ECO REPORT 2001

NGK SPARK PLUG CO., LTD.

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NGK SPARK PLUGS | NTK TECHNICAL CERAMICS

NGK SPARK PLUG CO., LTD.

CONTENTS

Scope of this Report

This Report shows you wide variety of efforts by NGK SPARK PLUG CO., LTD to get rid of environmental burden during the fiscal year 2001 (April 2000 - March 2001).
The articles cover the situation as of the end of fiscal year 2001, except for some plans and numerical targets to be accomplished in and after April 2001.
The articles also introduce our affiliated companies obtaining the ISO 14001 authorization.

Message from the President

We believe that the 21st century will be known as "the century of environment." Progressive environmental legislation, such as Electric Appliances Recycling Law and Green Purchase Law, has been in effect since April 2001, helping us build a resource-recycling society.
As you may know, we must approach the preservation of the environment on a global basis, as it relates to problems such as global warming and depletion of the ozone layer. Everyone must be aware that it is most important to tackle these problems immediately.
NGK SPARK PLUG CO., LTD's worldwide business network has been working to protect the global environment, which we believe is one of our most important responsibilities as society becomes ever more aware of environmental problems.
In 1974, we established a division responsible for environmental affairs, which ensures that we comply with the laws designed to protect the environment. Our company's goals include saving energy, reducing waste, and controlling harmful materials, toward the preservation of the global environment, in accordance with our "Environment Preservation Policy" and "Action Schedule for the Environment." Moreover, we obtained ISO 14001certification, an international standard for environmental management systems at all our domestic factories last December.
In the near future, we will expand our environmental management system to reach our affiliated companies both in Japan and overseas, to make the NGK SPARK PLUG group an active participant of the recycling economic society and an environmentally friendly company at large.
We are now seeking to accomplish each of our five goals: preventing air, soil, and water pollution; saving energy; reducing and reusing waste; designing environmentally friendly products; and managing the company in a way that considers the environment of the local community.
We hope this report has given you an idea of our efforts and achievements to preserve the global environment through the fiscal year 2001. Please know that we will continue to work to protect the environment. We welcome your comments.

Shigenobu Kanagawa

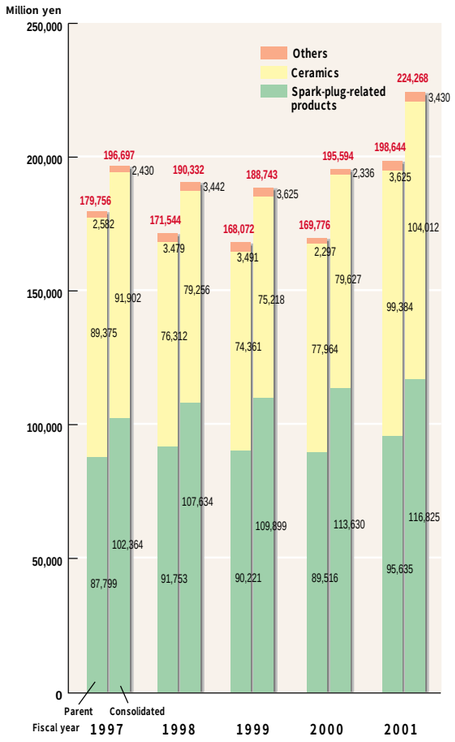
Sigenobu Kanagawa, President

Corporate profile as of June 30, 2001

Company Name: NGK Spark Plug Co., Ltd.
Head Office: 14-18 Takatsuji-cho, Mizuho-ku, Nagoya, Aichi Pref.
Founded: October 26, 1936
Capital: 47,854.26 million yen
Business: ①Manufacturing and selling spark plugs and related products for internal- combustion engines
②Manufacturing and selling new ceramics and applicable products
Number of Employees: 5,568

Head Office/Factory	1,045
Komaki Factory	2,937
Kagoshima-Miyanojo Factory	541
Ise Factory	453
Others	592

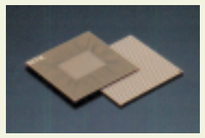
Progress in sales



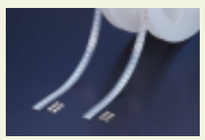
Main Products

Spark Plugs
NGK Spark Plugs have been making progress together with the history of NGK SPARK PLUGS CO., LTD. You can find many kinds of products of superior quality and made in consideration of the global environment, enabling you to reduce exhaust gas and save energy, all as a result of our research and development of many years. The advanced technology, high performance and fine quality of these products are highly evaluated and adopted by automobile, motorcycle and multipurpose engine manufactures all around the world.

Sensors
In order to preserve the nature by cleaning exhaust gas, saving resources and restraining global warming, we have been engaged in development of appropriate sensors for that purpose and in making them into practical use. We will continue preserving the comfortable environment of the earth through the development and production of various products such as oxygen sensors, temperature sensors and knock sensors.



Semiconductor Components
In order to meet various demands for electronic components with the context of rapid expansion of telecommunications, we serve wide variety of semiconductor components: IC packages, multilayer circuit substrate for high frequency and packages used in microprocessors for PCs reflecting cutting-edge technologies adopting ceramics and organic materials.



Electronic Components
Today electric components are more and more needed in this IT society. They are utilized for multiple purposes everywhere in our society: high-frequency parts for terminal equipment such as mobile phones, dielectric resonators for base stations, igniters for home gas equipment.

Cutting tools
These cutting tools are used for processing automobile parts and industrial machinery parts. With the hardness at high temperature and heat-proof composition, the Ceramic Series demonstrate excellent performance at high speed cutting for cast iron and heat resistant alloy.
Along with the Cermet Series for semi-finishing and finishing, they are highly evaluated by users.

Fine Ceramics
Making use of the characteristics of new ceramics, we serve bearing balls, ceramic tube for VCB and other products to various business fields. We are now under development to put into practice various kinds of artificial bones and bone head at hip joint (head of femur) consisting of apatite hydroxide, zirconia and so on by utilizing the strength and affinity with a living body of new ceramics.

Environmental management system

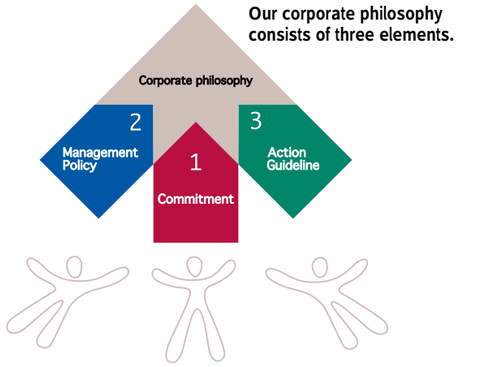
We are making earnest efforts to preserve global environment as one of the company's key assignments. We have established "NGK's Declaration for Environment", Environment Policy and Action Schedule, reflecting our corporate philosophy that supports our operations.
To achieve this action schedule, every sites and sections sets its goals every year with all our people buckling themselves to preserve global environment.

Corporate philosophy

Always be a propositional-type company to transmit new values to the world.

By bridging people with technology and maintaining global-scale thoughts and views, we will always seek what we should be.

Our corporate philosophy consists of three elements.



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 people of the world.

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

Slogan

With established trust and confidence inside and outside the company, we aim to contribute to the people of the world by creating and offering new values for the future.

Declaration for the environment

We aim to create new values through all our corporate activities such as development, manufacture and sales of NGK spark plugs and NTK new ceramics products as a company protecting the global environment and living in symbiosis with society.
In order to achieve this goal, we have compiled an environment action schedule based on our environment policy and will promote management that can be continuously developed and constant corporate activities in consideration of the preservation of the environment.

Environment policy

1. To accurately grasp the effect of corporate activity on the environment, set an environmental objectives and targets. These should be reviewed regularly for a continual improvement of the Environmental Management System (EMS) and performance for environmental preservation.
2. We will abide by laws, regulations, agreements and other demands we have agreed to concerning environmental preservation.
3. Priorities in environmental measures
   a. We will endeavor to prevent pollution in the air, soil and water.
   b. We will promote energy saving.
   c. In order to use resources efficiently, we will promote the reduction of waste and recycling and reusing them.
   d. We will endeavor to design and develop products with concern for the environment.
   e. We will have high concern for the environment of the local community.
4. In order to achieve this Environment Policy, we will make sure our employees know of this policy, and conduct environmental education as well as publicity to improve the level of recognition among our employees for environmental preservation. We will also ask related companies for their understanding and cooperation, as well as disclosing information outside the company.

Environmental action schedule

To realize our policy provided in the Declaration for the Environment, we have been making efforts to accomplish the "Environmental Action Schedule" planned in March 2000 with numerical targets for each factory by year and by policy.
The following table shows our targets and achievements for fiscal year 2001 and targets for fiscal year 2002(reviewed and revised in March 2001).

Target actions

Item	Target actions	Fiscal year 2001		Target of the fiscal year 2002	Related articles on page no.:
		Target	Achievement		
Environmental Management System	EMS based on the ISO 14001 will be founded and employed for the whole company.	The Komaki, Ise and Miyanojo Factories will obtain authorization by the end of 2000 (fiscal year).	Obtained integrated authorization for the whole company in December 2000	Kick off of introducing the system into five affiliated companies in Japan to let them obtain the authorization during 2002	3~7
Prevention of pollution in the air, soil and water	We will reduce exhaust gas by 20% (original unit) respectively by the end of 2005 (fiscal year).	To complete research, review and planning by the end of 2000 (fiscal year)	Proceeding as scheduled	To implement and review the schedule during 2001 (fiscal year)	8、9
	We will totally abolish the use of chlorinated organic solvents by the end of 2002 (fiscal year).	Partial abolishment for washing use	Reduction achieved by 48% in comparison with 1999 (fiscal year)	Total abolishment for washing use	18、19
Promoting energy saving	We will reduce the energy used per unit by 6%(original unit), as compared with 1999 (fiscal year), by the end of 2005 (fiscal year).	Reduction by 1% (original unit) in comparison with 1999 (fiscal year)	Reduction achieved by 17.2% in comparison with 1999 (fiscal year)	Reduction by 1% (original unit) in comparison with 2000 (fiscal year)	10、11
Reduction of waste and promoting recycling	※1. We will reduce the quantity of combustion and waste by 70%, as compared with 1999 (fiscal year), by the end of 2005 (fiscal year).	Reduction by 10% in comparison with 1999 (fiscal year)	Reduction by 43.3% in comparison with 1999 (fiscal year)	※2. To be targeted by site	12、13
Products development with consideration for the environment	We will promote research and development which will contribute to environmental preservation, estimating influence on the environment.	To reduce burden on the environment, review the raw materials for our products as well as the specifications of packing	※3	To reduce burden on the environment, review the raw materials for our products as well as the specifications of packing	14、15
Consideration for the environment of the local community	We will carry out cleaning activities in the vicinity of the factories not less than twice a year.	To implement not less than twice a year	Practiced more than twice a year and participated in activities conducted by local government	To practice not less than twice a year	16

※1.Reviewed in March 2001 and revised into a new target "To accomplish zero emission in all domestic factories by the end of 2006 (fiscal year)".
※2.Head Office/Factory site: reduction by 20% in comparison with 2000 (fiscal year)
Komaki Factory site : reduction by 55% in comparison with 2000 (fiscal year)
Miyanojo Factory site : reduction by 40% in comparison with 2000 (fiscal year)
Ise Factory site : reduction by 70% in comparison with 2000 (fiscal year)
※3.Examples of achievement
・We have lightened the spark plugs and decided on substitutions replacing burden-on-environment materials including hexachrome and lead.
・We have changed the packing materials for our products (fine ceramics, cutting tools, etc.) into low-burden materials (from chloride vinyl to non-chloride vinyl).

Our specific plans to accomplish target actions

Environmental Management System
◎To obtain integrated authorization for the domestic 4 factories and 3 affiliated companies
◎To establish and utilize a unified system for the whole company

Prevention of pollution in the air, soil and water
◎To promote replacing chlorinated organic solvents
◎To avoid using harmful chemicals and reduce them by means of separate collection
◎To review the manufacturing process

Promoting energy saving
◎To introduce high-efficiency motors and inverters
◎Thorough energy control in production facilities
◎To apply good examples of energy saving to the whole company

Reduction of waste and promoting recycling
◎Thorough separation of rubbish according to the standardized guideline to reduce combustion and buried wastes
◎To reduce foul on plating by modifying manufacturing process
◎To utilize hard plastic materials as fuel

Products development with consideration of the environment
◎To review the packing materials for products
◎Measures against environmental deterioration caused by disposal of wastes

Consideration for the environment of the local community
◎To carry out cleaning activities in harmony with local community
◎To participate in environment-preserving activities conducted by local government

Organization

For the purpose of promoting cross-organizational activities to preserve the global environment, we established a division responsible for environment-related issues in 1974. Ever since we have maintained and strengthened our efforts for the environment. At present we have a supervising organization "Environment Committee" responsible for preserving the global environment, and sub organizations "Experts Committee" and "Experts Conference" at the center and each site of the company, which is responsible for respective business fields. Under this structure, every department is engaged in environment-preserving activities to accomplish the environmental plans and targets in accordance with our Environment Policy.

Central Environment Committee
·Chairman: Environment & Safety Supervising Director
·To discuss and give directions on cross-organizational environment-related issues, and to promote preserving activities
·Held twice a year

- **Energy Saving Experts Committee**
  ·Chairman: Production Division Director
  ·To discuss and review issues of environment preservation related to saving energy, promote activities and report the results to the Central Committee.
  ·Held twice a year
- **Wastes Experts Conference**
  ·Chairman: Vice-chairman or a board member of the Central Committee
  ·To discuss and review issues of environment preservation related to reduction of wastes, promote activities and report the results to the Central Committee.
  ·Held at any time as appropriate (held twice in the fiscal year 2001)
- **Chemical Materials Experts Conference**
  ·Chairman: Vice-chairman or a board member of the Central Committee
  ·To discuss and review issues of environment preservation related to chemical materials, promote activities and report the results to the Central Committee.
  · Held at any time as appropriate (held 4 times in the fiscal year 2001)
- **Green Procurement Experts Conference**
  ·Chairman: Vice-chairman or a board member of the Central Committee
  ·To discuss and review issues of environment preservation related to green procurement, promote activities and report the results to the Central Committee.
  · Held at any time as appropriate (held twice in the fiscal year 2001)

Environment Committee/Experts Committee by site

Each department

Accounting on environment

It is one of our key assignments to make out and systematically manage the costs and effects of environment preservation. Therefore we started to build an environment-accounting system with reference to "Guidelines concerning understanding and disclosing of the costs for environment preservation (provisional) published by Environment Agency in March 1999, and disclosed "Expenses for environment preservation in the fiscal year 2000" for the first time in our Eco Report 2000.
This year we revised our guidelines according to "To ensure establishment of environmental-accounting system" published by Environment Agency in May 2000, and figured out expenses and investments for environment preservation.
In estimating economical effects arising out of our preservation activities, we have included only the effects expected on a certain ground, and excluded hypothetical effects.

(Million yen)

Environment preservation costs

Classification		Main items	Investment	Expense
Costs within the business area	Pollution-preventing cost	Cost for preventing air and water pollution, etc.	96	1,226
	Environment-preserving cost	Cost for preventing global warming and ozone layer destruction, etc.	16	161
	Resource-circulation cost	Cost for reduction and disposal of industrial wastes, etc.	16	475
Upstream & downstream cost		Cost for recycling and reusing the products and packages, etc.	0	11
Management activity cost		Cost for training employees on environmental issues, building up EMS, obtaining authorization, etc.	5	303
R&D cost		Cost for research and development of products contributable to environment preservation	970	5,928
Social activity cost		Cost for protecting the nature, expanding green area, advertising for environment, etc.	1	92
Environment destruction cost		Compensatory cost for soil pollution, damages on nature, etc.	0	0
Other costs		Other costs for environment preservation not applicable to the above classification (from Costs within the business area to Environmental destruction cost)	0	15
Total			1,104	8,211

Effects of environment preservation

Effects of environment preservation (Amount/quantity of reduction in comparison with the fiscal year 2000)		Economical effects by preservation activities	
		Specific effects	Amount (million yen)
Reduction of CO_2 exhaust	4,287 tons-CO_2	Income by recycling	58
Reduction of SO_x exhaust	36 Nm^3	Reduction of costs by energy saving	63
Reduction of wastes discharge	4,669 tonne	Reduction of costs for disposal of wastes	172
Reduction of final disposal of wastes	1,825 tonne		

(1tonne=1,000kg)

ISO14001

We are actively promoting the fulfillment of the requirements for authorization of the ISO 14001, an international standardization for environmental management systems (EMS), in order to strengthen our management of environment preservation activities.
First of all, our Head Office/Factory obtained the authorization in August 1999. The other three factories (Komaki, Kagoshima-Miyanojo and Ise) followed in December 2000, along with an integrated authorization for the whole company based on our common environment policy, manuals and standards.
Among our affiliated companies, three in Japan and two overseas, have already obtained the authorization, and others will follow to expand authorized sites in our group.

Year	Office/Factories	Affiliated companies: Domestic	Affiliated companies: Overseas
1999	Head Office/Factory		
2000	Komaki Factory Kagoshima-Miyanojo Factory Ise Factory	Nittoku Unyu Co., Ltd. Ceramic Sensor Co., Ltd. Nittoku Alpha Service Co., Ltd.	NGK SPARK PLUG MFG (U.S.A.), INC. NGK SPARK PLUG INDUSTRIES EUROPE S.A.
2001 (expected)	————	————	CERAMICA E VELAS DE IGNICAO NGK DO BRASIL LTDA.
2002 (expected)	————	Oguchi Seiki Co., Ltd. Kani Ceramic Co., Ltd. Iijima Ceramic Co., Ltd. Nakatsugawa Ceramic Co., Ltd. Nittoku Seisakusho Co., Ltd. Nichiwa Kiki Co., Ltd. Tono Ceramic Co., Ltd. Kamioka Ceramic Co., Ltd. Nansei Ceramic Co., Ltd.	————

Certificate of ISO 14001 registration

Information of our authorized identity has been registered on "TUV.com", an international third party authorizing organization.
ID：0091048237
http：//www.tuv.com

Audit/inspection for the environmental management system

We implement audit/inspect inside the company twice a year and receive third party audit/inspection every year in accordance with the ISO environmental management system to enhance the capability of our system. The internal audit/inspection is conducted using checklists by teams consisting of 190 registered auditors/inspectors from our employees.
In the two internal audits/inspections of 2001 (fiscal year), though 6% of all the audited/inspected items did not comply, none of them had any serious defects but only slight ones, which were corrected promptly.
In the follow-up audio/inspection of 2001 (fiscal year) by a third party authorizing agency, they reported three defective items at our Head Office/Factory and six at other three factories, but all of them were slight ones and were improved promptly.

Preventing pollution in the air, soil and water

We will endeavor to reduce the use, exhaust and discharge of substances posing a burden on the environment to ensure preserving the environment.

Regulating the use and emission of substances that pollute the air, soil and water and reducing the burden on the global environment is a precondition for continuing our corporate activities. Now we are fully committed to the promotion of control and reduction of substances posing a burden on the environment such as fully abolishing the use of chlorinated organic solvents, which were formerly used for washing parts.

Achievements in environment preservation

For the purpose of reducing a burden on the environment, we are measuring and checking data of the air, water, noise and ground water at all of our factories. In the fiscal year 2001 we reported some data exceeding the standards of the agreement for preventing pollution provided by local governments. We have, however, identified the cause and took necessary measures for not only the above items but .others exceeding self-regulation standards.
Since legislation concerning pollution and environment are becoming stricter year by year, and new laws are coming into enforcement one after another, we will take thorough measures to reduce a burden on the environment to preserve it. (Refer to pages 18 and 19 to see the environmental data by factory.)

Building a control system for dangerous and harmful substances

The PRTR Law has been brought into enforcement for the purpose of control and reduction of harmful chemical materials to human health and environment. We are building up a system to control these harmful chemical materials and making efforts to reduce the use of hexachrome, chlorinated organic solvents and lead.
We are going to introduce a new control system utilizing our computer network to control chemical materials, and specifying materials under our self-prohibition, self-restriction and self-control to reduce the quantity of use, exhaust, discharge and movement.

Results of the PRTR survey: All factories (April 1999 - March 2000)

Unit: t/year

No.	Chemical Materials	Handling quantity (tonne/year)	Quantity of movement			Quantity of exhaust/discharge (consumption)		Quantity of removal/disposal		Quantity of movement			Quantity of movement to public drainage
			Air	Water	Soil	Products	Supply	Incineration on site	Resolution	Intermediate disposal	Reclamation	Recycling	
1	Zinc aqueous compound	30	0	0	0	26	0	0	0	3	0	0	0
40	Ethyl benzene	3	0	0	0	0	0	0	3	0	0	0	0
63	Xylene	40	2	0	0	0	0	0	26	0	0	12	0
64	Silver and its aqueous compound	2	0	0	0	2	1	0	0	0	0	0	0
68	Chromium and trivalent chromium compound	3	0	0	0	1	0	0	0	0	0	2	0
69	Hexachromium compound	57	0	0	0	0	13	0	11	0	33	0	0
100	Cobalt and its compound	3	0	0	0	2	1	0	0	0	0	0	0
108	Inorganic cyanogens compound	8	0	0	0	0	4	0	4	0	0	0	0
144	Dichloropentafluoropropane	2	2	0	0	0	0	0	0	0	0	0	0
145	Dichloromethane	23	12	0	0	0	1	0	0	0	0	10	0
200	Tetrachloroethylene	5	1	0	0	0	0	0	0	1	0	3	0
207	Bronze aqueous sodium chloride (except complex chloride)	26	0	0	0	16	1	0	0	9	0	0	0
211	Trichloroethylene	61	39	0	0	0	6	0	1	0	0	16	0
227	Toluene	120	8	0	0	0	0	0	112	0	0	0	0
230	Lead and its compound	131	0	0	0	76	16	0	0	6	1	31	0
231	Nickel	180	0	0	0	174	5	0	0	0	1	0	0
232	Nickel compond	12	0	0	0	1	2	0	0	9	0	0	0
270	Di-n-butyl phthalate	2	0	0	0	0	1	0	0	2	0	0	0
299	Benzene	7	0	0	0	0	0	0	7	0	0	0	0
304	Boron and its compound	11	0	0	0	7	0	0	0	4	0	0	0
310	Formaldehyde	3	0	0	0	0	0	0	0	3	0	0	0
311	Manganese and its compound	3	0	0	0	0	0	0	0	3	0	0	0
346	Molybdenum and its compound	3	0	0	0	2	0	0	0	0	0	0	0
	Total	735	63	0	0	309	50	0	162	40	36	73	0

※The figures are rounded off making some diversity between the sum of each line and the total quantity shown.

Protection of the ozone layer

We have fully abolished the use of specific flon and 1.1.1-trichloroethene, which destroy the ozone layer from our manufacturing stages and have substituted them with other substances. We are promoting the switch over from flon to other substances for our air-conditioning when we renew our air-conditioning facilities.

Measures against dioxin

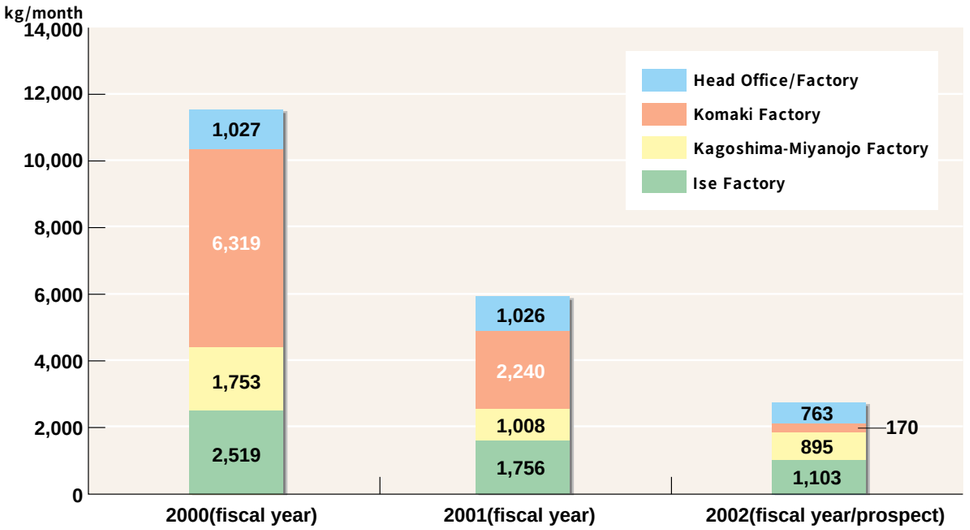
We have already abolished all of the incinerators at four factories and all of 14 affiliated companies according to "the Special Measures Law against Dioxin" brought into force in January 2000. We are also abolishing the use of chloride vinyl, which may produce dioxin when it is burnt, to be replaced by substitute materials for covers over equipment and trays for shipment of products.

Full abolishment of chlorinated organic solvents

We will have abolished this substance which was used to wash parts by the end of 2003 by switching over to a substitute substance, as targeted by September 2001 at Komaki and Ise Factories, March 2002 at Kagoshima-Miyanojo Factory and March 2003 at Headquarter Factory.

Non-chlorine organic solvent washing equipment (Headquarter Factory)

Purchase quantity of chlorinated organic solvents



Promoting energy saving

We will endeavor to reduce the quantity of energy used to preserve the global environment

In order to reduce the quantity of CO_2 emitted, which causes of global warming, we need to use energy such as electricity and gas efficiently. Fossil fuel, the source of these energies, can dry out in the future. We are making every effort to reduce the quantity of energy (original unit) used by reconsidering the stages and through energy saving activities within the company.

Reduction of the quantity of energy used

We are reducing the quantity of energy used in all the energy consuming facilities such as manufacturing facilities, related machinery, and air-conditioning and lighting equipment used in our departments. In order to proceed with our measures efficiently, our company has established in Energy Saving Special Committee, which considers, plans and confirms the effects of matters related to energy saving.

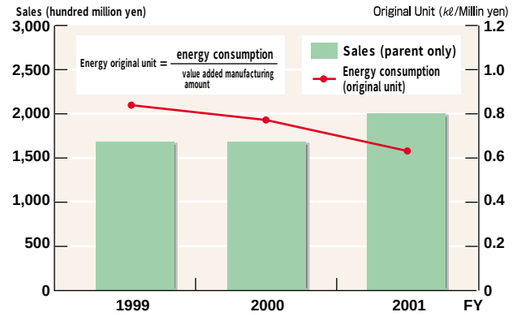
- Energy saving activities by the Energy Saving Special Committee
  - Holding the Energy Saving Special Committee(the Central Committee twice a year and the Local Committee 4 times a year)
  - Control of progress in the fiscal plan
  - Energy saving patrol by the Special Committee members
  - Emulation and development of good and efficient cases
  - Support for energy saving activities in each department
  - Providing information and enlightenment activities concerning energy saving
  - Choosing a temperature control manager for every air-conditioning facility for promotion of in-door temperature control
  - Reduction activity of electricity used for OA facilities, which are standing by in each office

A poster for the energy saving activities, designed and made by stuff members.

Emulation and development of good cases (booklet of energy saving cases)

■In-house energy saving patrol

■Quantity of energy used (original unit) and sales



(Note) 1. "Original unit" is the petroleum energy (kℓ) used per 1 million yen in the amount of value added manufacturing.
"Value added production amount" is the actual amount of production within the company calculated by subtracting the processing ordered outside of the company from gross sales amount.
2. The quantity of energy consumption is measured with the (kℓ) value in petroleum of the quantity of electricity and fuel used.

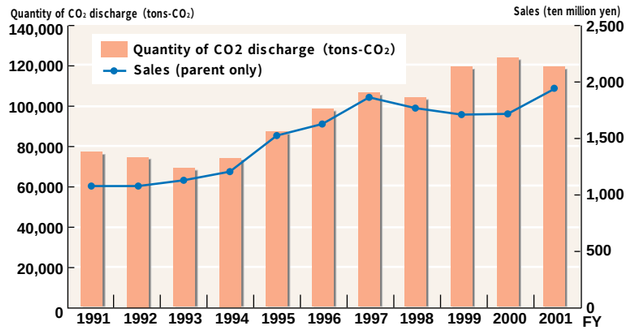
Reduction of CO_2

In order to reduce the discharge of CO_2, the representative of global warming gas, we are switching the energy using at combustion facilities such as incinerators to the natural gas. Kagoshima-Miyanojo Factory has decided to introduce a co-generation power generator to reduce CO_2 by making good use of total energy.

Kagoshima-Miyanojo Factory co-generation power generator

Construction period : September 2000～September 2000
Reduction of the quantity ofCO_2 : 425 (t-CO_2/year)
Capacity : Generating power……1500 (KW)×2

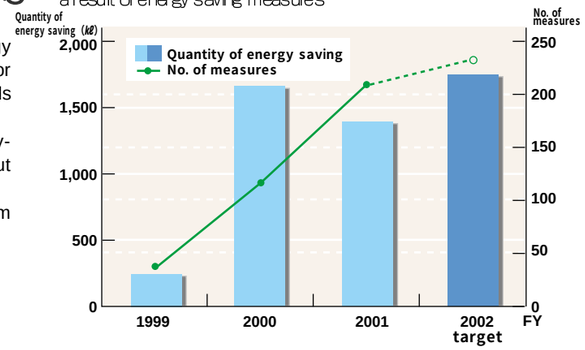
■Quantity of CO_2 discharge and progress in sales at four factories (combined)



Specific plan for energy saving

We are positively seeking to find ways to improve energy saving effects through our daily enlightenment activities for energy saving and application of energy control standards for production facilities to our daily work.
Every year each department submits the year's energy-saving plan and specific measures, which are carried out steadily under approval and instructions by managers.
We apply the same policy to mid-term and long-term business projects.

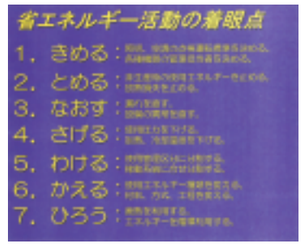
■Quantity of saved energy at four factories of NGK (combined) as a result of energy saving measures

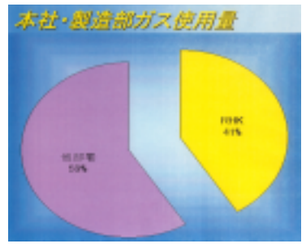


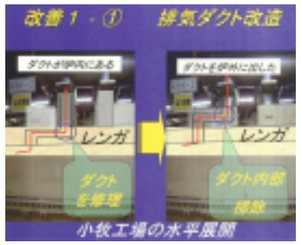
Examples

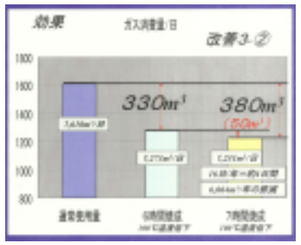
Energy saving activities for successive incinerators (Rollen Hearth Kiln) (Reduction of gas consumption)

Combustion Team, Ceramic Section, Headquarter Spark Plug Production Department, Spark Plug Division







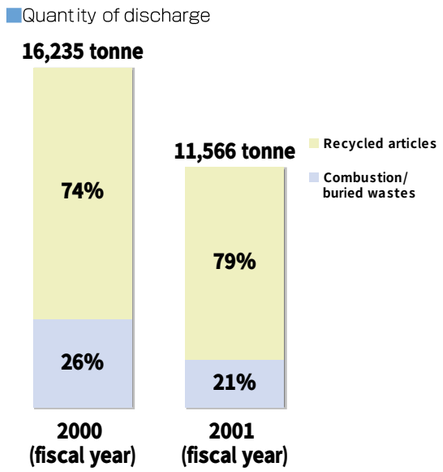


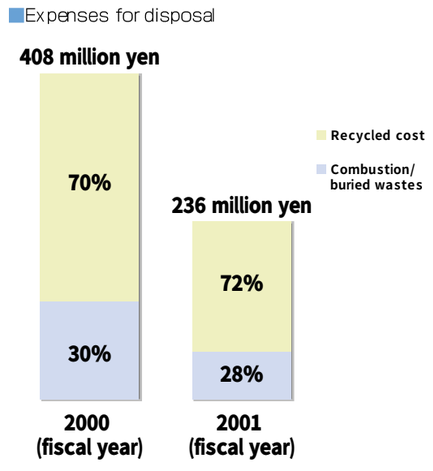
Reduction and good use of wastes

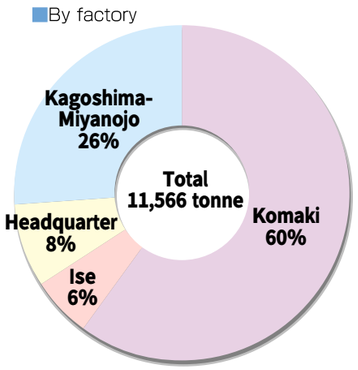
"The Basic Law for the Promotion of Building a Cyclical-type Society" was brought into enforcement in June 2000. To establish a resource-circulation type society, we regard waste-related issues as one of our most important challenges among the assignments for the environmental preservation. This is because we seriously recognize that companies which exhaust or discharge wastes are liable for disposal of such wastes. We will continue promoting the activities to reduce wastes along with the activities to expand EMS to our affiliated companies.

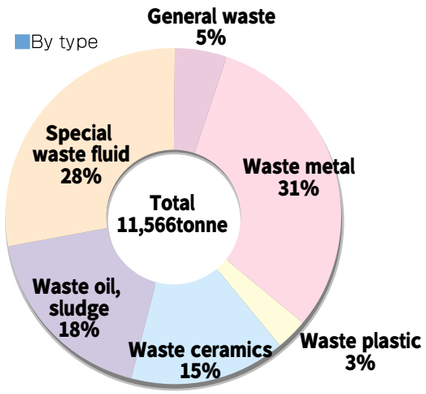
The present situation of wastes

We tackled separating and recycling wastes to be considerably reduced at all our domestic factories in the fiscal year 2001. As a result, the gross quantity of discharge decreased to 11,566 tons, 29% decrease in comparison with 1999, and combustion and buried wastes 2,390 tons, 43% decrease. Moreover, we improved the accuracy in measuring actual discharge quantity by applying the common garbage-separation rules to all our factories.





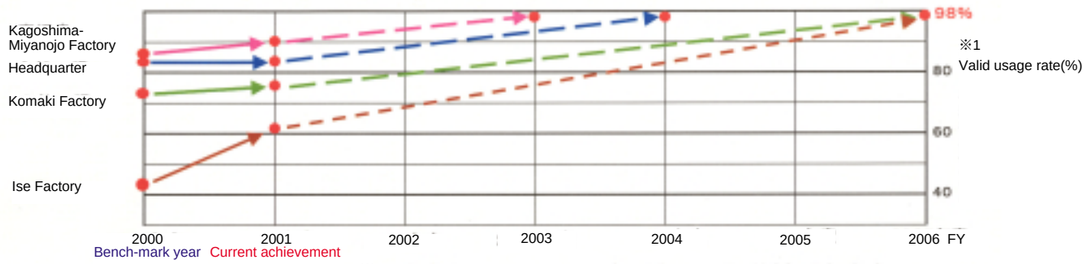




Reduction plan

We have reviewed the waste-reduction plan as a major challenge in our Environment Policy, and targeted the fiscal year 2003 for Kagoshima-Miyanojo factory and the fiscal year 2006 for the other factories as deadlines to accomplish the zero-emission. The zero-emission we aim at is to reduce quantity of waste discharge, and to reuse and recycle the discharged garbage as much as possible. We have fixed our goal of zero-emission as a valid usage rate of more than 98% to be achieved by recycling and reusing combustion/buried wastes except for cigarette ends and other home garbage (2% or less).

Zero-emission achievement goal (Recycle and Reuse rate: 98% or more)



※1"The valid usage" consists of both reusing and recycling.

Examples

Recycling the waste fluid after washing principal metal fittings

Miyanojo Spark Plug Production Department, Metal-fitting Section 2, Finishing Team

①History of efforts to recycle oil and water

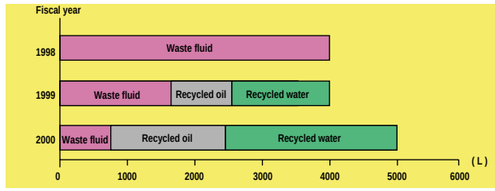
Fiscal year	Efforts and achievements
98fiscal year	・Introduced the washing machine No.1 ・Introduced the washing machine No.2
99fiscal year	・Launched recycling by natural separation
00fiscal year	・Introduced oil cleaners ・Introduced equipment for oil-water separation
01fiscal year	・Identified the equipment and devices for recycling as a unit

<The aim and backbone of the improvement activity>

Aim	: To reduce industrial wastes discharged outside the company to the least
Backbone: To make the facilities usable at as little expense as possible for recycling	

②Comparison of the results

Progress in quantity of recycling



1) Frequency of washing increased to 1.5 times, while the waste fluid decreased to 20% of the initial quantity.
2) Purchased quantity of new oil reduced by 690L/month thanks to utilization of recycled oil.
3) Use of well water reduced by 18% thanks to utilization of recycled water (2,600L/month).

Development of products kind to the environment

We will progress with products kind to the environment in order to contribute to the the environmental preservation.

We have constantly presented products which contribute to energy and resource saving and reduction of emitted gas in the automobile, telecommunications and general industries. We consider it our great corporate responsibility to contribute to the environmental preservation through our products. In the future we will expand our line of products which will be even kinder to the environment and build a system of environmental evaluation in each stage of design and development.

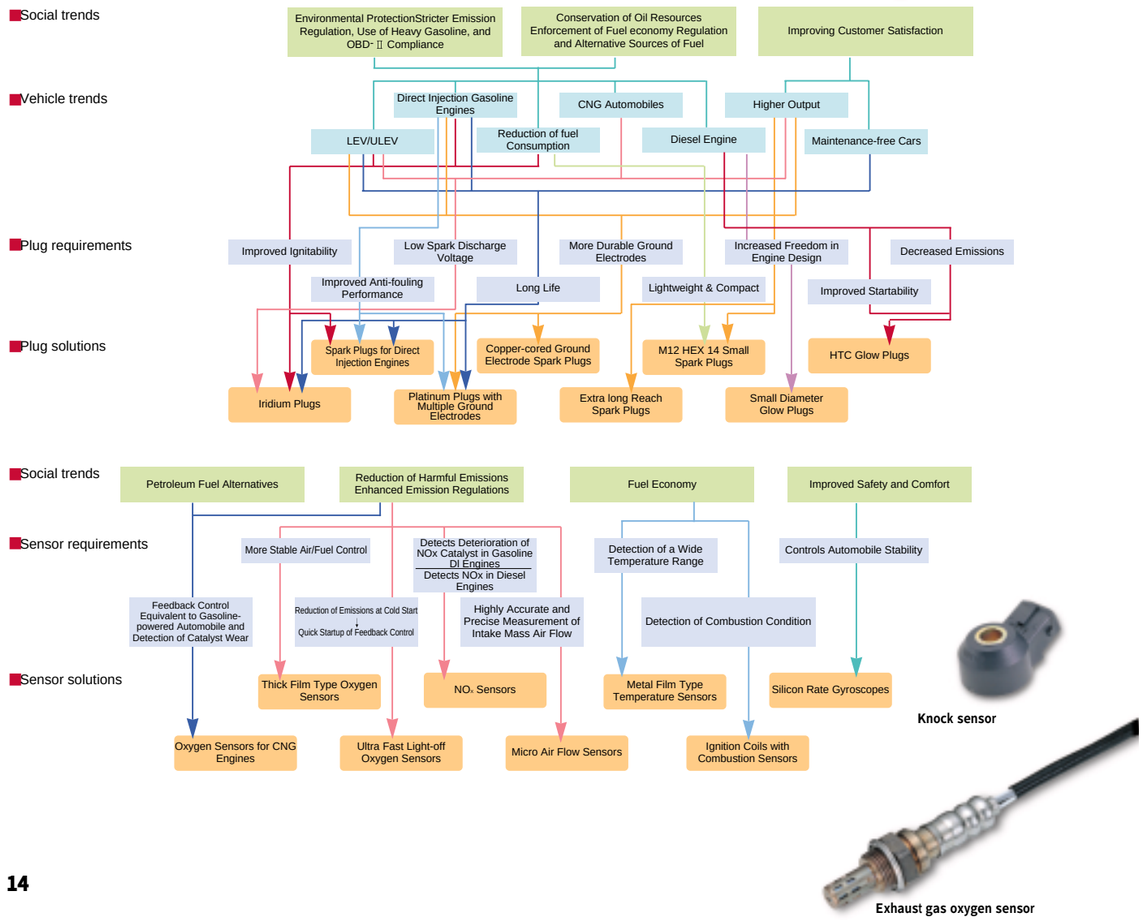
Automobile related area

The NGK Spark Plugs and the NTK Sensors have been playing important roles in the development of the automobile industry. The Spark Plugs can draw out the full performance of the engine and reduce the fuel consumption, thus contributing to energy saving and reduction of emission gas. The sensor detects the temperature, combustion and emission to control the automobile in its most appropriate condition contributing to reduction of emitted gas and global warming measures. In the future, we would like to expand and develop our line of products, which will be even kinder to the environment.

Iridium IX plug

Igniter plug for rocket

V-grooved center electrode plug

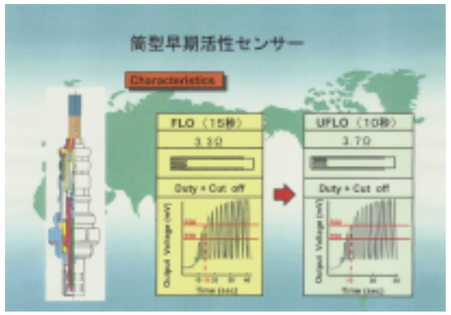


Knock sensor

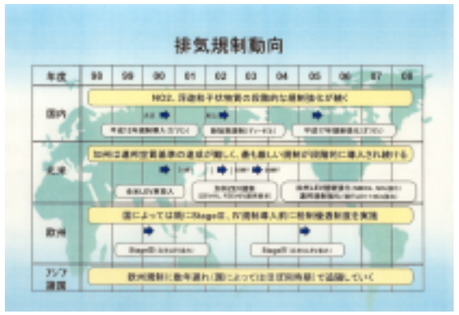
Exhaust gas oxygen sensor

High-performance oxygen sensors for car engines

The regulations against exhaust gas started in North America 30 years ago. They have been becoming stricter year by year. "LEV-Ⅱ" of North America will be in enforcement in 2003, and "EURO 4" of Europe and the second regulations of Japan will be in enforcement in 2005. They plan to set the standards of NMOG (HC except methane) and NOx as one tenth(1/10) of current ones. In order to reduce this NMOG, we have developed an "Fast Light-OFF/Ultra Fast Light-OFF/Oxyen sensor" which hastens the feedback control of engines, and a "Universal A/F heated exhaust gas oxygen sensor" which controls engines to make air fuel ratio best for exhaust gas efficiency of catalyst. We offer them to the world to help prevent the global warming.



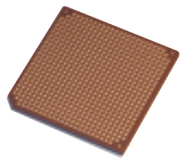
Characteristic curve of the sensor aiming at shortening the feedback time



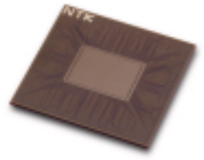
Trends of regulations against exhaust gas at each country

Communication media related area

Demands for our electric parts are increasing all the more in the Information Technology Era. Meeting the needs for compactness, higher density and speed on various electronic appliances and communication media components, we are also conscious of the effects to the environment. We take energy saving and low electricity consumption into consideration, whenever we design and develop various IC packages for PCs, computers, mobile communication machines, and ceramic filters and dielectric filters for mobile phones.

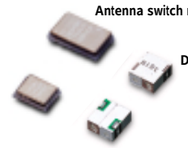


Ceramic package



Organic package

LTCC multilayer circuit substrate



Antenna switch module

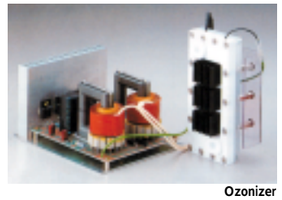
Dielectric filter

Ceramics related area

We provide ceramic products to various industries with the characteristics of heat resistance, abrasion resistance, electric insulation and functionality. We are also developing environment equipment including temperature and humidity detection apparatus and ozonizers.

Ozonizer

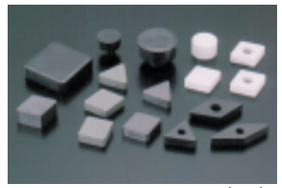
This is a highly reliable ozone producer using alumina ceramics and high-frequency and high-voltage power source. Using the antiseptic, deodorizing, bleaching effect of the high oxidation power of ozone, it is used in the field of water purification, air purification and deodorizing process. There is no possibility of the secondary pollution, because ozone is decomposed into oxygen naturally.



Ozonizer

Cutting tools

Ceramic and Cermet cutting tools which have high hardness at high temperatures are fit for the dry operation without using coolant. They prevent environmental pollution by spattering coolant compared with former operation with using coolant, and also reduce the consumption of electricity for oil supplying equipment. They are used in various cutting tool fields.



Ceramic series

Consideration for the environment of local community

Consideration for the environment of local community

Cleaning activities in the local community

To secure clean and comfortable living area, our employees positively practice cleaning activities in the neighborhood of our offices/factories. The following table shows present conditions in the fiscal year 2001:

Head Office/Factory	April 2000	Cleaning in the neighborhood of the factory
	September 2000	//
	October 2000	Cleaning around Sakae area in Nagoya City
	March 2001	Cleaning in the neighborhood of the factory
Komaki Factory	October 2000	//
	March 2001	//
Kagoshima-Miyanojo Factory	July 2000	//
	October 2000	//
Ise Factory	July 2000	//
	October 2000	//

Head Office/Factory

Komaki Factory

Kagoshima-Miyanojo Factory

Ise Factory

Participating in the Environmental Partnership Organizing Club [EPOC]

Companies and organizations in the Central Region who are commonly earnest about environmental issues came together to form the Environmental Partnership Organizing Club [EPOC] in February 2000 in order to realize a cyclical economic society.
We are one of the initial members. By sharing cross-industrial information and by cultivating each other, we as an EPOC member aim to improve our environmental activities, helping an advanced environment region to form and a cyclical society to realize.
This club exhibits our multiple efforts including "Environment Freedom Statement" by member companies on our website, which is under progress reflecting your evaluation.

EPOC Website: http://www.epoc.gr.jp

Other environmental activities

Green procurement

Green procurement means an activity to promote the environmental preservation by ensuring the following behaviors in purchasing goods, services or raw materials:
① Always purchase which sufficient consideration for necessity
② Purchase things that have the minimum burden on the environment with priority
③ Purchase things from corporation, which are kind to the environment with priority
In the fisical year 2001 we asked about 200 companies to reply our survey on corporate attitudes to the environment and cooperate with us in our activities.
We plan to work in cooperation with our material-suppliers for more effective environmental preservation.
In addition, in buying office stationeries and daily necessaries used in the company, we encourage our employees to buy "eco goods" less harmful to the environment.
The green procurement rate of the fiscal year 2001 was 68%, increased by 28% from the previous fiscal year.

Promotion of environmental education

In order to promote the environmental preservation, it is indispensable for every employee to be environmentally aware and to practice it. Based on the education and training standard, we draw up and regularly carry out education and training programs according to the environmental management system: general education (training for new employees, general education in office), specialized education (education for employees heavily engaged in environmental affairs, education for public qualifications) and in-house environmental inspection education (training and education of inspector, education to maintain capability of inspector).

Enlightenment activities

We have articles related to the environment in our monthly in-house gazette "Nittoku" since July 1998. We are also providing information such as environment-related news and topics by using the intra-net within the company for enlightenment activities.

Environmental data according to each factory

Environmental data have been listed for the main control items in each factory. (The blank items refer to raw materials not used in the respective factories.)
Each listed value is of our self-regulation and is stricter than that of related laws, ordinances, and pollution preservation agreements with the local cities and districts. We are acting to prevent pollution by measuring each item according to the listed value and by maintaining our facilities for the environmental preservation.
We have promptly reported the items values of which exceeded standards of the agreement for the prevention of pollution to the local government, received guidance from them, traced the causes and took necessary steps and measures.
We also trace the causes and took appropriate measures on the items exceeding our self-regulation values.

Head Office/Factory

Located in the central part of Nagoya City and having a function of headquarter and Automobile-related Business Division, it works as a home base of our factories in Japan and overseas, affiliated companies and sales network.

Classification	Item		Regulation value by law	Self-regulation value	MAX	MIN	Average
Air	Particles of soot	(mg/Nm^3)	150	120	10	6.7	6.1
	NOx	(ppm)	180	144	73	46	60
	SOx	(Nm^3/year)	———	———	———	———	———
Water	pH		5.0~9.0	5.7~8.7	7.6	5.9	6.8
	SS	(mg/L)	600	480	100	6	45
	BOD	(mg/L)	600	480	190	2	58
	n-hexane	(mg/L)	30	24	20	0.6	7.1
	Cyan	(mg/L)	1	0.8	<0.1	<0.1	<0.1
	Total chromium	(mg/L)	2	1.8	0.36	<0.04	0.11
	Chromium compounds	(mg/L)	0.5	0.4	0.12	<0.04	0.05
	Bronze	(mg/L)	———	———	———	———	———
	Zinc	(mg/L)	5	4	2.3	0.1	0.6
	Lead	(mg/L)	0.1	0.08	<0.02	<0.02	<0.02
	Nitrogen	(mg/L)	240	192	30	1.2	14
	Phosphorus	(mg/L)	32	25.6	3.8	0.15	1.4
	Colon Bacillus	(cell number/cm^3)	———	———	———	———	———
Noise	During the day	db	70	65	61.8	55.9	58.3

All the values were within our self-regulation values.

Komaki Factory

Located at the joint point of Tomei and Meishin Freeways and near a junction of Chuo Freeway, this factory is advantageous for transportation from and to other factories and affiliated companies. It works as our largest factory with the production lines of all the divisions as well as a research center.

Classification	Item		Regulation value by law	Self-regulation value	MAX	MIN	Average
Air	Particles of soot	(mg/Nm^3)	*200	———	18	2	6
	NOx	(ppm)	200	———	100	23	67
	SOx	(Nm^3/year)	*8,776	———	———	———	———
Water	pH		*6.0~8.0	6.2~7.8	7.7	6.8	7.3
	SS	(mg/L)	*30	24	13	2	7
	BOD	(mg/L)	*25	20	23	2.9	8.4
	n-hexane	(mg/L)	*5	4	1.1	<1.0	<1.0
	Cyan	(mg/L)	*0.5	0.4	<1.0	<1.0	<1.0
	Total chromium	(mg/L)	*1	0.8	<0.04	<0.04	<0.04
	Chromium compounds	(mg/L)	*0.2	0.16	<0.04	<0.04	<0.04
	Bronze	(mg/L)	*1	0.8	0.21	0.03	0.08
	Zinc	(mg/L)	*3	2.4	0.75	0.13	0.31
	Lead	(mg/L)	0.1	0.08	<0.02	<0.02	<0.02
	Nitrogen	(mg/L)	120	30	21	6.1	11
	Phosphorus	(mg/L)	16	4	1.1	0.28	0.6
	Colon Bacillus	(cell number/cm^3)	———	———	———	———	———
Noise	During the day	db	70	68	59	47	54.2

*Values by the Agreement for the prevention of pollution determined by Nagoya City (Values by Law where the city's value is not applicable)

The cause of BOD exceeding the self-regulation value : hydrogen solvent used as a substitute of chloride organic solvent.
Measures taken: We remodeled a part of the production lines to reduce the use of solvent and made thorough control on consistency of waste water.
Other environmental data were within our self-regulation values.

Kagoshima-Miyanojo Factory

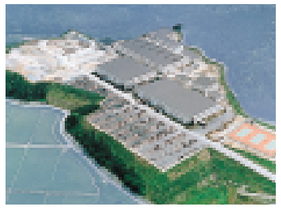
Located in a rural area surrounded by plenty of green, this factory works as a main manufacturing site of Automotive components group covering the consistent production of NGK spark plugs.

Classification	Item		Regulation value by law	Self-regulation value	MAX	MIN	Average
Air	Particles of soot	(mg/Nm^3)	300	240	7	7	7
	NOx	(ppm)	180	144	78	78	78
	SOx	(Nm^3/year)	———	———	———	———	———
Water	pH		*6.0~8.0	6.5~7.8	8.1	7.3	7.8
	SS	(mg/L)	*35	28	9	<4	5.0
	BOD	(mg/L)	*20	16	18	1	8.0
	n-hexane	(mg/L)	*5	4	<2.5	<2.5	<2.5
	Cyan	(mg/L)	1	0.8	<0.05	<0.05	<0.05
	Total chromium	(mg/L)	———	———	———	———	———
	Chromium compounds	(mg/L)	0.5	0.4	<0.05	<0.05	<0.05
	Bronze	(mg/L)	3	2.4	<0.05	<0.05	<0.05
	Zinc	(mg/L)	5	2.4	<0.05	<0.05	<0.05
	Lead	(mg/L)	0.1	0.08	<0.01	<0.01	<0.01
	Nitrogen	(mg/L)	———	———	———	———	———
	Phosphorus	(mg/L)	———	———	———	———	———
	Colon Bacillus	(cell number/cm^3)	3000	2400	37	0	3
Noise	During the day	db	65	60	52.1	43.6	48.8

*Values by the Agreement for the prevention of pollution determined by the local government (Values by Law where the local government's value is not applicable)

The cause of PH exceeding the agreement value : the water overflowing from the cooling tower
Measures taken : We equipped a neutralizing device before the final spigot. (September 2000)
The cause of BOD exceeding the self-regulation value : the water drained from the septic tank.
Measures taken : We cleaned the septic tank and made through water control on the water quality.
Other environmental data were within our self-regulation values.

Ise Factory



Located in the Ise-shima National Park surrounded by richness of the nature, this factory has a design and colors harmonized well with the nature.
This factory produces semiconductor component and electronic component as a main manufacturing site of Information-related Business Department.

Classification	Item		Regulation value by law	Self-regulation value	MAX	MIN	Average
Air	Particles of soot	(mg/Nm^3)	150	10	4	2	3
	NOx	(ppm)	180	90	40	<5	22.5
	SOx	(Nm^3/year)	———	———	———	———	———
Water	pH		5.8~8.6	5.8~8.6	7.6	7.0	7.3
	SS	(mg/L)	90	45	6.8	<1.0	1.8
	BOD	(mg/L)	25	20	9.8	1.1	4.8
	n-hexane	(mg/L)	———	———	———	———	———
	Cyan	(mg/L)	———	———	———	———	———
	Total chromium	(mg/L)	———	———	———	———	———
	Chromium compounds	(mg/L)	———	———	———	———	———
	Bronze	(mg/L)	———	———	———	———	———
	Zinc	(mg/L)	———	———	———	———	———
	Lead	(mg/L)	———	———	———	———	———
	Nitrogen	(mg/L)	120	60	30.1	2.8	10.7
	Phosphorus	(mg/L)	16	8	2.7	0.2	1.4
	Colon Bacillus	(cell number/cm^3)	3000	1000	0	0	0
Noise	During the day	db	60	58	60.1	43.3	53.7

The cause of noise exceeding the law-regulation value : singing of insects, as it was measured in September
Measures taken: We measured again in November and all the data were within the law-regulation values.
Other environmental data were within our self-regulation values.

Ise factory has a closed disposal system for wastewater. The wastewater is reused inside the factory after disposal.
Water discharged to outside the factory is limited to water used in lavatories and kitchens.
It is discharged after disposal in the combined septic tank.

Our office and factories

■Head Office/Factory
14-18, Takatsuji-cho, Mizuho-ku, Nagoya, Aichi Pref. 467-8525
General Administration Dept. Phone 81-52-872-5896
Fax 81-52-872-5999

Automotive Components Group
Spark Plug Div.

■Komaki Factory
2808, Iwasaki, Komaki, Aichi Pref. 485-8510
General Administration Sec. Phone 81-568-76-1211
Fax 81-568-76-1299

Automotive Components Group
Spark Plug Div.
Sensor Div.

Communication Media Components Group
Semiconductor Components Div.
Electronic Components Div.

Technical Ceramics Group
Cutting Tool Div.
Fine Ceramics Div.

■Kagoshima-Miyanojo Factory
2238-1, Tahara, Miyanojo-cho, Satsuma-gun, Kagoshima Pref. 895-1802
General Administration Sec. Phone 81-996-53-2211
Fax 81-996-53-2215

Automotive Components Group
Spark Plug Div.

■Ise Factory
871-6, Hosokoshi, Enza-cho, Ise, Mie Pref. 516-1196
General Administration Sec. Phone 81-596-39-1511
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Communication Media Components Group
Semiconductor Components Div.
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Fax 81-52-872-5942
14-18, Takatsuji-cho, Mizuho-ku, Nagoya, Aichi Pref. 467-8525

ECO REPORT *2001*

Please let us have your opinions and comments.

We would like to ask you for filling out the following questionnaire and sending it to us by FAX.

Q.1 How do you feel after reading this ECO REPORT?

◆Comprehensibility

① Very easy to understand ② Easy to understand ③ Fair ④ Hard to understand
⑤ Very hard to understand

◆Solidity (Quantity and quality of information)

① Full ② Sufficient ③ Fair ④ Insufficient ⑤ Poor

Q.2 If there is anything that makes you impressed or satisfied in this ECO REPORT, would you let us know about it?

Q.3 Would you let us know any part in this ECO REPORT that should be sophisticated or improved?

Q.4 What do you expect about our environmental activities?

Q.5 What is your position as a reader?

- User of our products
- Government officer
- People of environment NGOs
- People living in the neighborhood of our offices/factories
- Journalist
- Expert of environmental issues
- People working at banks or investment companies
- People in charge of environmental issues at companies
- Student
- Shareholder
- People working at research and development organizations
- Others ( )

●Thank you for your cooperation. Please fill in the following blanks if possible.

Name:		Sex	1、Male 2、Female	Age	
Address	Zip Phone				
Occupation		Company name			
		Dept./Sec.			

Please kindly send this sheet by FAX

NGK SPARK PLUG CO., LTD. General Administration Dept. Fax 81-52-872-5999 or
Environment & Safety management Dept. Fax 81-52-872-5942