280.0
Iijima Ceramic	311	Manganese and its compounds	1,241.0					1.0	1,101.0
	63	Xylene	9,630.0	6,044.4					3,585.6
	68	Chromium and trivalent chromium compounds	1,812.1					1,170.6	
	108	Inorganic cyanogens compounds (except complex salts and cyanate)	3,980.4		0.4		348.3		2,287.7
	230	Lead and its compounds	4,899.0						620.0
	231	Nickel	1,678.3						
	232	Nickel compounds	1,091.8						1,091.8
	270	Di-n-butylphthalates	7,623.4				3,021.3	3,421.7	1,180.4
Nakatsugawa Ceramic	346	Molybdenum and its compounds	3,748.9					1,317.6	
	63	Xylene	12,387.0	4,698.0					
	64	Silver and its water-soluble compounds	2,277.0						276.0
	68	Chromium and trivalent chromium compounds	11,827.7					2,727.6	9.0
	227	Toluene	139,991.0	139,374.0					588.0
	230	Lead and its compounds	3,961.0						1,577.3
	270	Di-n-butylphthalates	35,720.5					6,661.5	5,564.5
	272	Bis (2-ethylhexyl) phthalates	3,238.9						2,752.4
Kani Ceramic	346	Molybdenum and its compounds	7,664.0					947.3	634.0
	63	Xylene	1,098.4	1,098.4					
	270	Di-n-butylphthalates	3,698.2				1,423.1	1,806.4	469.4
Nittoku Seisakusho	211	Trichloroethylene	1,950.8	1,700.8					
	231	Nickel	6,987.5						
Nansei Ceramic Ceramic Sensor	230	Lead and its compounds	1,974.0						1,970.0
	253	Hydrazine	8,174.6	0.0	0.0		2,010.9	0.0	6,163.7
	283	Hydrogenfluoride and its water-soluble compounds	2,445.1	0.0	393.2		0.0	0.0	2,051.9
	304	Boron and its compounds	1,175.1	0.0	231.7		0.0	0.0	0.0

[Waste]

	Total volume of emissions (tons)	Volume effectively used (tons)	Volume of landfill and incineration (tons)	Recovery rate (%)
Head Office/Factory	899.8	894.1	5.7	99.4
Komaki Factory	8,412.2	8,345.1	67.1	99.2
Miyanojo Factory	3,056.8	3,038.1	18.7	99.4
Ise Factory	2,063.6	2,050.1	13.5	99.3
Iijima Ceramic	1,098.8	981.7	117.1	89.3
Nakatsugawa Ceramic	362.3	129.7	232.7	35.8
Kani Ceramic	74.5	17.3	57.2	23.2

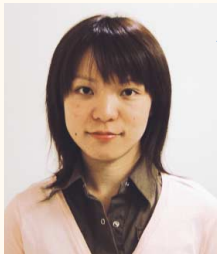
	Total volume of emissions (tons)	Volume effectively used (tons)	Volume of landfill and incineration (tons)	Recovery rate (%)
Nansei Ceramic	49.1	30.7	18.3	62.6
Kamioka Ceramic	102.5	72.0	30.5	70.3
Nittoku Seisakusho	230.7	221.8	8.9	96.1
Nitiwa Kiki	4.0	2.7	1.3	67.5
Tono Ceramic	16.2	13.7	2.5	84.5
Ceramic Sensor	811.6	798.5	13.1	98.4
Total	17,182.3	16,595.6	586.7	96.6

- ※1...We changed the self-regulated value because the measurement method was changed to continuous measurement.
 ※2...We took measures by improving the exhaust silencer of the vacuum pump and changing the direction of the outlet of the compressor exhaust.
 ※3...We are working on soundproofing measures and earthquake-proof construction.
 ※4...We have reported this to Oguchi-cho, and are working on soundproofing measures.

[Water, air and noise]

	Item	Type	Unit	Statutory regulation value	Voluntary regulation value	Average	MAX	MIN
Head Office/ Factory	Atmosphere (boiler)	Dust	(mg/Nm ³)	50	40	0.3	0.4	0.2
		NOx	(ppm)	150	120	49	54	44
	Atmosphere (incinerator)	Dust	(mg/Nm ³)	150	120	0.4	0.4	0.4
		NOx	(ppm)	180	144	19	25	13
	Drain (drainage)	pH		5.0~9.0	5.7~8.7	6.9	7.5	5.8
		S S	(mg/L)	600	480	33.6	110	5
		BOD	(mg/L)	600	480	59.5	250	3
		n-Hexane	(mg/L)	30	24	4.4	21	0.9
		Cyan	(mg/L)	1	0.8	0.2	0.4	0.1
		Total chromium	(mg/L)	2	1.6	0.06	0.12	0.04
		Hexavalent chromium	(mg/L)	0.5	0.4	0.04	0.04	0.04
		Zinc	(mg/L)	5	4	1.15	2.4	0.01
		Lead	(mg/L)	0.1	0.08	0.02	0.02	0.02
		Nitrogen	(mg/L)	—	128	17.8	25	9.1
		Phosphorus	(mg/L)	—	16	0.69	1.8	0.21
	Noise	Morning	(dB)	70	68	57	64	52
		Daytime	(dB)	70	68	60	65	57
		Evening	(dB)	70	68	58	64	55
		Night	(dB)	65	64	56	63	53
Komaki Factory	Air	Dust	(mg/Nm ³)	200	160	8.0	38	2
		NOx	(ppm)	200	160	61.3	110	19
	Drain (Public water area)	pH		6.0~8.0	6.2~7.8	7.4	7.8	7.0
		S S	(mg/L)	30	24	2.7	6	< 1
		BOD	(mg/L)	25	20	4.9	7.6	2.0
		n-Hexane	(mg/L)	5	4	< 1.0	< 1.0	< 1.0
		Cyan	(mg/L)	0.5	0.4	< 0.1	< 0.1	< 0.1
		Total chromium	(mg/L)	1	0.8	< 0.04	< 0.04	< 0.04
		Hexavalent chromium	(mg/L)	0.2	0.16	< 0.04	< 0.04	< 0.04
		Copper	(mg/L)	1	0.8	0.02	0.05	< 0.01
		Zinc	(mg/L)	3	2.4	0.11	0.40	0.03
		Lead	(mg/L)	0.1	0.08	< 0.02	< 0.02	< 0.02
		Nitrogen	(mg/L)	120	※1 60	5.5	8.5	3.1
		Phosphorus	(mg/L)	16	4	0.32	0.50	0.19
		Nickel	(mg/L)	—	—	0.16	0.30	< 0.1
		Manganese	(mg/L)	10	8	0.12	0.30	< 0.1
		Boron	(mg/L)	10	8	1	1.00	< 1
		Fluorine	(mg/L)	8	6.4	0.5	0.80	0.2
	Noise	Morning	(dB)	65	63	58	61	53
		Daytime	(dB)	70	68	58	62	50
		Evening	(dB)	65	63	57	61	51
		Night	(dB)	60	58	56	58	50
Miyanojo Factory	Air	Dust	(mg/Nm ³)	300	240	< 7	< 7	< 7
		NOx	(ppm)	180	144	51	51	51
	Atmosphere (use of diesel for co-generation)	Dust	(mg/Nm ³)	100	80	12.5	18	7
		NOx	(ppm)	950	855	705	840	570
	Drain (Public water area)	SOx	(Nm ³ /h)	3.9	3.12	0.26	0.41	0.11
		pH		6~8	6.5~7.8	7.5	7.8	7.1
		S S	(mg/L)	35	28	5	9	4
		BOD	(mg/L)	20	16	4	11	1
		n-Hexane	(mg/L)	5	4	< 2.5	< 2.5	< 2.5
		Cyan	(mg/L)	1	0.8	< 0.05	< 0.05	< 0.05
		Hexavalent chromium	(mg/L)	0.5	0.4	< 0.05	< 0.05	< 0.05
		Copper	(mg/L)	3	2.4	0.16	0.27	< 0.05
		Zinc	(mg/L)	5	2.4	0.075	0.08	0.07
		Lead	(mg/L)	0.1	0.08	< 0.01	< 0.01	< 0.01
		E. coli (counts/cm ³)		3000	2400	0	0	0
		Boron	(mg/L)	10	10	0.9	1.0	0.8
		Fluorine	(mg/L)	8	8	0.2	0.2	0.2
	Noise	Morning	(dB)	60	55	47	50	42
		Daytime	(dB)	65	60	48	50	46
		Evening	(dB)	60	55	48	50	45
		Night	(dB)	50	50	46	47	45
Ise Factory	Air	Dust	(mg/Nm ³)	250	100	< 5	< 5	< 5
		NOx	(ppm)	180	140	66	102	24
	Drain (Public water area)	pH		5.8~8.6	6.0~8.4	7.4	7.6	7.2
		S S	(mg/L)	90	45	< 1	< 1	< 1
		BOD	(mg/L)	25	20	2.0	7.0	< 1
		n-Hexane	(mg/L)	5	2.5	< 1	< 1	< 1
		Cyan	(mg/L)	1	0.5	< 0.1	< 0.1	< 0.1
		Total chromium	(mg/L)	2	1	< 0.04	< 0.04	< 0.04
		Hexavalent chromium	(mg/L)	0.5	0.3	< 0.04	< 0.04	< 0.04
		Copper	(mg/L)	3	0.5	< 0.02	< 0.02	< 0.02
		Zinc	(mg/L)	5	2.5	< 0.005	< 0.005	< 0.005
		Lead	(mg/L)	0.1	0.1	< 0.005	< 0.005	< 0.005
		Nitrogen	(mg/L)	120	60	3.1	9.1	0.1
		Phosphorus	(mg/L)	16	8	1.93	3.86	0.69
	Noise	Morning	(dB)	55	55	49.2	51.1	45.5
		Daytime	(dB)	60	58	52.6	53.8	51.5
		Evening	(dB)	55	55	46.5	50.9	41.2
		Night	(dB)	50	50	44.7	49.0	41.2
Iijima Ceramic	Air	Dust	(mg/Nm ³)	100	100	1.5	1.5	1.5
		NOx	(ppm)	150	150	77	77	77
	Drain (Public water area)	pH		5.8~8.6	6.0~8.0	7.45	7.6	7.2
		S S	(mg/L)	50	10	1.875	11	1
		BOD	(mg/L)	30	25	1.3	4.6	0.5
		n-Hexane	(mg/L)	5	5	< 1	< 1	< 1
		Cyan	(mg/L)	0.5	0.3	< 0.01	< 0.01	< 0.01
		Total chromium	(mg/L)	1	1	< 0.02	< 0.02	< 0.02
		Hexavalent chromium	(mg/L)	0.3	0.3	< 0.02	< 0.02	< 0.02
		Copper	(mg/L)	2	2	0.0575	0.09	0.01
		Zinc	(mg/L)	3	3	0.07	0.07	0.07
		Lead	(mg/L)	0.1	0.1	< 0.005	< 0.005	< 0.005

	Item	Type	Unit	Statutory regulation value	Voluntary regulation value	Average	MAX	MIN	
	Noise	Phosphorus	(mg/L)	16	16	1.55	1.9	1	
		E. coli	(counts/cm³)	3000	3000	6.75	11	0	
		Morning	(dB)	—	65	52	52	52	
		Daytime	(dB)	—	65	57.4	57.4	57.4	
		Evening	(dB)	—	65	53.6	53.6	53.6	
		Night	(dB)	—	55	49.8	49.8	49.8	
Nakatsugawa Ceramic	Air	Dust	(mg/Nm³)	200	150	3	3	3	
		NOx	(ppm)	144	130	72	72	72	
	Drain (Public water area)	pH		5.8~8.6	6.2~8.2	7.5	8.1	7.1	
		SS	(mg/L)	50	35	1.6	4	1	
		BOD	(mg/L)	15	13	2.7	6.2	0.5	
		COD	(mg/L)	40	30	4	8.3	1.9	
n-Hexane		(mg/L)	5	4	0.5	0.5	0.5		
Nitrogen		(mg/L)	10	10	2.3	5.4	0.2		
Kani Ceramic	Noise	Phosphorus	(mg/L)	3	2.5	0.1	0.56	0.01	
		E. coli	(counts/cm³)	3000	1000	36	170	30	
		Morning	(dB)	60	58	48	51	45	
		Daytime	(dB)	65	63	48	52	46	
		Evening	(dB)	60	58	48	51	46	
		Night	(dB)	50	50	48	50	45	
	Air	Dust	(mg/Nm³)	100	90	< 8.0	< 8.0	< 8.0	
		NOx	(ppm)	150	135	54.0	54.0	54.0	
	Drain (Public water area)	pH		5.8~8.6	5.9~8.5	7.1	7.1	7.1	
		SS	(mg/L)	200	180	1.4	1.4	1.4	
		BOD	(mg/L)	160	144	15.0	15.0	15.0	
		n-Hexane	(mg/L)	5	4.5	1.0	1.0	1.0	
Noise	Morning	(dB)	50	50	47.0	※2 50.9	43.6		
	Daytime	(dB)	60	60	47.0	51.0	42.7		
	Evening	(dB)	50	50	49.1	※2 51.3	47.4		
	Night	(dB)	45	45	47.5	※2 51.5	44.3		
Nansei Ceramic	Drain (Public water area)	pH		5.8~8.6	5.8~8.6	7.5	7.7	7.3	
		SS	(mg/L)	200	90	13	38	1	
		BOD	(mg/L)	20	20	5	8	1	
		Lead	(mg/L)	0.1	0.1	< 0.01	< 0.01	< 0.01	
		Nitrogen	(mg/L)	120	100	18.3	43.8	3.9	
		Phosphorus	(mg/L)	16	16	1.7	4	0.3	
Noise	Morning	(dB)	55	55	51	54	53		
	Daytime	(dB)	60	60	54	59	51		
	Evening	(dB)	55	55	50	53	49		
	Night	(dB)	50	50	48	49	46		
Kamioka Ceramic	Drain (Public water area)	pH		5.8~8.6	6.2~8.2	7.7	7.8	7.6	
		SS	(mg/L)	200	50	5.4	8.0	2.8	
		BOD	(mg/L)	160	40	< 2.0	3.5	< 0.5	
		n-Hexane	(mg/L)	5	2.5	< 0.85	1.2	< 0.5	
	Noise	Morning	(dB)	60	60	44.0	46	42	
		Daytime	(dB)	65	65	45.5	48	43	
Nittoku Seisakusho Head Office/ Factory	Noise	Evening	(dB)	60	60	44.5	47	42	
		Night	(dB)	50	50	44.5	48	41	
		Drain (drainage)	pH		5以上	5.8~9.0	7.7	8.9	7.1
			SS	(mg/L)	600	300	30	77	5
			BOD	(mg/L)	600	300	42	99	0.7
			n-Hexane	(mg/L)	50	25	1.2	1.2	1.2
Nittoku Seisakusho Oguchi Factory	Noise	Morning	(dB)	60	60	※3 61.9	62.8	61.3	
		Daytime	(dB)	65	65	64.5	65.1	62.5	
		Evening	(dB)	60	60	60	61.2	58.3	
		Night	(dB)	50	50	※3 54.7	55.4	53.6	
		Drain (Public water area)	pH		5.8~8.6	6.0~8.4	7.3	7.6	7.1
			SS	(mg/L)	30	30	2.7	6	1
BOD	(mg/L)		25	20	1.4	3.3	0.5		
n-Hexane	(mg/L)		5	4	1	1	1		
Nichiya Kiki	Noise	Nitrogen	(mg/L)	120	60	0.55	0.6	0.5	
		Phosphorus	(mg/L)	16	8	0.01	0.01	0.01	
		Morning	(dB)	60	60	55	※4 62	50	
		Daytime	(dB)	65	65	57	64	52	
		Evening	(dB)	60	60	54	58	50	
		Night	(dB)	50	50	46	※4 53	40	
Tono Ceramic	Drain (Public water area)	pH		5以上	6~8	6.9	7.2	6.7	
		n-Hexane	(mg/L)	50	20	15	20	10	
	Noise	Daytime	(dB)	65	63	58.7	63	56.1	
		Dust	(mg/Nm³)	—	200	< 10	< 10	< 10	
		NOx	(ppm)	—	200	135	140	130	
		pH		—	5.8~8.6	8.4	8.4	8.4	
Ceramic Sensor	Noise	SS	(mg/L)	—	200	22	22	22	
		BOD	(mg/L)	—	160	24	24	24	
		n-Hexane	(mg/L)	—	5	1	1	1	
		Morning	(dB)	50	50	45	49	43	
		Daytime	(dB)	60	60	52.7	58	47	
		Evening	(dB)	50	50	45	49	44	
	Air	Night	(dB)	45	45	43.7	44	42	
		Dust	(mg/Nm³)	100	100	1	1	1	
		NOx	(ppm)	150	120	78	91	73	
		pH		6~8	6~8	7.1	7.3	6.9	
		SS	(mg/L)	18	14.4	6.2	10	4	
		BOD	(mg/L)	18	14.4	4	7	2.8	
	Drain (Public water area)	COD	(mg/L)	18	14.4	10.1	12	6.7	
		n-Hexane	(mg/L)	2	1.6	1	1	1	
		Nitrogen	(mg/L)	30	24	12.9	17	9.1	
		Phosphorus	(mg/L)	4	3.2	0.65	1.2	0.25	
		Boron	(mg/L)	10	10	3.05	3.8	2.3	
		Fluorine	(mg/L)	8	8	3.2	4.3	2.1	
Noise	Daytime	(dB)	70	70	57.1	61.1	53.8		
	Night	(dB)	60	60	56	59.6	52		



Ms. Chiaki Ohara

2nd-year student
Science and Engineering Dept., Waseda
University Graduate School.
Belongs to the environment and safety
engineering laboratory, and studies
photocatalysts.

Year by year, people are getting more interested in how each company addresses environmental issues. I believe that NGK Spark Plug has been working on the analysis of the relationship between their business and the environment in a well-considered manner, and is taking various environmental measures based on it. Especially, I was very impressed because they don't limit themselves to the improvement of the manufacturing process, but include improvements to their product development, pursuing environment friendly designs as seen in the spark plug. I believe that this kind of attitude will become increasingly important in the future as the social responsibility of companies is emphasized more and more. I sincerely hope that they promote their environmental measures further and achieve their Eco Vision 2010.



Mr. Yuji Kawaguchi

Writer
Presented lectures in the Environmental
Conference 2004 on the safety hygiene of
Ise Factory and the environmental issues
mainly focusing on seawater pollution.

Industries in the twentieth century only paid attention to the benefits and merits of science and technology, and tended to forget their negative aspects. Now, as we move towards an age of considering environmental issues from a global perspective, the expectations for corporate measures on environmental issues and social roles is growing bigger and bigger. I would like to applaud NGK Spark Plug's efforts in publishing the ECO report and implementing their various preservation measures. This is because I can see their attitude in addressing challenges as a forerunner on every page. I hope that this report will be utilized as a bench mark for environmental preservation activities, and that zero emissions will become a key word at NGK Spark Plug.



Mr. Shigeo Igaki

District chief of the Iwasakihara area near
Komaki Factory, and participated in the
Safety Hygiene and Environmental
Convention 2004 as a guest.

*Safety Hygiene and Environmental Convention 2004
We have organized the Environmental Convention since
2001. In FY2004, we also organized the Safety
Hygiene and Environmental Convention 2004, with the
main convention at the Komaki Factory and the site
conventions at four NGK Spark Plug factories, Group A
and B affiliates, and Ceramic Sensor.

I took up the post of district chief in FY2004. Through my participation in seminars associated with environmental issues provided by NGK Spark Plug, I recognized that each employee of NGK Spark Plug has been working hard towards achieving ISO 14001 certification. Thanks to the lectures I listened to in the Safety Hygiene and Environmental Convention 2004, I gained a more positive view of the environmental issues in the future. I have also read this ECO Report, and was strongly impressed by their stance of analyzing various environmental issues in a detailed and serious manner and leading to practical solutions. I deeply hope that this kind of activity will help develop the local community including the villages in the vicinity, and bridge corporations and the whole global community.



Ms. Yumiko Mori

Employee of NGK Spark Plug,
Belonging to the Purchasing Dept.

I am glad that the ECO report has been enhanced year by year and I could join as one of the in-house auditors from last year. My own view towards the environment has been drastically changed since I became involved in the in-house audit activities and green procurement. I believe that the theme of the environment will require the recognition and participation of many people. I would like more people to play a role to communicate with the "outside", not just the "inside", in order for us and our children to be able to continue enjoying a rich and safe life in the future. I am hopeful for the fulfillment of the Eco Vision 2010.

■ Contacts for inquiries

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	Komaki Factory Environment and Safety Management Dept. +81 568-76-1544
	Miyanojo Factory Clerk's Office +81 996-53-2211
	Ise Factory Environment and Safety Management Dept. +81 596-39-1534
Iijima Ceramic	General Administration Dept. +81 265-86-5211
Nakatsugawa Ceramic	General Administration Dept. +81 573-68-5484
Kani Ceramic	General Administration Dept. +81 574-63-2511

Operation site	Dept. name/tel
Nansei Ceramic	General Administration Dept. +81 599-65-3366
Kamioka Ceramic	General Administration Dept. +81 578-2-1112
Nittoku Seisakusho	General Administration Dept. +81 52-811-3921
Nichiwa Kiki	General Administration Dept. +81 52-382-0511
Tono Ceramic	General Administration Dept. +81 574-63-1031
Ceramic Sensor	General Administration Dept. +81 568-76-5400

■ Request for cooperation in a questionnaire ■

Thank you for reading our ECO report 2004. In order to improve future reports,
we would like to ask for your cooperation in completing the enclosed questionnaire.

Please kindly send your completed questionnaire to ▶ **FAX +81 52-872-5942**

Third party examination

In order to secure the credibility of ECO report 2004, NGK Spark Plug Group has, for the first time, asked a third party to examine its content. TÜV Rheinland Japan, its ISO14001 certification organization, was requested to perform this task.

We will accept the result of their examination with sincerity in order to improve our information disclosure in the future.

Third Party Verification Report regarding the

「ECO report 2004」 issued by NGK SPARK PLUG Co., LTD.

1. Object of verification

The 'ECO report 2004' has been issued by NGK SPARK PLUG Co., Ltd. in accordance to the 'Environmental Reporting Assessment Guidelines' established by the Japanese Ministry of Environment. The 'ECO report 2004' covers environmental performance information of NGK SPARK PLUG Co., Ltd. and 11 affiliated companies in Japan for the reporting period from April 01st 2003 until March 31st 2004. TÜV Rheinland Japan Ltd. verified this 'ECO report 2004' according to all requirements of the 'Environmental Reporting Assessment Standard' (fiscal 2003 version) as established by the Japanese Ministry of Environment.

2. Verification method

Following the Ministry of Environment's Environmental Reporting Assessment Standard, information reported for each site, calculation methods and description contents have been verified on a sampling basis during interviews at the Headquarter site. Also, the accuracy of environmental information and calculation processes of relevant items have been assessed during environmental management system audits (ISO14001) at each site.

3. Conclusion

TÜV Rheinland Japan Ltd. assessed the 'ECO report 2004' as planned in accordance with objectives defined by the Environmental Reporting Assessment Standard. The assessment team verified appropriate implementation of corrective action required during the Headquarter audit. It was concluded that the 'Eco report 2004' fulfills the Environmental Reporting Standard and Guidelines, covering important information and correctly describing environmental performance.

4. Opinion

The 'ECO Vision 2010', which was based on the newly established Environmental Policy this year, defines specific targets also for NGK group companies, and was evaluated as an action plan considering financial feasibility and issues of corporate social responsibility (CSR). It can be said that such a group-wide basic policy including the overseas sites is a good step into the direction towards sustainable development.

The material balance chart and "challenges surrounding NGK group and ECO word" mention in detail environmental impacts arising during the product life cycle. These descriptions are deemed excellent and very easy to understand. The company's stance to tackle those challenges is clearly described in ECO Vision 2010.

It is desired that each site will verify whether 'zero emission' according to the definition for utilization of waste and sorted emissions is fulfilled. Also, a qualitative improvement of 'zero emission' with 3R priority in mind should be addressed in future.

For environmental accounting, clear establishment of calculation rules for effect of environmental preservation is desired. Specifically speaking, the calculation rule for effect of sales and waste recycling should clearly be established. This will lead to increased transparency and activities with higher quality.

Activities with "participation of everyone" are implemented as part of the Environmental Management System, which is certified for compliance to ISO 14001 for the entire NGK group. The fact that these activities brought about positive result is highly acknowledged. The effective control by the Central Environmental Committee, which acts as a central function for the system consisting of 12 companies, has certainly contributed in this point. Therefore, describing such specific performance status is recommended.

Clarification of the affiliated companies in Japan and consistency of data were required during the Headquarter audit and were properly corrected. Also, although data about compliance levels and substances regulated by the PRTR law were partially found inconsistent at the initial stage, these data have been revised and are now consistent.

Yokohama, 2004-08-09

Ralf Wilde
President
TUV Rheinland Japan Ltd.,
3-19-5, Shin-Yokohama, Kohoku,
Yokohama 222-0033, Japan

Thinking for tomorrow's sake...
...and acting accordingly.



ECO report 2004

NGK SPARK PLUG CO., LTD.

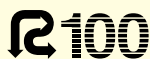
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