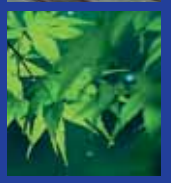
MOTION & CONTROL
NSK

Social and Environmental Report

Social and Environmental Report 2004



Contributing to Society Th

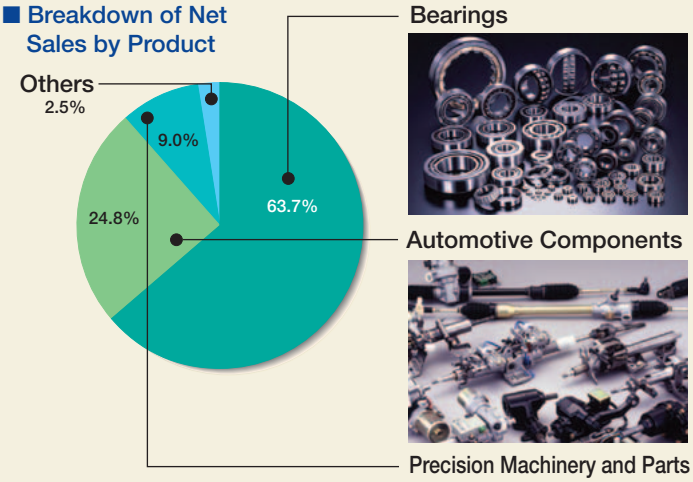
Bearings, the mainstay product of NSK, are one of the most basic components essential to the smooth and efficient operation of machinery. NSK has come a long way since its founding in 1916 and the manufacture of Japan's first domestically produced ball bearing. Over the years, NSK has developed not only bearings, but also automotive components, precision machinery and parts, and a variety of other products, working side by side with customers in the automotive industry and a spectrum of other machinery manufacturers. As a comprehensive bearing manufacturer, NSK is committed to continuously delivering products that meet the diverse requirements of its customers, supporting the development of industry through progress in machinery in Japan and the lifestyles of people everywhere.

"Motion & Control" is the core concept driving NSK's businesses. Today, NSK is in the midst of developing its businesses globally, establishing bases in Japan, the Americas, Europe and Asia and linking them via a global network. This enables NSK to provide products in every corner of the world, helping to support people everywhere in their daily lives and contributing to the development of industry.

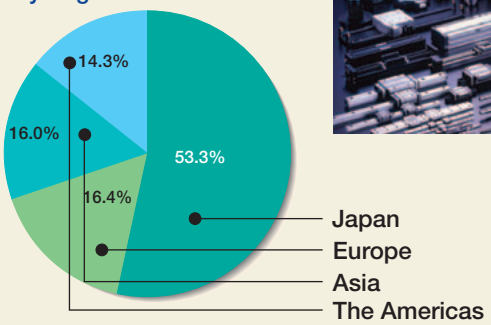
■ Corporate Overview

Company Name	NSK Ltd.
Head Office	1-6-3 Ohsaki, Shinagawa-ku, Tokyo 141-8560, Japan
Establishment	November 8, 1916
Capital	¥67.2 billion (As of March 31, 2004)
Net Sales	Consolidated: ¥522.2 billion (Year ended March 31, 2004) Non-consolidated: ¥348.8 billion (Year ended March 31, 2004)
Employees	Consolidated: 19,772 (As of March 31, 2004) Non-consolidated: 3,680 (As of March 31, 2004)
Group Companies	Domestic: 22 Overseas: 52

■ Breakdown of Net Sales by Product

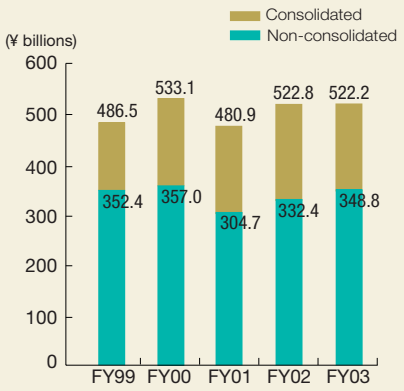


■ Breakdown of Net Sales by Region

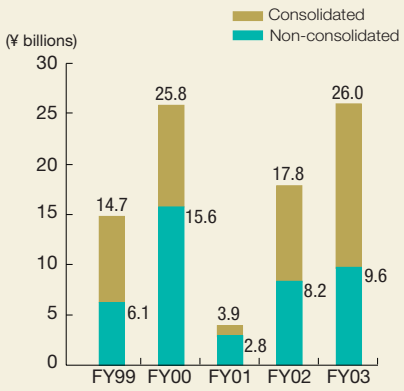


■ Operating Results

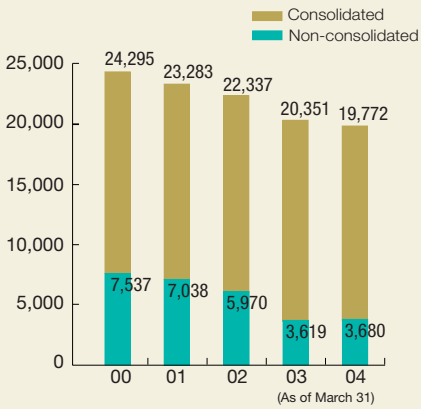
Net Sales



Operating Income



Employees



rough Motion & Control

Corporate Philosophy

NSK aims to contribute to the well-being and safety of societies and to protect the global environment through its innovative technology integrating Motion & Control.
We are guided by our vision of NSK as a truly international enterprise, and working across national boundaries to improve relationships between people throughout the world.

■ Reporting Policy

Since 2001, NSK has compiled and published an Environmental Report, with the objective of presenting the rationale, intent and progress of our environmental activities in an intuitive format to investors, shareholders, suppliers, citizens residing near our factories, employees and other stakeholders.

This publication has been titled the Social and Environmental Report as it includes information for engendering a deeper understanding of NSK's relationship with society and social contribution, as well as our environmental activities.

At NSK, we consider this report a vital means of information disclosure. Opinions and suggestions of readers are invaluable and provide a point of reference for improving the readability, clarity and quality of successive reports.

Statements concerning environmental management highlight the contribution of NSK products to preserving the environment, activities for lessening environmental impact in the manufacturing field, and activities at NSK and each of its subsidiaries' manufacturing sites. Every effort has been made to state this information in a straightforward fashion while giving close attention to the following two points:

1. Objectivity

To present our environmental activities in an objective manner, this report was compiled in accordance with the "Environmental Reporting Guidelines" published by Japan's Ministry of the Environment.

2. Transparency

In this report, we have included complaints and similar information concerning environmental matters, reflecting our belief in the importance of maintaining a high level of transparency in our activities.

Scope of Report

This report covers the activities of NSK, newly spun-off subsidiaries, and manufacturing and distribution subsidiaries in which we have a stake of 50% or more. See page 49 for more details.

Period of Coverage

This report covers FY2003 (April 2003 to March 2004)

Date of Issue

October 2004 (Date of issue of previous report: Dec. 2003; next report: scheduled for Oct. 2005)

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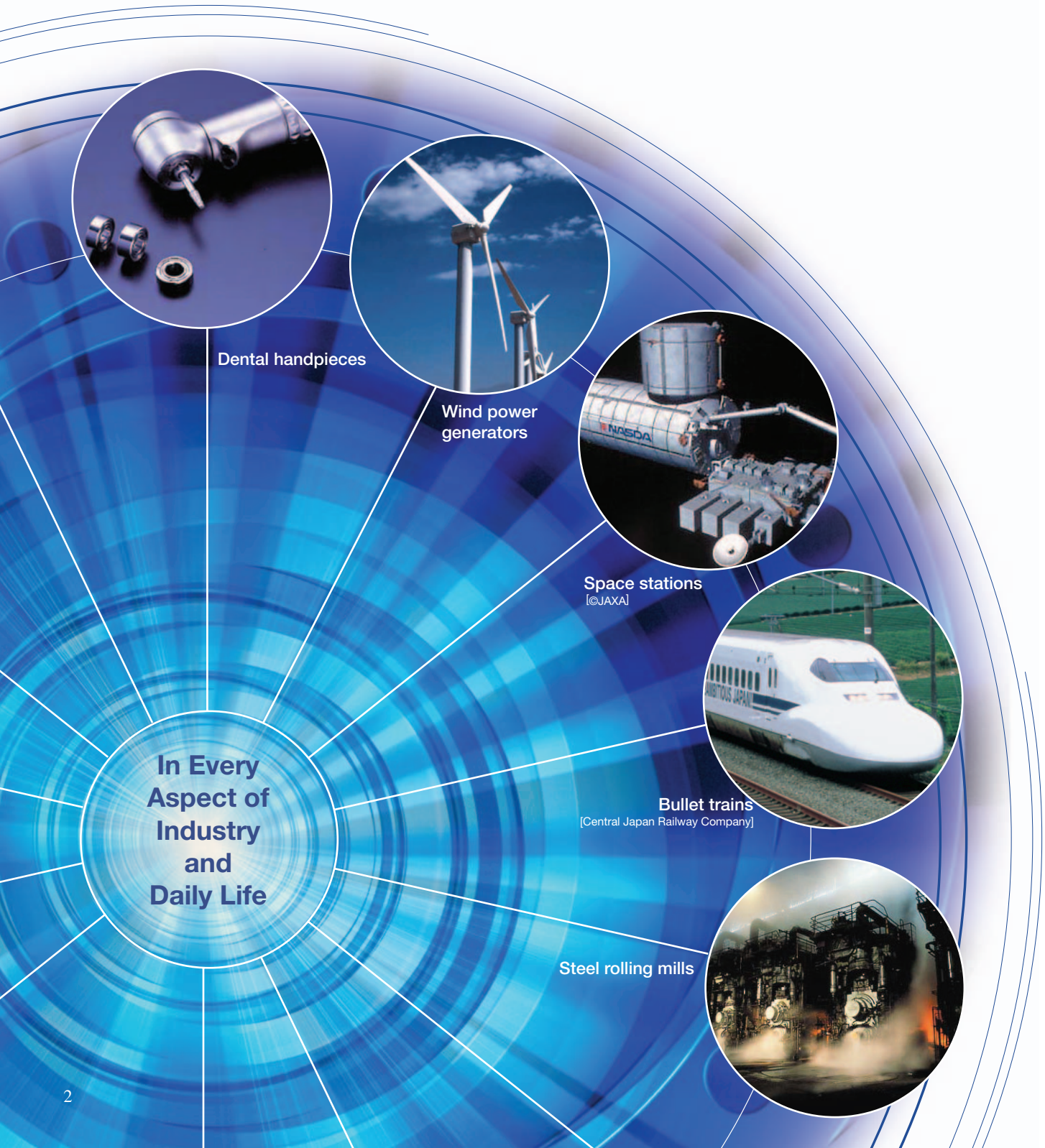
NSK: Supporting a Safe and *Motion & Control*—Supporting the Safety and Well-being of Society

NSK Products—In Every Aspect of Industry and Daily Life

A diverse array of machines is in operation all around us, from electrical home appliances to automobiles, trains, and airplanes. There are even machines above us in space. Bearings are found in virtually all of these, supporting safety in a broad range of areas by helping machines with rotating parts achieve friction-free rotation. While bearings can range in diameter from a few millimeters to an enormous 5 meters, one fact is certain—without them, the modern lifestyles and industries we know would grind to a halt.



Affluent Society

Did You Know?

Supporting comfort and convenience in daily life

One type of bearing supporting NSK's core concept of "smaller, faster and smoother" is found in handpieces used in dental treatment. The use of super high-speed rotation helps to reduce pain during treatment, requiring the ball bearing inside to rotate 400 thousand times per minute. Miniature ball bearings less than 9mm in diameter are also hard at work in PCs and home video cameras.

Supporting industry: from steel mills to satellites

Rolling bearings that facilitate the rotation of metal rollers in steel mills are an example of bearings designed to perform under large, heavy loads and punishing conditions. Bearings are also vital to machines operating in vacuum environments, like the bearing units found in satellite flywheels, semiconductor production equipment and other machinery.

Lending unseen support to traffic safety

Bearings help make transport safe, faster and more comfortable. They are found in the bodies of railroad rolling stock. In bullet trains and other railway vehicles, bearings work behind the scenes to enhance operational safety, simultaneously supporting high speeds, reliability and comfort. The gigantic engines mounted on passenger jets also owe their rotation to bearings.

Supporting the reliability of a spectrum of machinery

As these examples illustrate, NSK's bearings are used in the critical components of a host of different machinery. Whether easing the pain of dental treatment, withstanding the grueling environment of steel mills, or underpinning safety, peace of mind and comfort in bullet trains, NSK-brand products are an unseen partner supporting the reliability of a variety of machinery and equipment.

NSK Technology: Contributing to Well-being, Safety and the Environment

NSK products have long contributed to safety by helping a wide range of industrial products achieve higher quality and reliability. Driving the evolution of NSK's Motion & Control concept are *four core technologies* for controlling friction. These technologies play a key role in resource and energy conservation on a global scale.

Tribology

Unfamiliar to most people, this term describes a scientific and technological field encompassing friction, wear, lubrication and materials. NSK continues to deepen its understanding and mastery of technologies in this area, with the goal of further broadening the scope of application, achieving higher performance and improving the reliability of its mainstay bearings and other products.

Materials and analysis technologies

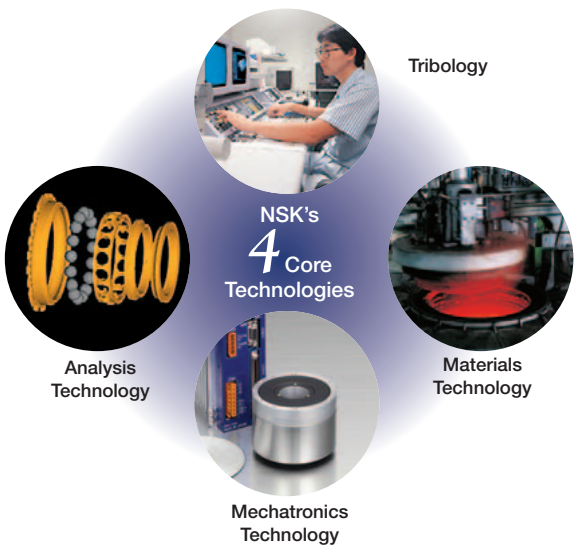
Tribology is supported by two main pillars: materials technology and analysis technology. The former focuses on a material's composition, ceramics, polymers and other new materials, and how materials react to heat. The latter involves the use of numerous computer simulations, analyses and evaluations to accurately and quickly determine optimal design and requirements.

Mechatronics technology

NSK has expanded the breadth of its businesses by translating customer feedback into a number of products over the years. Mechatronics, alongside bearing-related technology, was crucial to making this possible. Mechatronics simultaneously encompasses specialized motor technology and sensing technology for accurately determining position, as well as technology for transforming these into cohesive systems.

Bearings: intrinsically contributing to environmental protection

Bearings reduce friction in the rotating parts of machinery, thereby helping to lessen the impact of machinery on the environment through the conservation of energy. Moreover, bearings are mostly composed of steel, so they contain virtually no environmentally harmful substances. Furthermore, bearings can be recycled after use, making them superior in terms of conserving resources.



The NSK Corporate Vision

Motion & Control—Responsive and Creative

Improving Relationships Between People Throughout the World

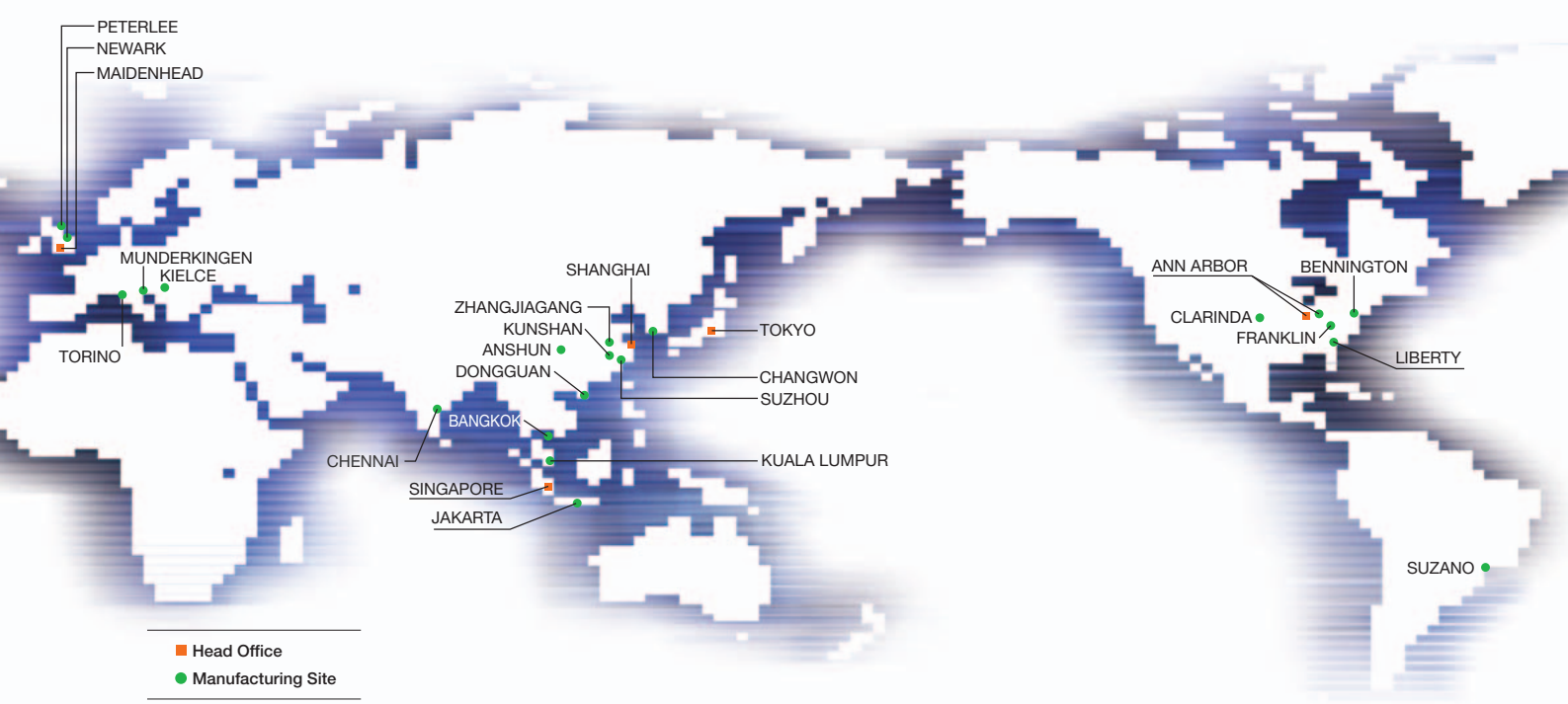
NSK, a leader in the bearing industry, has developed operations on the global stage, with nearly half of its business conducted outside Japan. Through changing times, the NSK Group has consistently remained at the technological forefront. "Global Network Management" encapsulates the NSK corporate vision, supported by employees and stakeholders the world over.

Global corporate responsibilities

NSK's mission is to develop products and technologies needed by customers in regions around the globe, and to provide a stable supply at reasonable prices. Bases in Japan, the Americas, Europe and Asia are networked together in real time, realizing a manufacturing, sales and technology development infrastructure that contributes to the growth of local communities, and allows NSK to respond immediately to global requests.

Building a corporation for a new era

Around 55% of the NSK Group's workforce is located overseas. NSK respects the individuality and potential of every one of its employees, pooling their talents to support industry growth, and hence peoples' lifestyles, in every country where its products are found. It also aims to achieve sustainable development and harmonious balance with the environment.



NSK Management Principles

1. To serve our customers through innovative and responsive solutions, taking advantage of our world-leading technologies
By building on its accumulated technological expertise and by further developing new technologies and products through research, NSK will reinforce its position as a world leader and propose innovative solutions to customer requirements. The trust placed in NSK by its customers has been responsible for its growth and prosperity.
We intend to further deepen this relationship.

2. To provide challenges and opportunities for our employees, channeling their skills and fostering their creativity and individuality
We will create a work environment that welcomes individualism, innovation, rewards initiative and encourages our staff to use their creative energies to embrace new challenges.

3. To identify the needs of the times and of the future, and to use all of NSK's resources to meet those needs by being versatile, responsive and dynamic
By encouraging our staff to adopt a global perspective and to be flexible in their thinking and actions, we will foster a corporate culture that is vital and proactive and in concert with the evolving borderless world.

4. To work together with our employees and contribute to the communities in which we operate
Through activities that benefit the regional community, NSK's staff will work to realize harmony with, and to promote the prosperity of, the communities in which they serve and in which the Company operates.

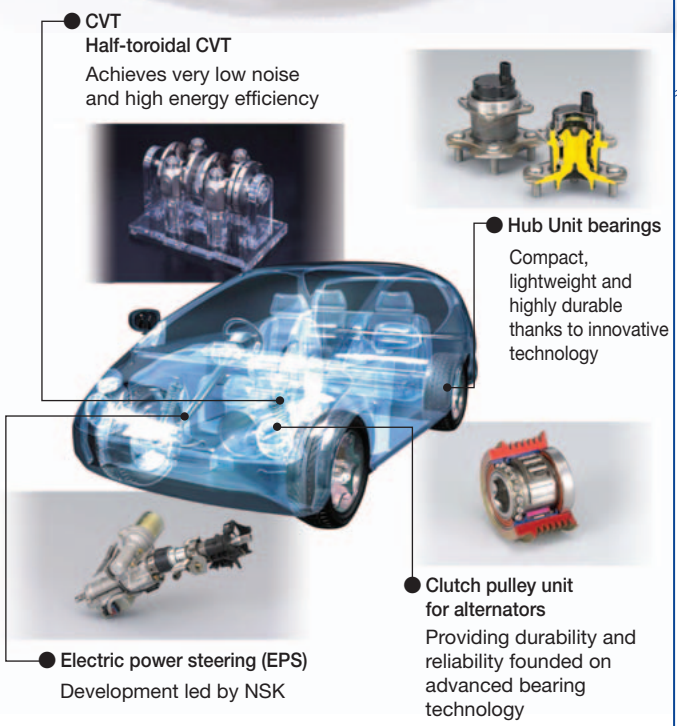
5. To manage our business from an international perspective and to develop a strong presence throughout the world
NSK's operations will be managed from an international perspective. Our research and development, production resources and sales network will operate on a world stage. Our operations will adopt policies that best meet special regional requirements while benefiting from an active exchange of new ideas, cultures and practices that cross national boundaries.

Meeting Society's Needs in Partnership with Customers

NSK manufactured Japan's first domestically produced bearings in 1916. Since then, it has gone on to produce a host of products, including the country's first automotive bearings, bearings for bullet trains, and high-precision ball bearings for VCRs, thereby supporting the development and commercialization of an array of machinery and devices that have radically transformed each era. Providing the backdrop for these achievements has been NSK's tireless efforts, in partnership with its customers, to astutely grasp and accurately respond to society's needs.

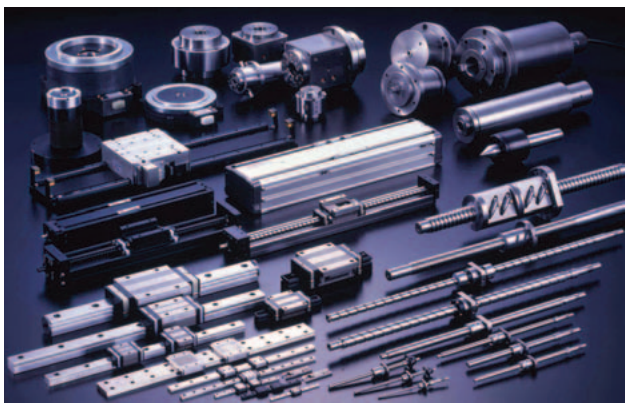
Automotive products

A single automobile uses no less than 100 bearings. NSK has been involved in developing and producing all manner of components related to driving, steering and braking—the three primary functions of all vehicles—and has advanced R&D for realizing automobiles that are safer, more comfortable and friendlier to the environment. NSK led the way in the development of electric power steering (EPS) and Half-toroidal CVT, the latter noted for its smooth, quiet running performance and energy efficiency. Both products, born of a desire to protect the environment and enhance driving comfort and safety, have attracted a great deal of attention as next-generation products.



Precision machinery and parts

NSK, capitalizing on the precision processing technology gained over the course of its work with bearings, has a reputation for excellence among leading-edge companies in Japan and around the world. Driving this reputation is NSK's production of precision products. Among these are steppers, which aid in processes for manufacturing smaller semiconductors with greater density, ball screws, NSK linear guides, and megatorque motors. From machine tools, semiconductor production equipment and LCD manufacturing equipment, to industrial robots, medical devices and even amusement applications, a broad span of fields are home to NSK precision machinery-related products.



Precision machinery and parts

Message From the President

Fulfilling our responsibility to society with integrity through Motion & Control

Under our corporate philosophy of "Contributing to Society Through Motion & Control," our objective at NSK is to become a systems supplier that actively offers solutions to satisfy our customers' needs and requirements.

Since bringing to market the first domestically produced bearing not long after we were founded, we have consistently supplied bearings—often called the staple of industry—automotive components, precision machinery and parts and a range of other products. NSK's goal is to help create a more affluent and safer society. To achieve this, we are working to reliably deliver high-quality products that match the respective regions and applications of our customers—industrial equipment and machinery manufacturers. Our hope is that these customers will use NSK components in their equipment and machinery with total peace of mind. Corporate Social Responsibility (CSR) has become an important topic for discussion in the business community. At NSK, CSR has three main elements: responsibly supplying products, enhancing the quality of management, and building a relationship of trust with society.

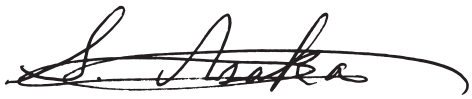
The first element means that it is our responsibility to continuously deliver high-quality products in a rapidly changing business environment—products that we can be proud of as a comprehensive maker of bearings. In these activities, and guided by our corporate philosophy, we also strive to enhance NSK's product development, manufacturing, marketing and management capabilities. Second, when we talk about enhancing the quality of management, we don't just mean rapidly implementing business restructuring and other initiatives to realize management strategies; we also mean building a highly transparent corporate governance system that engenders widespread trust and support in NSK as a good corporate citizen. And third, we believe a relationship of trust with society can be achieved in three ways: through environmental management activities that reduce the environmental impact of our operations, global social contribution activities, and respect for the rights and potential of every NSK employee.

Bearings are used in a host of rotary components in machinery, helping to make life safer and more convenient. But bearings play another role: they minimize energy loss, thereby helping to protect the global environment. "Contributing to the development of a recycling-oriented society" sits at the heart of our environmental management activities. By improving and developing bearings to reduce the environmental impact of machinery, and more effectively using resources in the bearing production process, we are making progress towards achieving this goal.

In addition to working with equipment and machinery makers to improve efficiency by maximizing the environmental characteristics of our bearings, we will also join hands with local communities, citizens and the international community to tackle another key issue: ensuring our bearings contribute to society by meeting demands for reliability, safety and comfort.

Although NSK's social and environmental management activities are still at an early stage, I hope that by reading this report you will gain a better understanding of what we are doing in these areas, as well as the direction we're heading. Please do not hesitate to give us your opinions and recommendations, because by listening closely to what you have to say, I believe we can enhance our environmental management and fulfill our wider social responsibilities, to further increase NSK's value to society.

July 2004



Seiichi Asaka
President and Chief Executive Officer

Environmental management initiatives in fiscal 2003

In June 2004, I was appointed chairperson of the Global Environment Protection Committee, the organization responsible for overseeing the implementation of environmental management across the NSK Group.

At NSK, we believe two key elements are vital to delivering long-term sustainable growth. The first element is the ability to generate earnings by supplying high-quality products and services based on sound business activities. The second element is to establish strong relationships with a wide range of stakeholders based on sincere, transparent and accountable business activities that earn the understanding and trust of society.

For fiscal 2003, we decided to produce a Social and Environmental Report instead of the conventional Environmental Report we had published until now. As you will see, the structure of the report has changed a great deal, and our objective is to clearly explain our policy on NSK's relationship with society and the kind of social activities we are carrying out.

Today, much more is expected of companies in their environmental protection activities. In addition to lowering the direct environmental impact of their manufacturing processes, companies are also being asked to play a greater role in reducing the environmental impact of products throughout their entire lifecycle—from the product design and development stage, right through to the useable-life and end-of-use stages. In fiscal 2003, NSK implemented a range of environmental protection activities. These included introducing cogeneration systems and taking other steps to enhance energy efficiency, enabling us to exceed our target for a reduction in CO_2 output per unit of production. And building on our success of achieving zero emissions at all plants owned by or spun off from NSK Ltd. in fiscal 2002, we increased the parameters for recycling to include grinding stones and other items, and endeavored to achieve zero emissions at Group company facilities. In environmental management, domestic and overseas subsidiaries worked to attain ISO 14001 certification during the year, with our plant in Kunshan, China, gaining this certification in December 2003. By July 2004, we expect all relevant domestic manufacturing facilities to have attained ISO 14001 certification. Although NSK has worked to extend the scope of its environmental protection activities to component and material suppliers, we decided to carry out a review of our green procurement standards to ensure closer cooperation with suppliers. These new standards were implemented in fiscal 2003.

As mentioned earlier in this report, the functions, performance and characteristics of NSK's entire range of bearings and other products help to save energy and resources. Going forward, we will work with customers to further improve their design, aiming to create products that help protect the environment through greater energy savings, longer usable lives, the elimination of environmentally harmful substances and reduced maintenance.

In closing, I look forward to hearing your views on this report and our wider environmental protection activities in order to strengthen communication between NSK and all its stakeholders.

Norio Otsuka
Director, Executive Vice President
(Chairman, Global Environment Protection Committee)

A Company Earning the Trust of Society

NSK Corporate Philosophy and Governance Systems

The fundamental philosophy of NSK is to contribute to the world through innovative Motion & Control technology. As well as providing a cultural foundation, this philosophy also guides business policy. Through internal promotion and ongoing improvements to the system of corporate governance, NSK aims to generate sustained long-term growth.

NSK Corporate Philosophy

The NSK corporate philosophy lies at the heart of a system that defines the type of company that NSK aims to be: a responsible, modern corporate citizen. This philosophy guides employees' thoughts and actions.

This philosophy is supported by four elements: the corporate philosophy itself, management principles, a corporate message, and slogans.

The corporate philosophy specifies the overall aims of NSK in terms of desired corporate activities and the resulting contribution to society.

Management principles at NSK aim to realize the philosophy by specifying the actions and direction required in all aspects of management (including relationships with customers, employees, local communities and the general public, as well as corporate culture).

The corporate message brings together NSK's philosophy and activities, projecting an accurate image of where the company is headed.

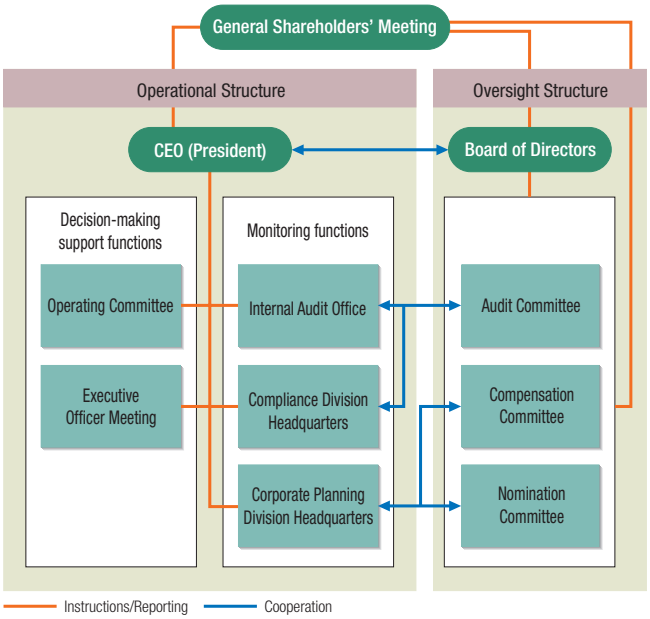
Slogans encapsulate everyday policies required to realize the NSK corporate philosophy, and help to create a high level of organizational motivation needed for employees to realize their potential and take action.

Improving the Transparency of Company Actions

Since 1999, NSK has proactively taken measures to improve corporate governance systems, including the introduction of an executive officer system and the appointment of an independent director. In June 2004, to make the system work more dynamically while increasing the efficiency of oversight functions, NSK adopted the "Company with Committees" system. As required by the Commercial Code of Japan, NSK established three committees covering audit, compensation and nomination functions. In addition, to reinforce internal audit and risk management functions, NSK created and reorganized its internal systems, establishing the Internal Audit Office, Compliance Division and Corporate Planning Division.

- Compensation Committee: Originally established in June 1999 as part of the introduction of the executive officer system, this committee aims to set executive remuneration fairly and transparently.
- Audit Committee: Established in June 2003, the committee reports to the Board of Directors.
- Nomination Committee: Established in February 2004, the committee is an advisory panel that provides the Board of Directors with nominations for candidates for election to director positions.

NSK Corporate Governance Structure



Elements of the NSK Corporate Philosophy System

- Corporate Philosophy

NSK aims to contribute to the well-being and safety of societies and to protect the global environment through its innovative technology integrating Motion & Control. We are guided by our vision of NSK as a truly international enterprise, and working across national boundaries to improve relationships between people throughout the world.

- Management Principles

1. To serve our customers through innovative and responsive solutions, taking advantage of our world-leading technologies.
2. To provide challenges and opportunities for our employees, channeling their skills and fostering their creativity and individuality.
3. To identify the needs of the times and of the future, and to use all of NSKs resources to meet those needs by being versatile, responsive and dynamic.
4. To work together with our employees and contribute to the communities in which we operate.
5. To manage our business from an international, perspective and to develop a strong presence throughout the world.

- Corporate Message

Responsive and Creative
Motion & Control

- Slogans

Beyond Limits, Beyond Today
Beyond Frontiers
Beyond Individuals
Beyond Imagination
Beyond Perceptions
Challenging the Future

Risk Management and Corporate Ethics at NSK

NSK's responsibilities extend beyond the stable supply of high-quality products to customers to encompass other community-oriented activities, such as hazard prevention and damage minimization in the event of an accident at an NSK plant, office or other operating site. NSK undertakes a variety of risk management and compliance activities to earn the trust of society through the fulfillment of such corporate social responsibilities.

Risk Management

NSK established the Risk Management Committee, which is linked directly to the Board of Directors, in 2002. Following the move to the "Company with Committees" system in 2004, this committee now reports directly to the president and CEO. It oversees at the executive management level all risks faced by the NSK Group. Reporting to the committee is a division responsible for planning and implementing countermeasures and internal communications in emergency situations.

The threat posed by SARS was a major risk management issue during FY2003. Based on the principle of "putting life first," NSK's risk management systems led the company's response. After collecting details from local sources, NSK swiftly imposed a travel ban and provided emergency supplies of masks, sterilization fluid and other needed items to stricken areas. Prompt action helped ensure that no NSK Group employee or related family member was affected by the outbreak.

The SARS episode reaffirmed the importance of doing everything possible to help people affected by the crisis based on accurate and timely information. NSK plans to further strengthen its risk management systems based on lessons learned from its experience with SARS.

Corporate Ethics

As a key part of society, corporations cannot expect to maintain dynamic growth over the long term without earning the enduring trust of society. The risks facing a company are not limited to external events such as terrorism and natural disasters, but also include any kind of corporate misconduct that could tarnish the company's brand image.

Reflecting such concerns, NSK has formulated its own internal code of ethics with the purpose of preventing accidents and other problems. This ethics code has two main components. First is a set of universal business ethics principles that govern the behavior of all NSK employees and executives in a variety of different contexts. Second is a set of compliance regulations that specify basic internal rules covering key issues such as anti-trust laws, prohibition of insider trading, and handling of intellectual property. NSK has established procedures and penalties for internal disciplinary action as well as a helpline to offer assistance on compliance-related matters. Both the code of ethics and the compliance regulations apply across the NSK Group. NSK continues to strive to ensure all company actions reflect the highest ethical standards.

NSK Code of Conduct

NSK has formulated an internal code of conduct to clearly define ethical standards of behavior governing actions in the course of everyday business activities of employees and executives alike. The code applies across the NSK Group. It covers activities by all parts of the company in functions ranging from sales and production to distribution and procurement, and also pertains to environment- and information-related issues.

NSK Business Ethics Regulations

[1] NSK Principles of Business Ethics

1) NSK aims to sustain its development as a respected and trusted corporate member of international and local communities with a reputation for honesty and fairness.
2) As a corporate citizen, NSK is committed to observing relevant laws and regulations and to maintaining the highest ethical standards in the course of all business activities.

[2] Compliance Regulations (Main Categories)

1) Observation of Antitrust Statutes
2) Observation of Export Regulations
3) Prohibitions Against Bribery and Payoffs (entertaining, handling the exchange of gifts, etc.)
4) Dealing With Public Institutions and Handling Political Contributions
5) Proper Record Keeping and Handling Thereof
6) Prohibitions Against Insider Trading
7) Handling Intellectual Property
8) Prohibition of Illegal and Anti-social Conduct
9) Protection of Company Assets
10) Handling Company Secrets
11) Relationships With Customers
12) Relationships With Suppliers
13) Prohibiting Slander Against Competitors
14) Cultivation of a Sound Workplace

[3] Disciplinary and Compliance Counseling Procedures

Disciplinary rules
Establishment of compliance helpline

NSK Code of Conduct

- NSK aims to develop a leading global brand by raising corporate value.
- NSK employees always put the customer first.
- NSK employees' actions reflect pride in the NSK brand.
- NSK employees' actions reflect awareness of shareholder value.
- NSK employees always act with awareness that they are members of the global NSK Group.
- NSK employees maintain the highest ethical standards, reflecting the position of NSK as a responsible corporate citizen.

NSK and Its Stakeholders

Working Together With Customers and Suppliers

NSK's customer-oriented development, production, sales and management systems are geared to ensuring NSK delivers top-class customer satisfaction. NSK cooperates with suppliers to create improvements in various aspects of product quality, environmental performance and hazard prevention. These include APS (Advanced Production System) activities, which are aimed at improving overall manufacturing efficiency, and various NSK initiatives, notably the setting of green procurement standards. NSK also continues to develop its global procurement systems to secure further gains in product and service quality, cost, and delivery lead times.

Adopting a Customer-oriented Perspective

In 2002, NSK spun off its automotive components and precision machinery operations. These moves helped NSK's sales and production divisions focus on their respective customers and enabled development of more highly responsive systems.

In an era of rapid change, NSK Sales Co., Ltd. was created with the goal of improving customer service. NSK Sales strives to improve related functions through the use of a flat organizational structure. In an effort to offer customers one-stop shopping capabilities for products and related services, NSK Sales focuses on providing technical training to selected personnel, as well as the development and operation of CHANCE-II, an online information service and e-business system for providing a variety of information 24 hours a day. Separately, NSK also places emphasis on providing sales agency personnel with product training, since they provide a key sales channel for NSK. This approach helps raise the level of service to NSK customers.

Quality Improvement Initiatives

Based on a firm commitment to continually providing products of the highest quality, NSK works with both customers and suppliers to boost levels of product quality and production excellence. As part of its APS initiative, NSK assigns improvement support teams (ISTs) to suppliers to assist in the development of Quality Control (QC) technology and related systems. Dissemination of the APS concept has proved an effective means of raising product quality and manufacturing productivity, resulting in reduced rates of in-process defective items, higher production capacity and lower inventories. NSK is also in the process of introducing a system for evaluating the QC systems of suppliers, and is working to establish quality management systems, such as acquiring ISO/TS 16949 certification.

Working With Suppliers

Working with a supplier network that extends to approximately 700 firms, NSK strives to increase customer satisfaction through a variety of initiatives aimed at improving QCDS (Quality, Cost, Delivery, Satisfaction). These include promotion of the APS approach, development of VA/VE (Value Analysis and Value Engineering) proposals, globalization of manufacturing systems, and sharing of a specially developed cost database ("MISTRAL").

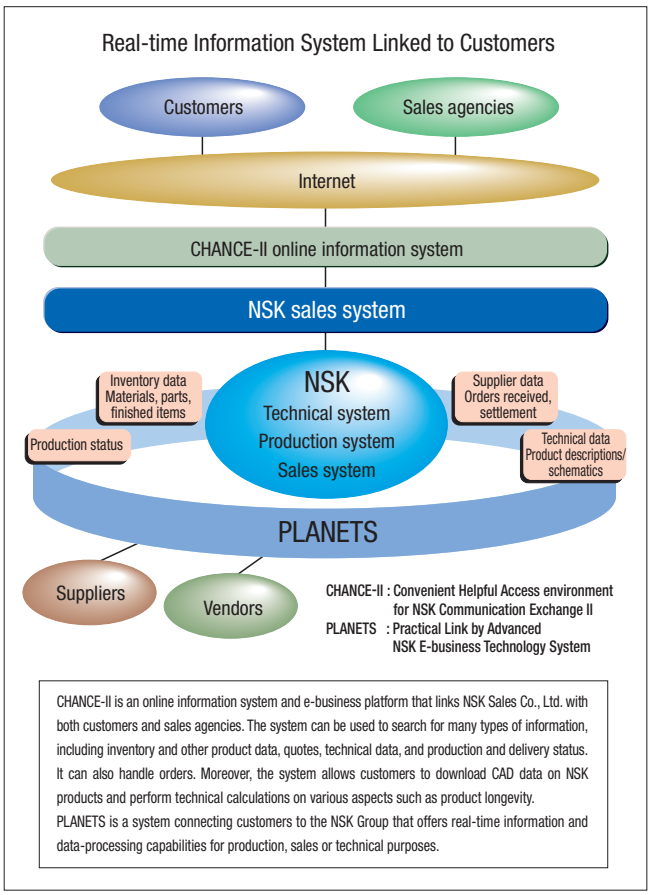
NSK seeks to reduce the environmental impact of its operations. Through its Green Procurement Standards, NSK has long encouraged suppliers to voluntarily enact environmental measures. NSK is now going a step further by revising these standards, with the ultimate goal of developing a framework for ensuring the quality of environment-related items right from the procurement stage.

Procurement Policies

To ensure the high quality and reliability of NSK-branded products, NSK has established systems to control the quality of procured items from an early point in supply chains.

Bolstering procurement systems has become a critical element in generating further gains in QCDS as demand becomes more global in scale and as competition intensifies. NSK's approach to its global procurement systems is based on four policies, summarized below.

1) Reduction of external procurement costs in conjunction with suppliers
2) Global supply chain optimization, including ongoing development of a procurement system in China
3) Simultaneous expansion of cost improvement strategy, first pioneered by automotive bearing operations, to other businesses
4) Cost reduction of auxiliary material



CHANCE-II is an online information system and e-business platform that links NSK Sales Co., Ltd. with both customers and sales agencies. The system can be used to search for many types of information, including inventory and other product data, quotes, technical data, and production and delivery status. It can also handle orders. Moreover, the system allows customers to download CAD data on NSK products and perform technical calculations on various aspects such as product longevity.
PLANETS is a system connecting customers to the NSK Group that offers real-time information and data-processing capabilities for production, sales or technical purposes.

Working Together With Employees

NSK has developed personnel systems that provide positive challenges for employees, supported by training and development programs geared to assist self-motivated individuals. NSK offers multi-faceted employee welfare programs and facilities, and has also established strict workplace safety standards. In addition, recently NSK has actively developed student internships and other programs.

NSK Stance Toward Employees

NSK employs approximately 8,800 people in Japan and 11,000 people in overseas operating bases in 26 countries. Regarding its employees as true assets of the business, NSK aims to make the best use of its human resources by creating a working environment conducive to personal and corporate growth.

Personnel Systems Aim to Boost Individual Potential

NSK has adopted various systems designed to build on the capabilities of and motivate individual employees. All employees receive periodic reviews from superiors relating to agreed performance goals that vary by department and function. Employees can contact the Human Resources Department directly about work environment-related issues or to express preferences about future career direction. Employees also have the opportunity to take on new career challenges by applying for a variety of internal positions. In addition, in 2000, NSK introduced a system of performance-linked bonuses to enable all workers to take greater responsibility for the management of the company.

Training Systems Provide Opportunity for Self-development

NSK's training and development philosophy is based on providing opportunities for improvement to self-motivated employees. Organized systematically, training systems range from induction courses for new employees, on-the-job training, and various educational programs, to training seminars, study abroad and secondment assignments. To rapidly develop business leaders within a comprehensive training framework, NSK has also established the NSK Management School. The school divides its curriculum into two levels, offering training for key employees in non-managerial positions ("Manager Course") and for middle managers ("General Manager Course"). The purpose of these classes is to boost management skills by encouraging active debate and actual practices.

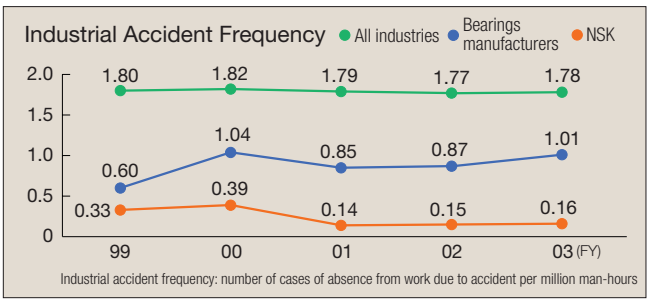
Creating a Supportive Working Environment

In order to motivate its employees and to ensure that they are healthy in mind, NSK devotes substantial resources to employee welfare programs tailored to the demands of modern society. NSK operates a variety of paid leave systems to support employees after childbirth, in raising families and in caring for relatives. Employees can take sabbaticals or take leave for volunteer purposes.

Occupational health is an important issue for NSK. All employees receive regular health checks and appropriate guidance from health professionals. A wide variety of sporting and cultural clubs and other associations for employees are available as part of a proactive and comprehensive health care policy.

Occupational Health and Safety (OH&S)

As a manufacturer, NSK has always placed top priority on workplace safety. A central committee oversees all OH&S issues at NSK. Committee members are involved in promoting greater awareness of safety issues, while site managers undertake on-site safety reviews. After an incident at Fujisawa Plant in February 2000, resulting in minor employee injury, comprehensive measures were taken to determine the cause and to prevent any reoccurrence. The plant is on track to record over 10 million man-hours of operation without any safety incidents.



Internships and Graduate Trainee Programs

NSK has long organized student internships and graduate trainee programs for those studying technical disciplines. In addition, in 2002, NSK extended its Summer Internship program to include undergraduates studying the arts or humanities. Over a two-week period, students gain a variety of experience in sales, personnel, accounting and public relations departments under the guidance of employees. This system complements campus-based academic programs by providing valuable experience of actual corporate work. In 2002, NSK accepted 12 students in internships (7 from technical subjects). The program was expanded to 21 students (10 from technical subjects) in 2003. NSK accepted three graduate trainees in each of these years.

Working Together With Local Communities

As a global corporate citizen, NSK undertakes a range of activities together with local communities. These include donations to disaster-stricken areas, sponsorship of local cultural events and contributions to the development of local human resources through scholarship programs. NSK's guiding philosophy is that all company activities are ultimately rooted in local communities.

NSK: Contributing to Society

The essence of NSK's basic philosophy underpinning its social contribution is to use Motion & Control technology to aid the smooth and safe operation of society while helping to preserve the global environment. NSK also aims to work across national boundaries to improve relationships between people around the world. By pursuing development of eco-conscious technology and production methods, and by seeking to reduce environmental impact, NSK aims to fulfill its responsibilities as a global corporate citizen of enriching society in Japan, as well as the countries and regions where it operates.

Contribution to Local Communities

A total of 656 employees at NSK plants and offices in Japan participated in voluntary clean-up programs targeting local parks, waterways and other areas. Meanwhile, the Ohtsu Plant held another open house for local residents, which again proved extremely popular.

Academic Support Programs

An NSK committee focuses on strengthening ties with universities in Japan. Monetary assistance programs include a system of grants for university instructors (which has been running for over 10 years), payment of various joint research expenses and student scholarship programs. In addition, to assist in the education of students studying subjects related to machinery, NSK regularly assigns employees to act as lecturers on these courses.

Mechatronics Foundation

In April 1988, NSK established the Electro-Mechanic Technology Advancing Foundation to contribute to industrial progress through technical developments in the field of mechatronics. The foundation supports R&D programs through research grants, and also sponsors lectures, research seminars and other events to promote interchange between people involved in the field. Since its establishment, the foundation has supported over 500 projects and made total disbursements of approximately ¥455 million.

Worldwide Social Contributions of NSK Group

Technology Development Promotion in China

In a shining example of Sino-Japanese cooperation, NSK sponsors awards for outstanding dissertations by Chinese students in the field of mechanical engineering. The second annual awards were held in FY2003 at Tsinghua University. Separately, as part of efforts to promote bearings technology within China, NSK worked with the Luoyang Bearing Research Institute to produce a Chinese edition of a ball bearings textbook written by Junzo Okamoto.

Jakarta Plant

The Jakarta Plant provides student scholarships for around 20 elementary, junior and high schools in the area. When the suburbs of Jakarta were hit by major flooding in February 2001, the company joined with employees in donating supplies of food, drinking water and clothing to help people in afflicted areas.

Activities in Europe

After extensive flooding in eastern Germany and central Europe in the summer of 2002, NSK Deutschland GmbH contributed employee and corporate donations for disaster relief. Elsewhere, volunteers from the Peterlee Plant in the U.K. participated in a kart racing event to support the Marie Curie Cancer Care charity.

Activities in the Americas

Volunteers at NSK Americas, Inc. were involved in raising funds to help cancer patients. Elsewhere, NSK was a sponsor of the Annual International Glenn Miller Festival held in Clarinda, Iowa (site of an NSK Corp. plant). In Brazil, employees at the Suzano Plant (NSK Brasil) maintain a varied program of local community activities to raise donations for local welfare facilities and to organize special traffic education classes for children.

Working Together With Shareholders and Investors

Recognizing the return of profits to shareholders and investors as a key mission, NSK strives to raise the quality of its management to increase shareholder value. A variety of investor relations (IR) organizational activities, tools and events are geared to provide the investment community with a deeper understanding of NSK. Socially responsible investment (SRI) audits conducted by independent organizations in Japan and overseas have recognized NSK as a company that takes its environmental and social responsibilities seriously.

NSK Stance Toward Shareholders

As of March 31, 2004, NSK shareholders totaled over 34,000. Share ownership by financial institutions was 53.48%, with overseas investors (18.64%), individuals/other (18.94%), other Japanese companies (7.46%) and securities firms (1.48%) also accounting for significant proportions.

Returning profit to shareholders is a key management policy at NSK. The company aims to maintain a stable dividend, which is set after consideration of consolidated results and payout ratios. Cash dividends for the year ended March 31, 2004 totaled ¥6.50 per share, a year-on-year increase of ¥1.50.

IR Activities

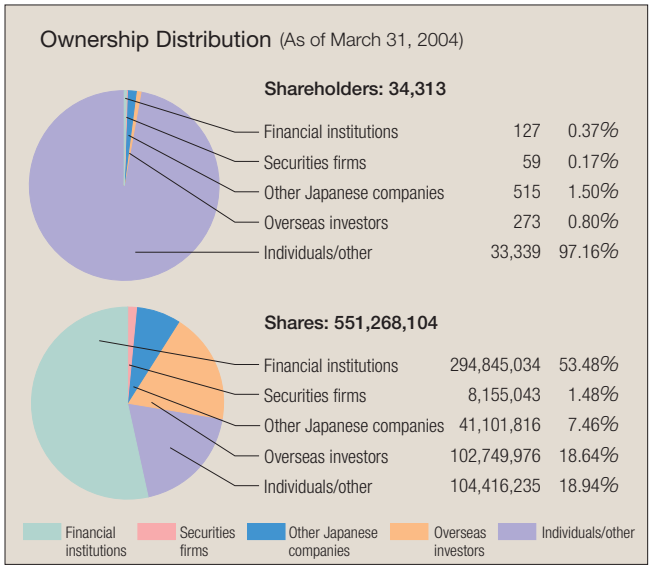
Investor demand for corporate equity depends on accurate knowledge of results and an understanding of the company's objectives, strategy and plans. Gaining the trust of shareholders and investors through transparent disclosure of business philosophy and medium- to long-term strategies and plans is also a key element in raising the value of the company.

NSK established a dedicated IR organization at the end of 1997 to focus on shareholders and investors. IR activities include investor presentations on interim and full-year results and on mid-term business plans. NSK also organizes various IR events such as site tours and technical seminars.

A variety of investor-oriented information is available on the NSK web site at http://www.nsk.com/eng/ir/index.html.

Socially Responsible Investment (SRI)

The social role of corporations is changing as the impact of companies on society grows amid continued globalization. This has resulted in a trend toward socially responsible investment (SRI), which aims to value the environmental and social contributions of companies as well as economic performance. The SRI concept embraces the conclusion that companies making a strong contribution to society will also tend to generate higher long-term investment returns, as they contribute to the sustainable development of society. Numerous large pension funds in Europe and the United States have investment preferences for SRI stocks. The total pool of investment assets in the SRI market currently exceeds ¥300 trillion. Although little of this capital originates in Japan as yet, Japanese investors are starting to follow the example of SRI fund managers based in Western countries.



Membership of SRI Indices

In 2003, NSK was selected as a component of leading SRI indices, including the Dow Jones Sustainability World Index and the FTSE4Good Global Benchmark Index. In Japan, NSK is also a member of the Morningstar SRI Index. Only 17 Japanese companies are constituents of all three of these indices.

NSK's selection stemmed from its high evaluation of activities such as:

1) Attainment of zero emission status at all plants owned by or spun off from NSK Ltd.
2) Social contributions in the form of donations, scholarships, volunteer programs and other activities.
3) Good corporate governance, notably the establishment of compensation and audit committees.

NSK and Environmental Management

NSK formulated its Environmental Policy to ensure that its mission—contributing to society through its products—is fulfilled through each product it manufactures. This objective defines policies governing environmental activities for the NSK Group.
The NSK Environmental Policy is dedicated to the pursuit of eco-conscious technology and environmentally friendly products. NSK will continue to develop its environmental management systems as a means of fulfilling its responsibilities as a global corporation.

NSK Environmental Policy

Our commitment to environmental management forms the basis of our existence and our pursuits. We are determined to take independent and assertive actions.

1. Overall Goals

To create harmony between people and the Earth by developing environmentally friendly manufacturing processes and technology, such as our tribology friction control technology, using the full efforts of all employees and all divisions in our company.

2. Reduction of Negative Environmental Impact

To establish and continually improve the environmental management system, comply with regulations, prevent pollution and reduce environmental impact.

3. Contribution to Societies

To be a good global corporate citizen, contributing to the social development of countries and communities where we operate, and also to advance the realization of affluent societies that are in harmony with the environment.

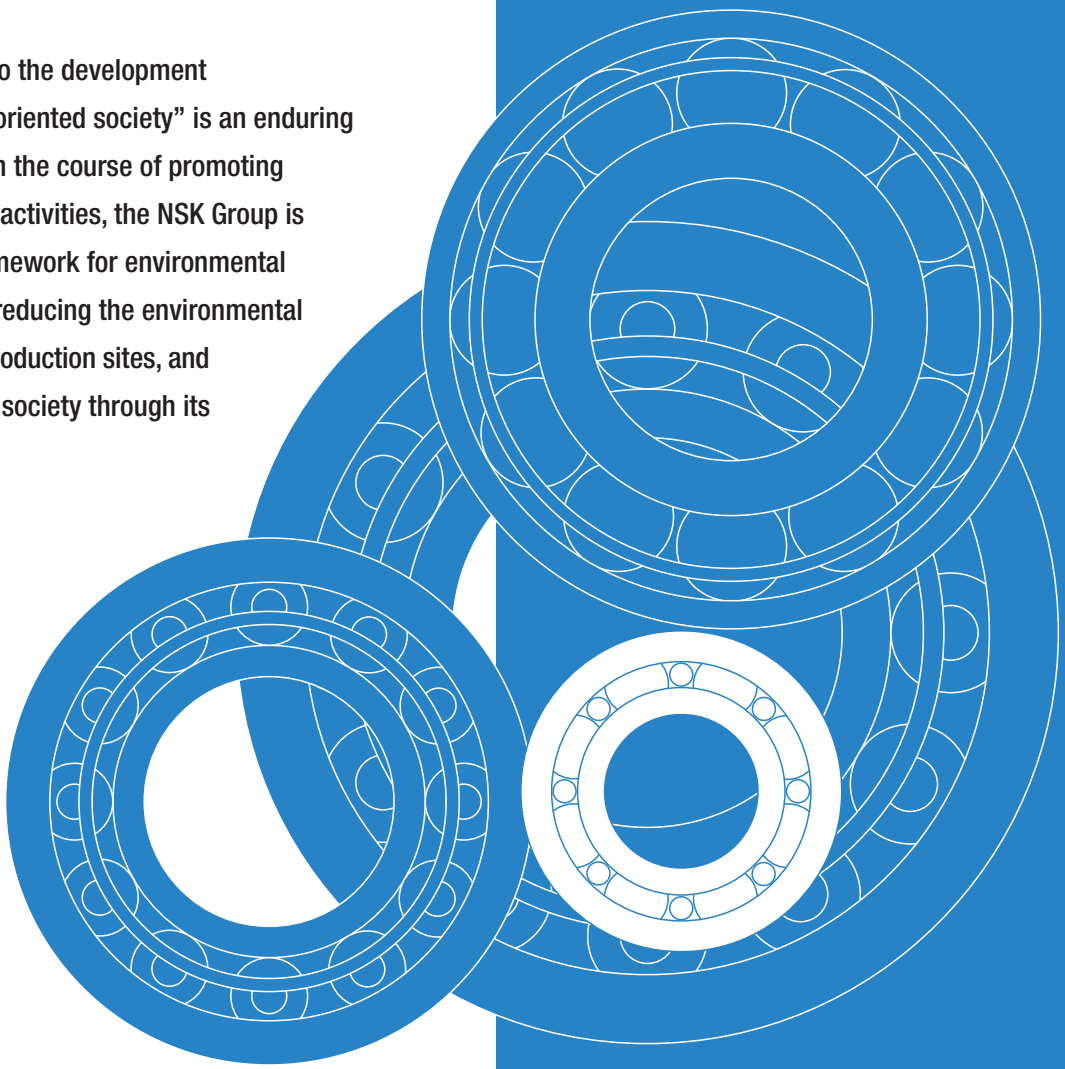
Environmental Code of Conduct

1. To reform environmental management organizations by improving operational systems and clarifying chains of responsibility.
2. To develop products and technology that will reduce environmental impact.
3. To tackle environmental protection more aggressively by setting and adhering to high internal standards in addition to complying with laws, ordinances and agreements.
4. To ensure energy and resource conservation, waste reduction, and recycling in all spheres of our business operations.
5. To convert from ozone-depleting and hazardous chemical substances to environmentally friendly alternative substances, and where possible, switch to alternative processes and technologies.
6. To communicate with environmental authorities and local communities in order to receive insightful and constructive opinions.
7. To contribute to local communities through participation in social environmental activities.
8. To encourage employees to understand our environmental policies and to ensure an environmental mindset in the company through education and internal communications.
9. To disclose the ongoing status of our environmental management activities to the public when necessary.

Originally compiled: December 12, 1997
Last revised: June 27, 2002

Environmental Management at NSK

"Contributing to the development of a recycling-oriented society" is an enduring goal for NSK. In the course of promoting environmental activities, the NSK Group is outlining a framework for environmental management, reducing the environmental impact of its production sites, and contributing to society through its products.



NSK and the Environment

Aiming to Contribute to the Recycling-oriented Society

NSK products are integral components of a wide range of machinery and play an integral role in supporting their smooth operation and energy efficiency. NSK products are found in everything from ordinary home appliances to automobiles, trains, airplanes and rockets, as well as robots, machine tools and other machinery. By carefully considering each stage of a product's lifecycle, NSK is fulfilling what it considers to be its duty as a manufacturer, to seize the initiative in contributing to the development of a sustainable, recycling-oriented society.

Measures at the Development and Design Stages

Every aspect of the product lifecycle, from the materials used to end-of-life recycling, is carefully considered at the development and design stages as part of efforts to lessen environmental impact. Beginning with steps to enhance the energy efficiency of products for customers, whose operations carry the largest environmental load, NSK is making longer lasting and maintenance-free products, ensuring products are recycled easily by excluding hazardous chemical substances, and initiating other actions to further reduce environmental impact. To this end, NSK is taking its efforts back to the basic materials stage, creating a variety of technologies for developing products such as high-performance materials and grease that does not contain harmful chemical substances. In parallel, NSK is reducing environmental impact at the manufacturing stage by improving yields and giving attention to shortening the manufacturing process at the development stage.

In fiscal 2003, NSK registered 11 more products and technologies that met its own environmental standards, for a total of 91 such cases fulfilling these criteria.

Manufacturing Stage

At NSK, most energy and natural resources are consumed, and most industrial waste and other by-products generated, during the manufacturing stage. Acknowledging this, NSK considers manufacturing the stage with the most profound effect on the natural environment, directing Group activities towards measures that target energy, waste, recycling and hazardous chemical substances.

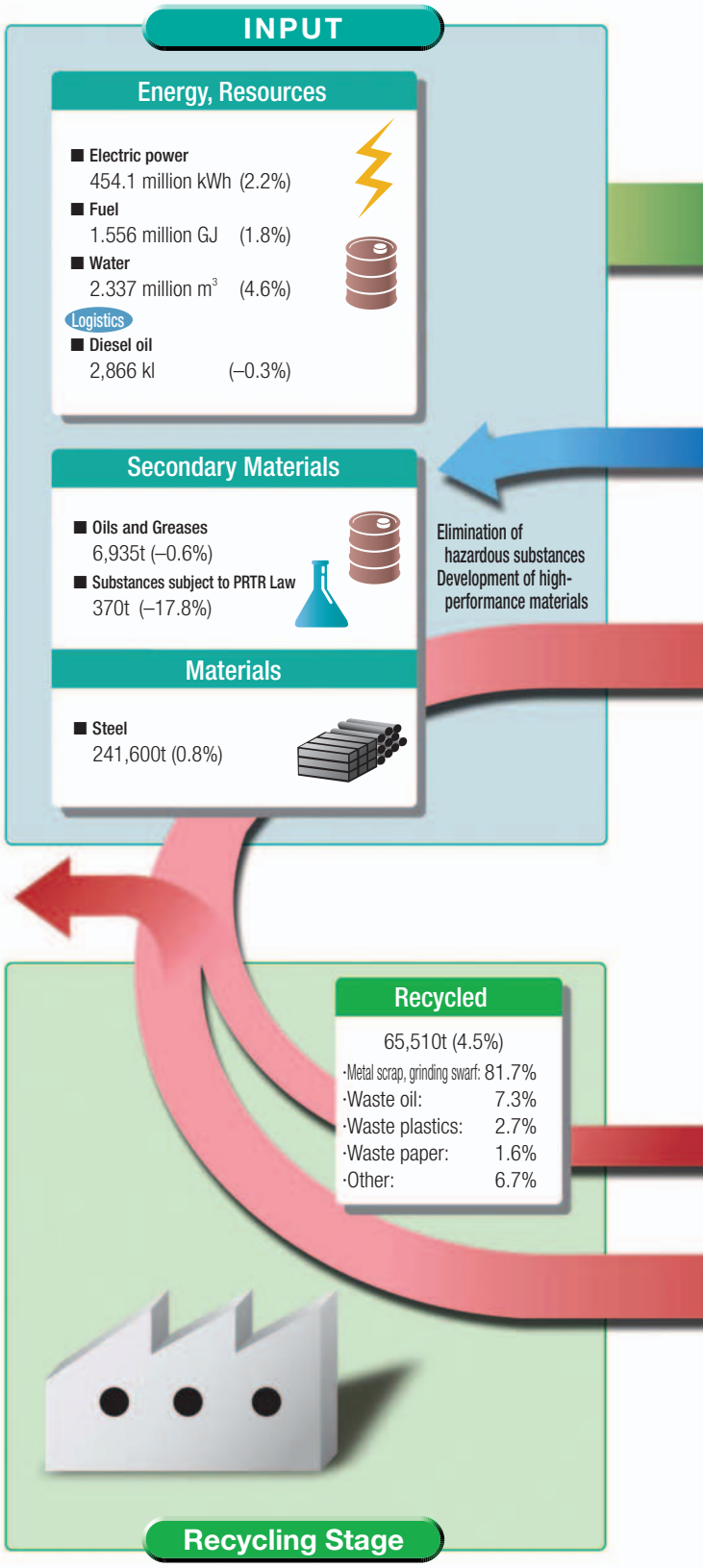
In fiscal 2003, while increased production drove Group energy consumption nearly 2% higher year on year, energy consumption per production unit improved by almost 6%, thanks to the installation of a cogeneration system at NSK Precision Co., Ltd.'s Maebashi Precision Machinery & Parts Plant and other measures aimed at raising efficiency.

In fiscal 2002, NSK achieved zero emissions status for all of its own and spun-off subsidiaries' plants, and is promoting a similar goal for its subsidiaries. Progress so far has reduced the Group's volume of industrial waste sent to landfill by 15.7% year on year to 398t, lowering the percentage of total landfill waste produced by the Group to 0.6%. Chemical substance countermeasures, meanwhile, resulted in a 47% reduction in released and transferred substances covered under Japan's Pollutant Release and Transfer Register (PRTR) Law to 90t.

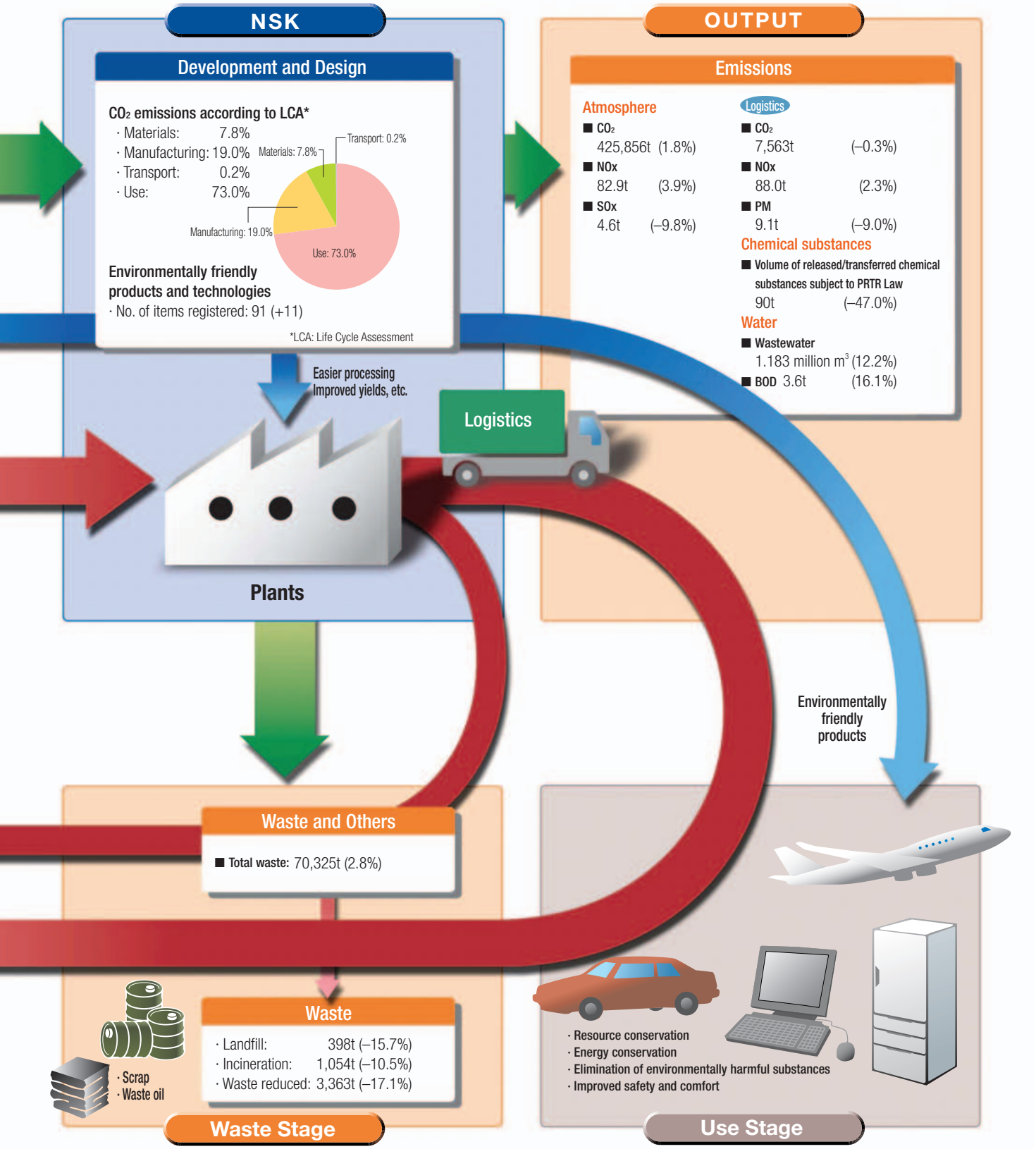
Waste and Recycling Stages

Bearings, NSK's flagship product, are largely composed of steel materials. At the end of their useful life, bearings, along with the machines in which they are installed, are converted to scrap, to be recycled as new steel materials. This characteristic makes bearings superior products in terms of recyclability. To improve this further, NSK is taking steps to eliminate the trace amounts of heavy metals found in coated plating for components and using biodegradable grease, among other steps.

Going forward, NSK will continue to strive to improve the level of its initiatives throughout the entire Group to contribute to the development of a recycling-oriented society.

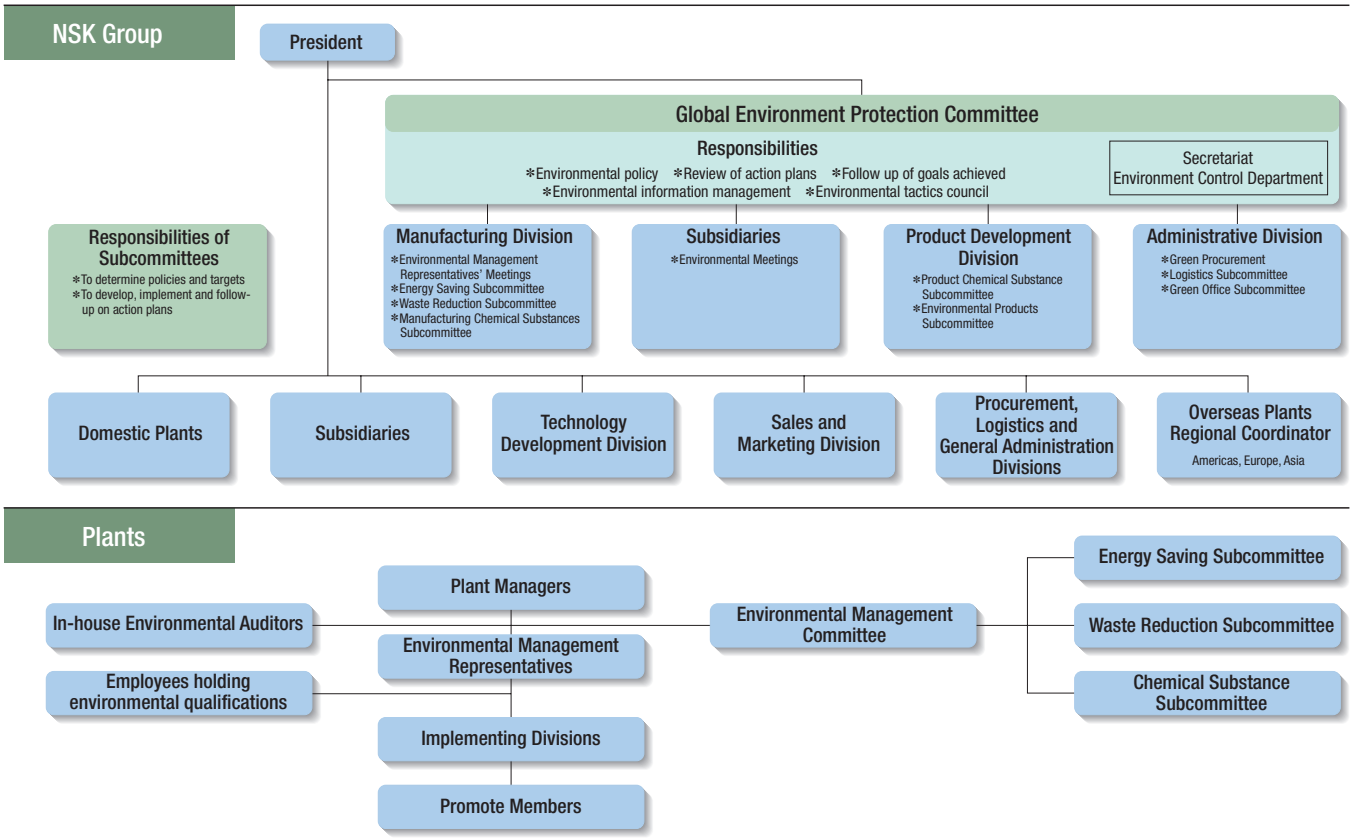


· Figures in parentheses represent year-on-year comparisons.
· Performance data compiled from NSK, newly spun-off subsidiaries, manufacturing-related subsidiaries in which NSK holds an equity stake of 50% or more, and a logistics-related subsidiary.


NSK
Development and Design
CO2 emissions according to LCA*
· Materials: 7.8%
· Manufacturing: 19.0%
· Transport: 0.2%
· Use: 73.0%
Materials: 7.8%
Transport: 0.2%
Manufacturing: 19.0%
Use: 73.0%
Environmentally friendly products and technologies
· No. of items registered: 91 (+11)
*LCA: Life Cycle Assessment
Easier processing
Improved yields, etc.
Plants
Logistics
OUTPUT
Emissions
Atmosphere
■ CO2
425,856t (1.8%)
■ NOx
82.9t (3.9%)
■ SOx
4.6t (–9.8%)
Logistics
■ CO2
7,563t (–0.3%)
■ NOx
88.0t (2.3%)
■ PM
9.1t (–9.0%)
Chemical substances
■ Volume of released/transferred chemical substances subject to PRTR Law
90t (–47.0%)
Water
■ Wastewater
1.183 million m3 (12.2%)
■ BOD 3.6t (16.1%)
Environmentally friendly products
Waste and Others
■ Total waste: 70,325t (2.8%)
Waste
· Landfill: 398t (–15.7%)
· Incineration: 1,054t (–10.5%)
· Waste reduced: 3,363t (–17.1%)
· Scrap
· Waste oil
Waste Stage
· Resource conservation
· Energy conservation
· Elimination of environmentally harmful substances
· Improved safety and comfort
Use Stage

Environmental Management Organization

In 1993, the NSK Group established the Global Environment Protection Committee. Building on the momentum of its forerunner, the Committee on the Comprehensive Management of Fluorocarbon Regulations, this committee conducted environmental protection activities that mainly targeted manufacturing processes. From 2001, however, NSK unveiled plans to switch to a new company-wide organizational framework for environmental activities, and began promoting environmental management from the perspective of contributing to the development of a recycling-oriented society. This principal organization is charged with deliberating and deciding company-wide environmental policies, objectives and initiatives, as well as determining the necessary flow for fulfilling each policy. At the most basic levels of the organization, specialist subcommittees are installed in divisions responsible for product development, procurement, manufacturing, logistics and other functions, to promote environmental protection efforts across the entire company. Authority and responsibility for the operation of these subcommittees is delegated to the head of each division. Each business site also has an Environmental Management Committee. Chaired by the Plant Manager, this committee is responsible for formulating environmental policies for each site in line with company-wide environmental guidelines. Responsibility for promoting activities under this structure lies mainly with Environmental Management Representatives.
NSK also sponsors environment liaison meetings as a means of spreading the word on its environmental policies among subsidiaries and as a forum for exchanging related information. This is just one more way in which NSK is advancing environmental activities throughout the entire Group.



History of Activities by the Global Environment Protection Committee

Category		FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003
Voluntary Action Plans		1st voluntary action plan								2nd voluntary action plan		
Global Warming Prevention Measures		1st plan				2nd plan				3rd plan		
Waste and Recycling Measures		1st plan		2nd plan		3rd plan				4th plan		
Measures for Hazardous Chemical Substances	Chemical Substance Management		Establishment of chemical substances management system for products containing substances with high-environmental impact						Establishment of a manufacturing processes management system			
	Ozone-depleting Substances	Elimination of cleaning chemicals from all sites							Reduction of specified refrigerant CFCs			
	Chlorinated Solvents	Elimination of trichloroethylene	Elimination of dichloromethane from NSK sites						Elimination of dichloromethane at subsidiaries			
	Dioxins					Elimination of incinerators from all sites			Conversion to chlorine-free machining oils			
	PRTR Management					Participation in pilot project				Reduction plan		
Compliance/Environmental Risk Management Measures		Legal compliance	Environmental risk measures/Reduction of environmental impact									
Logistics Measures		Elimination of PVC and polystyrene foam packaging					Promotion of returnable packing materials	Automotive committee		Logistics subcommittee		
Product Measures										Products subcommittee/LCA introduced		
Procurement Measures										Implementation of green procurement and green purchasing		
Office Measures										Green office subcommittee		
Establishment of Environmental Management System	NSK Environmental Policy					Policy formulated						
	ISO 14001 Certification					NSK domestic sites		Subsidiaries/overseas operations				
	Environmental Accounting							Introduction of environmental accounting				
	Environmental Auditing		Compliance audit	Performance audit		System audit and support		Audit of subsidiaries				
	Measures by Subsidiaries							Environmental meetings	Action plans			
Disclosure of Environmental Information						Launch of Website		Status report published in annual report		Publishing environmental report		

Voluntary Action Plans

Since 1993, NSK has enacted Voluntary Action Plans, focused primarily on manufacturing divisions, to advance its environmental protection agenda. Today, the scope of these plans is company-wide, with NSK taking steps to successfully complete its Secondary Voluntary Action Plan encompassing fields such as development, procurement and distribution. Since 2001, NSK has established and pursued common objectives in this area in conjunction with its subsidiaries.
In FY2003, cogeneration systems were installed at manufacturing divisions as a means of tackling global warming. This and other actions enabled NSK to outstrip its original objectives, reducing CO_2 emissions per production unit by 21% compared with FY1990. NSK also reviewed its green procurement standards to cope with more stringent regulations at its procurement divisions concerning substances that impact on the environment.
Although minor delays were experienced at one site, four NSK Group companies attained ISO 14001 certification, with all production bases in Japan scheduled to be certified by July 2004. Moreover, NSK has begun issuing common guidelines regarding countermeasures for addressing global warming, waste and chemical substances at its overseas sites.

NSK Action Plans

Category		Mid- to Long-range Goals	Performance in FY2003	Evaluation
Development		To create environmentally friendly products	Number of registered environmentally friendly products and technologies: 91 (increase of 11 year on year)	○
		To reduce the use of environmentally hazardous substances	Revised regulations for management of hazardous substances included in products Switching to hexavalent chromium alternatives for surface finishing	○
Manufacturing	Anti-global Warming Measures	To reduce CO_2 emissions and energy consumed per production unit by 23% by FY2010 (base year: FY1990)	Reduced CO_2 emissions per production unit by 21% (Base year: FY1990)	○
	Waste and Recycling Measures	To achieve a recycling rate of at least 98% by FY 2010	Achieved recycling rate of 94.8% Continuing to maintain zero emissions (Landfill waste ratio: 0.1%)	○
	Hazardous Chemical Substance Measures	To eliminate ozone-depleting substances (Refrigerant-use CFCs and halon-based fire extinguishers) by FY2005	Decreased refrigerant CFCs by 64%, and halon-based fire extinguishers by 36% (Base year: FY2000)	○
		To reduce the use of products containing PRTR-designated substances and machining oils with chlorine-based additives by 50% by FY2005 (Base year: FY2000)	Reduced PRTR-designated substances by 33%, and machining oil with chlorine-based additives by 39% (Base year: FY2000)	○
Logistics Measures		To reduce CO_2, NOx and PM emissions during distribution	Reduced CO_2 emissions per production unit by 4.4%, NOx emissions by 2.4% and PM emissions by 14.9% (Year-on-year comparison)	○
		To promote environmentally friendly packaging (Reduction of packaging materials)	Recycling of plastic boxes: Used in product transport, 60t; Used during processing, 17t	○
Green Procurement		To adopt green procurement standards	Reviewed methods for managing hazardous substances, revised related standards	○
		To adopt guidelines for green purchasing	Office and work uniforms created from recycled PET bottles: 4,500 uniforms	○
Green Office Activities		To improve awareness of environmental conservation	Published ECO News, implemented environmental education	○
		To reduce the volume of paper used and promote sorting of waste material and energy saving	Reduced electricity consumption by 31%, paper consumption increased by 2% (Year-on-year comparison)	△

Action Plans at NSK Subsidiaries

Category	Mid- to Long-range Goals	Performance in FY2003	Evaluation
Environmental Management	To acquire ISO 14001 certification by FY2003	Newly acquired at four companies (Acquisition activities scheduled to conclude in July 2004 with expanded certification by one company)	△
Anti-global Warming Measures	To reduce CO_2 emissions per production unit by 1% annually	Reduced CO_2 emissions per production unit by 3.9% (Year-on-year comparison)	○
Waste and Recycling Measures	To achieve a recycling rate of 98% or more by FY2010	Achieved recycling rate of 92%	○
	To achieve zero emissions by FY2004	Six companies maintained zero emissions status	○
Hazardous Chemical Substance Measures	To eliminate ozone-depleting substances (Refrigerant-use CFCs and halon-based fire extinguishers) by FY2010	Decreased refrigerant-use CFCs by 57%, and halon-based fire extinguishers by 21% (Base year: FY2000)	○
	To reduce chlorine-based machining oils by 50% by FY2005 (Base year: FY2000)	Reduced chlorine-based machining oil by 9% (Base year: FY2000)	○
	To abolish dichloromethane by FY2003	Completed	○

○: Indicates target achieved △: Indicates an 80% achievement of target ×: Indicates target unachieved

Glossary

Cogeneration system: Refers to highly energy efficient systems that utilize heat emitted by engines or turbines during power generation for air conditioning, water heating, production equipment and other purposes.

Green procurement: Refers to the concept of giving priority to suppliers that are more proactive in enacting environmental protection measures when purchasing more environmentally friendly products. Green procurement is one way that a company's environmental stance can have an effect on those outside its immediate operating sphere.

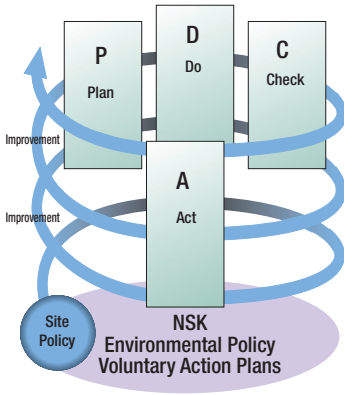
Auditing Methods and ISO 14001

Environmental conservation activities are a corporate social responsibility, and are vital to a company's sustainable growth. To this end, the NSK Group has worked to acquire ISO 14001 certification, the internationally recognized environmental management system standard. Each business site, based on NSK's corporate philosophy and environmental policy, is responsible for independently formulating its own environmental policies suited to its location, products manufactured and other aspects of its business operations, and implementing an appropriate PDCA (Plan, Do, Check, Act) cycle. Ongoing organizational improvements are made through regular audits that confirm the system's implementation status and environmental performance. In FY2003, four more NSK subsidiaries in Japan and one production site overseas acquired ISO 14001 certification, bringing the total number of certified sites to 19 in Japan and 14 overseas.

Audits for Better PDCA Cycles and Performance

■ System Audit

Internal audits are an essential part of NSK's environmental management system. Performed once a year, these audits help to improve the system and ensure that the PDCA (Plan, Do, Check, Act) cycle is properly implemented. An external certification body also conducts an annual examination or a 3-year renewal examination, providing an objective viewpoint for evaluating how well the system is functioning.



■ Performance Audits

The subcommittees under the Global Environment Protection Committee (the Energy Saving, Waste Reduction and Chemical Substance Management subcommittees) carry out regular checks to confirm matters such as performance results and legal and regulatory compliance.

■ Audit by Audit Committee

Each year, the company Audit Committee performs an audit of NSK's environmental management activities.

Fostering and Training Internal Auditors

To raise the skill level of internal auditors and increase understanding of environmental management systems among its employees, NSK promotes external seminars each year as part of its environmental education program. These and other events are designed to train employees in internal audit procedures. In total, 350 people have been trained through these seminars, 86 of those in FY2003.

Correcting Minor Deficiencies

According to FY2003 audit results, the number of minor deficiencies reported in external audits rose slightly year on year. NSK immediately took action to correct reported problems and areas marked for improvement, and is working to bolster system audit functions and improve the system. Until now, NSK has focused on improving areas that have a direct and negative environmental impact such as input energy, hazardous substances, wastewater, and industrial waste. Going forward, NSK will also give attention to improving areas within the system itself by increasing productivity and operational efficiency.

Audit Issues and ISO 14001 Certification (Month/Year)

	Name of Site	Internal Audit			External Audit				Date of Certification
		C1	C2	OB	C1	C2	OB	SP	
NSK	NSK Fukushima Co., Ltd.	0	2	6	0	2	11	0	Jul. 1998
	Saitama Plant/ NSK Precision, Co., Ltd., Saitama Precision Machinery & Parts Plant	0	11	29	0	0	10	1	Sep. 1998
	Shiga Manufacturing Division (Ohtsu & Ishibe Plants)	0	10	29	0	1	14	2	Oct. 1998
	Fujisawa Plant/Technology Division	0	1	20	0	3	12	0	Sep. 1999
	NSK Precision Co., Ltd., Kirihara Precision Machinery & Parts Plant	0	4	9	0	1	5	2	Nov. 1999
	NSK Precision Co., Ltd., Maebashi Precision Machinery & Parts Plant/ Technology Division	0	0	25	0	0	10	2	Dec. 1999
	NSK Steering Systems Co., Ltd.	0	0	10	0	2	8	2	Dec. 1999
Subsidiaries	NSK Kyushu Co., Ltd.	0	0	12	0	1	8	1	Oct. 2000
	NSK Needle Bearing Ltd. (Haruna Plant)	0	0	3	0	0	7	0	Jan. 2001
	Inoue Jikuuke Kogyo Co., Ltd.	0	12	21	0	3	14	1	Feb. 2001
	NSK-Warner K.K.	0	8	21	0	0	8	2	Mar. 2001
	NSK Micro Precision Co., Ltd. (Fujisawa)	0	5	20	0	1	8	3	Jun. 2001
	Shinwa Seiko Co., Ltd. (Kutsuki Plant and Shinasahi Plant)	0	1	5	0	0	11	2	Dec. 2002
	NSK Machinery Co., Ltd.	0	1	7	0	0	5	0	Mar. 2003
	NSK Logistics Co., Ltd. (Headquarters, Logistics Centers in Kanto, Chubu and Kansai regions)	0	6	2	0	2	12	3	Oct. 2003
	Chitose Sangyo Co., Ltd.	0	9	14	0	1	9	1	Nov. 2003
	Asahi Seiki Co., Ltd.	0	13	0	0	0	16	2	Dec. 2003
	NSK Micro Precision Co., Ltd. (Nagano)	0	7	0	0	0	12	1	Apr. 2004

Note: Results listed are those for the second ISO 14001 Examination for NSK Logistics Co., Ltd., Chitose Sangyo Co., Ltd., Asahi Seiki Co., Ltd., and NSK Micro Precision Co., Ltd. (Nagano).
C1: Serious compliance issues such as a total lack of procedures required for the system
C2: Minor issues, such as a partial lack of compliance with important items
OB: No compliance issues, but effectiveness of system should be improved
SP: Noteworthy achievement

ISO 14001 Certification

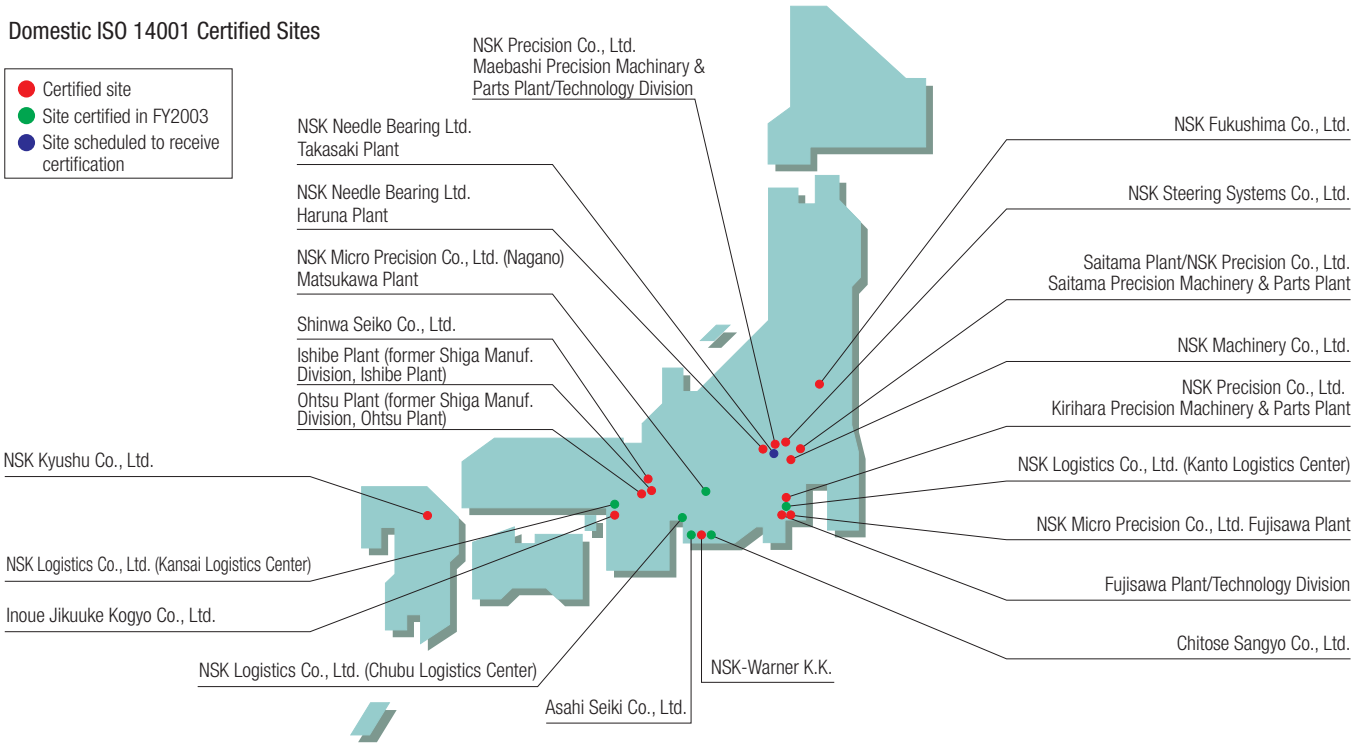
● Domestic Sites

Following the acquisition of ISO 14001 certification by NSK and newly spun-off subsidiaries, NSK promoted a Group-wide certification drive. Certification was acquired in FY2003 by the Matsukawa Plant of NSK Micro Precision Co., Ltd. (Nagano), a manufacturer of miniature ball bearings. Although relatively small in scale, certification was also acquired by Chitose Sangyo Co., Ltd. and Asahi Seiki Co., Ltd., two subsidiaries responsible for the lathe processing of bearing components and other processes. With these additions, all NSK subsidiaries involved in front-end processing are now ISO 14001 certified. Aware of the importance of enacting measures in the area of logistics, certification was also acquired by NSK Logistics Co., Ltd. and its Logistics Centers in Japan's Kanto, Chubu and Kansai regions.

NSK Needle Bearing Ltd., which has already acquired certification, is seeking to expand certification of its Takasaki Plant in July 2004. Once complete, NSK will have acquired complete ISO 14001 certification for all of its production sites in Japan.

ISO 14001 examination at NSK Logistics Co., Ltd.

Domestic ISO 14001 Certified Sites



● Overseas Sites

As a global corporation, NSK carries out environmental conservation activities at its overseas production sites under a common set of environmental guidelines. These activities include the acquisition of ISO 14001 certification. In FY2003, Kunshan NSK Co., Ltd., a subsidiary based in China, acquired certification, bringing the total number of overseas sites with ISO 14001 certification to 14 out of a total of 19 sites.

ISO 14001 Certified Overseas Sites

Name of Site	Date of Certification	Country
NSK Korea Co., Ltd., Changwon Plant	Dec. 1997	Korea
NSK Bearings Europe Ltd., Peterlee Plant	Feb. 1999	U.K.
NSK Brasil LTDA., Suzano Plant	Jan. 2000	Brazil
P.T. NSK Bearings Manufacturing Indonesia, Jakarta Plant	Mar. 2000	Indonesia
NSK Precision UK Ltd.	May 2000	U.K.
Siam NSK Steering Systems Co., Ltd.	Nov. 2000	Thailand
Neuweg Fertigung GmbH	Jan. 2001	Germany
NSK Steering Systems Europe Ltd., Peterlee Plant	Sep. 2001	U.K.
NSK Corporation, Ann Arbor Plant	Nov. 2001	U.S.
NSK Micro Precision (M) Sdn. Bhd., Malaysia Plant	Jan. 2002	Malaysia
NSK Corporation, Clarinda Plant	Jul. 2002	U.S.
NSK Corporation, Franklin Plant	Nov. 2002	U.S.
NSK Steering Systems America, Inc.	Dec. 2002	U.S.
Kunshan NSK Co., Ltd.	Dec. 2003	China

Environmental Accounting

At NSK, environmental accounting is regarded as a vital management tool for quantitatively evaluating the costs and benefits of environmental activities. Such accounting is also an invaluable communication tool for engendering a greater understanding of NSK's activities among its stakeholders. NSK formally introduced environmental accounting in FY1999 as a means of disclosing corporate data. This accounting system is based on the 2002 Environmental Accounting Guidelines published by Japan's Ministry of the Environment.

Accounting Results

In FY2003, NSK's total environmental investments and costs were approximately ¥940 million and ¥4,240 million. Economic benefits from NSK's environmental activities amounted to approximately ¥250 million. NSK is giving particular attention to the environmental contribution of its products. R&D required for the development of environmentally friendly products and technologies accounted for nearly 60% of environmental conservation costs. Almost 30% of these investments consisted of global environmental costs, a fact directly linked to substantial benefits gained in the form of improved CO_2 emissions per production unit and cost reductions. NSK also maintained zero emissions status, simultaneously cutting its landfill waste ratio from 0.2% to 0.1%. Beginning FY2004, NSK is planning to broaden the accounting scope to encompass subsidiaries.

Environmental Conservation Costs

Category		Investments		Costs		Main Purpose
		FY2002	FY2003	FY2002	FY2003	
		Millions of Yen	Millions of Yen (%)	Millions of Yen	Millions of Yen (%)	
Business Area Costs	Pollution prevention costs	163.2	71.3 (7.6)	468.7	431.8 (10.2)	· Installation of dust collectors, smoke and soot removers · Odor removers and other countermeasures for unpleasant smells · Improvement and relocation of underground tanks and pipes to above-ground locations · Inspection, repair and maintenance of facilities with an environmental impact · Inspection, repair and maintenance of drainage and waste liquid treatment facilities
	Global environmental costs	198.2	262.6 (27.9)	156.5	174.5 (4.1)	· Installation of cogeneration systems and other energy conservation measures · Measures to reduce ozone-depleting substances
	Resource recycling costs	106.5	53.9 (5.7)	377.4	397.4 (9.4)	· Installation of machinery for compacting grinding swarf into briquettes · Measures for recycling and reducing waste products · Treatment/disposal of municipal and industrial waste
	Subtotal	467.9	387.8 (41.2)	1,002.6	1,003.7 (23.7)	
Upstream/ downstream costs		5.2	0.0 (0.0)	99.7	124.1 (2.9)	· Green purchasing (Low-emission vehicles, office equipment, paper, stationery, uniforms, etc.) · Recycling of plastic boxes
Management costs		1.1	12.1 (1.3)	400.3	396.2 (9.3)	· Greenery development · Maintenance and operation of ISO 14001 systems · Measurement and analysis of environmental impact
R&D costs		574.5	541.6 (57.5)	1,923.9	2,637.4 (62.2)	· R&D into environmental technologies and features for new products
Social activity costs		0.0	0.0 (0.0)	38.6	36.9 (0.9)	· Donations and membership dues for WWF Japan, Keidanren Nature Conservation Fund, and Electro-Mechanic Technology Advancing Foundation
Environmental remediation costs		1.2	0.0 (0.0)	23.7	39.5 (0.9)	· Maintenance and management of treatment facilities
Total		1,049.8	941.5	3,488.7	4,237.7	

Economic Benefits of Environmental Activities

Category	Amount (Millions of Yen)	
	FY2002	FY2003
Cost saving from energy conservation*1	94.7	128.6
Cost saving from waste reduction*1	38.8	33.0
Sales of valuable waste*2	74.9	84.0
Total	208.4	245.6

*1 Including benefits of investments made during 5-year period from FY1999 to FY2003

*2 Income from sale of valuable waste to subsidiaries

Physical Benefits of Environmental Activities

Category		Year-on-year comparison	
		FY2002	FY2003
Plants	CO_2 emissions per prod. unit	3.9% improvement	7.4% improvement
	Water consumption	2.0% improvement	7.2% increase
	Landfill waste ratio	1.2% improvement	0.1% improvement
	Waste recycling ratio	2.5% improvement	0.4% improvement
Logistics	CO_2 emissions per prod. unit	6.7% improvement	4.4% improvement

Scope and Method of Data Collection

- Period: April 2003 to March 2004
- Sites covered: Plants operated by NSK and its spun-off subsidiaries, technology, logistics, and headquarters divisions
- Criteria for recording environmental conservation costs
  - · Environmental investments and costs determined in accordance with "Environmental Accounting Guidelines 2002," published by Japan's Ministry of the Environment.
  - · Depreciation is recorded as a cost using the 5-year straight-line depreciation method.
  - · Compound costs are divided in proportion to the relative environmental purpose.
  - · Costs incurred through green purchasing are posted as full amounts; not the differential amount.
- Criteria for recording environmental conservation benefits
  - · Economic benefits determined through actual evidence (in monetary units) and physical benefits resulting from environmental benefits are recorded.
  - · Deemed benefits (risk avoidance benefits, estimated profit contribution benefits, etc.) are not included.

Glossary

Briquettes: Refers to bricks of compressed grinding swarf roughly the size of a fist. Compressing grinding swarf—a manufacturing byproduct—into briquettes makes it easier to reuse as a raw material in steelmaking.

Environmental Communication

Raising environmental consciousness among all employees is critical to promoting environmental initiatives. NSK, for its part, is engaged in ongoing environmental education and awareness activities specifically targeting its workforce. NSK discloses environmental data in a variety of ways to deepen understanding of its environmental conservation position and activities among customers, investors and all other people.

Environment Education & Awareness Activities

Environmental Education

NSK implements educational programs at every personnel level: from management executives at NSK and its subsidiaries, to general employees. These programs help NSK employees acquire an extensive knowledge of the environment, environmental trends and related skills.

● At NSK Headquarters, environmental education is an integral part of the training curriculum. Training for newly inducted employees offers easy-to-follow explanations of such issues as why environmental efforts are necessary, NSK's environmental efforts, tips on reading environmental reports, and advice on environmental measures they can undertake on an individual basis.

● At its plants, NSK has instituted education programs for raising the level of environmental awareness and encouraging full legal and regulatory compliance in the environmental field. Targeting temporary staff and resident professionals as well as full-time employees, these programs are designed to promote understanding of environmental problems and environmentally conscious conduct in each of these workforce sectors.

● To better respond to customer requirements and adapt to more stringent laws and regulations, NSK revised its "Management Regulations for Hazardous Substances Contained in Products" and codified related investigation and management methodology. To disseminate a working knowledge of these regulations and their application, NSK's Product Chemicals Subcommittee held explanatory meetings, attended by R&D engineers, in each region where the company conducts business. Topics covered at these meetings include trends in environmental regulations, explanations of regulated substances at NSK and what constitutes strict compliance. The aim of these meetings is to improve environmental consciousness, leading to more environmentally conscious designing.

Employees Receiving Environmental Education in FY2003 and Number of Programs

Type of program	No. of participants	No. of programs
❶ Compliance with environmental laws and regulations	1,617	24
❷ Heightening environmental awareness	6,785	57
❸ Acquisition of environmental qualifications such as environmental auditor	57	17
❹ Environment-friendly design, green purchasing and procurement	451	11

Environmental Awareness

● NSK regularly publishes an internal newsletter, *NSK Group News*, featuring articles on the Company's environmental measures. The newsletter is helping to raise awareness by introducing NSK employees to environmental events and topics. An English-language version, *NSK NEWSLETTER*, is also available to employees overseas. In addition to introducing NSK sites in other countries, this newsletter is a source for information on environmentally friendly products. It also provides an overview of the FY2003 edition of the Environmental Report, and other environmental data from NSK.

● During the course of year, NSK posts *ECO NEWS* on the company intranet. The aim of this publication is to share the latest information with employees in a timely manner. In preparation for peak electricity usage in summer, NSK utilized the *ECO NEWS* as a forum for sharing power usage forecasts from Tokyo Electric Power Company, and for requesting employees to conserve energy. Via *ECO NEWS*, NSK also released information related to the safety of chemical substances, risk communication and other areas as another means of boosting environmental awareness.

● The *Eco-Card* is one of many activities under way for improving environmental awareness and create a common environmental mindset at each of NSK's plants. The portable *Eco-Card* is the culmination of efforts undertaken by a number of NSK plants, and is used by employees to keep track of the ways in which environmental conservation activities coincide with their individual work duties. This approach makes employees more conscious of NSK's environmental policies. Having employees fill in their own objectives for environmental conduct is also a tool for giving them a personal stake in environmental issues.

Environmental PR

NSK Environmental Report Receives Award for Excellence

NSK has published an Environmental Report since FY2001. This report is dedicated to presenting NSK's progress on relevant measures and management's environmental vision for the company in an easy-to-understand format.

NSK's efforts in this area were acknowledged when its Environmental Report 2003 received the Award for Excellence (Global Environmental Forum President's Award) at the 7th Environmental Report Awards, an event co-presented by the Global Environmental Forum and NAPEC, two prominent Japanese environmental associations.

NSK was praised for extending environmental conservation activities and its zero emissions drive to Group subsidiaries and the supply chain. In distribution, NSK won accolades for its detailed level of environmental consciousness in this area, including the establishment of cyclical routes (so-called "milk runs") in the supply chain between freight originators and intended recipients. The report was praised by some as a prime example of the kind of report that a company involved in BtoB business should produce.

New Advertising for Environmentally Friendly Products

To coincide with its receipt of an award for excellence in the presentation and content of its Environmental Report, NSK took out a full-page ad in the morning edition of the Nikkei Shimbun, one of Japan's foremost financial newspapers, on January 23, 2004. This ad was intended to introduce readers to the vast array of machinery containing NSK products in a variety of fields, and to illustrate the pivotal role these products play in conserving energy by supporting smooth operation. To underscore the environmental nature of these products, the design for the ad (right) featured select NSK products framed by leaves from a variety of trees. The message for the ad was "Approved by the Environment. Supported by Technology," encapsulating NSK's commitment to use technology as a tool for contributing to the environment.

Exhibit at the 37th Tokyo Motor Show

From October 22 to November 5, 2003, NSK sponsored an exhibit at the 37th Tokyo Motor Show. Based on the theme "Brand in Brands," an expression of how NSK is a brand supporting top names in the auto industry, the exhibit furthered understanding of the ways that NSK technology promotes vehicular safety and comfort, and how this technology is inherently environmentally friendly. On display were CG presentations of NSK products, including electric power steering (EPS), half-toroidal CVT and other transmission-related products, as well as electric linear actuators and hub unit bearings. Most visitors to the exhibit were especially interested in a model showing the inner workings of NSK's half-toroidal CVT.

Data Disclosure on the NSK Website

The NSK Social and Environmental Report can also be found on our Website. Instead of the one-sided presentation of information, since 2001, we have been accepting public opinions and advice through email to encourage the free communication and exchange of ideas between NSK and the public.

URL: http://www.nsk.com

Email: eco@nsk.com

Opinions and ideas from our readers

- I was surprised by the sheer number of applications for bearings in everyday life. I plan to read more environmental reports—they're real eye openers. (Male respondent, age 76)
- The fact that schools and parks are indicated on your factory maps clearly illustrates NSK's concern for the surrounding environment. The glossary at the bottom of the page also helped make the report easier to read. (Female respondent, age 32)
- In far fewer pages than other reports, NSK succinctly spells out its environmental activities. I hope future reports will offer a sample of how environmental efficiency indicators are calculated. (Male respondent, age 64)
- I want NSK to continue developing more environmentally friendly products. I also think NSK should work to cut CO_2 emissions not only through cogeneration systems but also through manufacturing line improvements. (Male respondent, age 70)

At NSK, we appreciate your opinions and suggestions, and will try to reflect them in future environmental conservation activities. Your continued input and support are much appreciated.

Product Lifecycle Initiatives

NSK implements measures
to reduce environmental impact incurred during
each stage of the product lifecycle,
from development to disposal.
This section outlines some of the initiatives that
NSK has promoted in this area.

Product Development

Product Measures

In every field imaginable, NSK products help conserve energy and resources by greatly improving the efficiency of rotational and linear movements in a broad array of industrial machines, from automobiles to home appliances. In FY2003, NSK further strengthened the activities of its Environmental Products and Product Chemicals subcommittees and aggressively promoted the creation of environmentally friendly products, measures targeting hazardous chemicals, environmental design and lifecycle assessment (LCA).

Designing and Developing Environmentally Friendly Products

One of the goals of NSK's Environmental Policy is to develop "environmentally friendly manufacturing processes and technology." To ensure that design and development divisions adopt this approach as a standard part of their daily routine, NSK established a basic common policy in FY2001 for all technical divisions, as well as a set of independent action plans for each division. From this shared vision, NSK is aiming, from the earliest planning stages, to research and develop environmentally friendly products that reduce environmental impact throughout the entire product lifecycle.

Basic Policy for the Development of Environmentally Friendly Products

To supply environmentally friendly products, we will endeavor to develop products with the least negative environmental impact throughout their lifecycle—from research and development, through design, production and use, until final scrapping. Specifically, we will manufacture products according to the following standards:

1. **Products should contribute to energy conservation and reduce negative impact on natural resources when used by customers**
2. **Products should have minimal energy requirements, and minimal impact on natural resources during the manufacturing process**
3. **Products should be manufactured using processes that are free of any hazardous substances**
4. **Products should contribute to the health and safety of end users with low noise, low vibration and low dust emissions**

Protecting the Environment Through Products and Technologies

● Creation of Environmentally Friendly Products and Environmental Conservation Technologies

Given their ability to conserve energy and resources, NSK's rolling bearings, ball screws, linear guides and other products are inherently environmentally friendly products. To conserve resources, NSK bearings are manufactured largely from scrap steel and recycled into new products at the end of their useful lives. Such recycling minimizes the environmental impact of NSK products throughout their entire lifecycle, from manufacture to disposal. In terms of environmental technology, NSK has two primary missions. The first is to create environmentally friendly products that conserve energy, consume fewer resources, are free of harmful substances and deliver other benefits at the customer-use stage. The second is the development of manufacturing technologies that minimize environmental impact by incorporating concern for the environment throughout the entire production process, from material and parts selection, to manufacture, shipping and disposal. NSK is establishing links between production, sales and technology fields in addressing these two areas.

In FY2003, NSK registered a total of 91 environmentally friendly products and environmental conservation technologies that meet its voluntary standards, 11 more than the previous year.

Elimination of Hazardous Substances

● Stronger Framework for the Elimination of Hazardous Substances

Part of NSK's basic policy for the development of environmentally friendly products demands that "products should be manufactured using processes that are free of any hazardous substances, or at least use the safest substances available." NSK has devised a framework for rapidly responding to laws and regulations at home and abroad concerning hazardous substances, as well as voluntary regulations enacted by customers and industry groups in their respective industries.

NSK's "Management Regulations for Hazardous Substances Contained in Products" were drafted specifically to curtail the use of hazardous substances in products. NSK has made compliance with these regulations the duty of all employees, and has, among other actions, moved to systematically abolish even those target substances that typically dissipate

Technology-based Environmental Matrix

Process / Environmental effects	Features and functions in product planning (Customer benefits)	Parameters for selecting materials, parts & lubricants	Considerations for manufacturing and shipping	Considerations for disposal
Energy conservation (Electricity, gas, fuel)	Compact and lightweight, Low torque, High speed CVT, EPS, Hub units, Low-torque ball bearings, Roller clutches with plastic cages, Needle roller followers	Selection of parts and materials with low environmental impact and consuming minimal energy Fast-carburizing medium carbon steel	Simplified processing, Reduction of stock removal, Reduced heat treatment times Technology for correcting heat treatment distortion Expanded micro-machine process technology	Recycling
Resource conservation (Long-life design, low resource consumption, recyclable)	Long-life, Unit design, Compact design, Corrosion and heat resistant New material long-life bearings, Linear guides with lubricating unit, Robust series bearings	Easy-to-recycle, lightweight materials Use of hollow shafts	Increased yield rate, technology for utilizing both main and odds, Near-net-shaping Cold rolling, Precision roll forming, Segment-facing technology, Use of recycled plastics	Recycling
Cleanliness, health and safety (No hazardous substances, maintenance-free, non-polluting, low noise and vibration)	Cleanliness, Tighter sealing, Lower noise and vibration, No dust, No need of lubricant replenishment Molded Oil™ bearings, Squeak-free bearings, Quiet ball-screws	Use of materials and parts free of hazardous chemicals Use of new, alternative materials, biodegradable lubricants Biodegradable greases, Switch to chromium and lead-free materials, Use of titanium alloys	No hazardous substance use within plants, Use of non-hazardous cleaning agents, Promotion of dry processing Elimination of substances subject to the PRTR Law Abolition of ozone-depleting substances	Non-leakage of hazardous substances even after disposal (through landfill or incineration)

Environmentally friendly product Environmental conservation technologies

Glossary

CVT: Abbreviation for Continuous Variable Transmission.

EPS: Abbreviation for Electric Power Steering. EPS equipment uses a motor to assist the driver in vehicle handling.

Hub unit bearings: Bearings that integrate an inner ring, outer ring, ball bearings and a bearing cage into a single unit attachable to automotive wheels.

Hollow shaft: Rounded, bar-shaped components hollowed out to achieve lighter weight

ELV Directive: Directive issued in Europe to promote less waste from and proper disposal of end-of-life vehicles.

during use. NSK recently published the third edition of these regulations, which were revised in December 2003. These revisions were designed to bring NSK into compliance not only with Europe's ELV and RoHS Directives, but with the administrative provisions laid out by companies involved in automobiles and electrical machinery. Specifically, these regulations address 46 banned substances, including brominated flame retardants and cadmium compounds; 22 restricted substances (to be phased out), such as lead compounds, hexavalent chromium compounds, and nitrites, and 9 observation substances, among them tellurium and cobalt compounds. In cases where the use of restricted substances is unavoidable, the engineers involved must propose and execute a plan for phasing out the substance until its abolition. In the case of observation substances, NSK has made it mandatory for engineers to identify alternative substances.

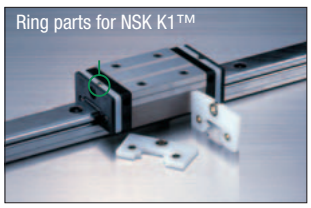
● Progress on Eliminating Hazardous Substances

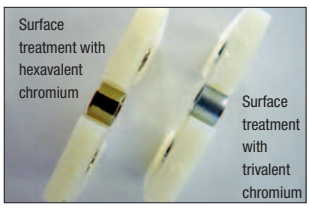
NSK has formulated and is making steady progress on a plan for eliminating from its products substances with severe environmental impact. The state of implementation of this ongoing effort is detailed in the table below. Going forward, NSK will continue its voluntary management activities and other aggressive measures to completely abolish the use of hazardous substances.

● Technological Alternatives to Hazardous Substances

NSK equips its linear guides with NSK K1 a lubrication unit compatible with a special lubricant and a solid lubricant made from a plastic-based composite. Both materials were independently developed by NSK.

Attaching this unit to both ends of a bearing enables maintenance-free operation without the need to supply additional lubrication. Previously, the surfaces of components found in the rings used in NSK K1 lubrication units were treated with hexavalent chromium to prevent rusting. NSK had already switched to trivalent chromium, a harmless alternative. This is just one example of the attention NSK pays to its smallest components in the quest to eliminate substances that negatively impact the natural environment.





Progress on Eliminating Hazardous Substances

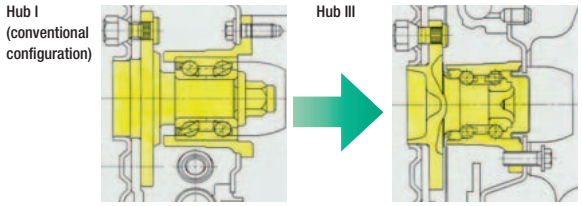
Hazardous substance	Material name	Part/product name	State of phase-out/ development of alternatives
Lead	Solder	·Electrical components	Alternatives being selected and evaluated
	Steel, non-ferrous metals	·Brass retainers for bearings	Selection of alternatives complete
	Electro-deposit paints	·Painted parts	Shift to alternatives under way
	Lead bronze	·Block bearings for roller clutches	Adoption of alternatives completed in March 2004
Cadmium	Nickel cadmium batteries	·Nickel cadmium batteries	Alternatives in use for new designs
Hexavalent chromium	Surface treatments	·Bearing shields ·Core plate for bearing seals	Adoption of alternatives completed in March 2003 Adoption of alternatives completed in March 2004
		·Ring parts for NSK K1	Shift to alternatives under way
Mercury	Electronic components	·Substrate parts	Alternatives under consideration
Brominated flame retardants (PBB, PBDE)	Wire coatings	·Mechatronic products	Adoption of alternatives completed in March 2004

Promotion of LCA

Life Cycle Assessment (LCA) is a means of quantitatively determining and evaluating the amount and type of environmental impact incurred by a product during each stage of its lifecycle, from the extraction of raw materials, to manufacture, processing, distribution, sale, consumption, use and recycling or disposal. NSK has conducted LCAs for each of its key product groups (bearings, precision machinery and parts, and automotive components).

LCA Analysis of the Shift to Wheel Hub Unit Bearings

An LCA analysis on the replacement of the conventional Hub I configuration with a Hub III type revealed that NSK's hub unit bearings for automobile wheels could reduce CO_2 emissions by as much as 89kg per vehicle. Due to the massive volume of automobiles produced, the adoption of the Hub III configuration by just 10,000 vehicles would reduce CO_2 emissions by an enormous 890t.



Assumptions

1. Vehicle details
   Class: 1,600cc passenger car
   Weight: 1,050kg
   Mileage: 17km/l
2. A torque reduction of 20% is assumed for each wheel
3. Vehicle useful life is assumed to be 160,000km
4. The following are assumed to affect mileage
   *Lower torque on wheel bearings, helps reduce resistance when vehicle is in motion
   *Integrating wheel bearings and peripheral parts into a single unit results in lighter weight, contributing to lower overall vehicle weight (outlined in yellow above)
5. LCA calculations per vehicle

Looking ahead, NSK aims to reflect the results of LCAs in product planning and to continue actively implementing LCAs in response to future user needs.

Glossary

RoHS Directive: Directive issued by the European Parliament and Council of the European Union concerning restricted use of specified hazardous substances in electric and electronic equipment.

Hexavalent and trivalent chromium: Chromium compounds are typically divided into those consisting of trivalent chromium, which imparts a blue-violet color, and hexavalent chromium, which causes compounds to range in color from yellow to red. Hexavalent chromium compounds are highly volatile, damaging skin or nasal membranes if touched or inhaled. Hexavalent chromium has also been identified as carcinogenic.

NSK Product Showcase

The Megatorque Motor® PS Series: A High-torque, Lightweight and Compact Design, Built for High Speed and High Resolution

Environmentally friendly products (Energy and resource conservation)

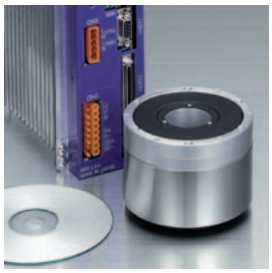
Megatorque, the first direct-drive motor for industrial use commercialized by NSK, makes it possible to directly move a load without the use of gears or other mechanical speed reducers. The substantial boost in productivity and the simplification of equipment made possible by this motor is leading to its adoption at a growing number of manufacturing sites.

Products such as flat-panel televisions, DVD recorders, and digital cameras utilize a number of semiconductor, liquid crystal and other components, which are manufactured using Megatorque motors. DVDs have witnessed a sharp rise in demand as a storage media for video, and DVD production lines also utilize a number of Megatorque motors. In this climate, NSK is meeting market needs with the development of its PS series of Megatorque motors, all of which contribute to greater energy conservation for production lines and in other areas.

NSK, as a pioneer in direct-drive motors, will continue to leverage its track record and experience in this field to support industrial growth.

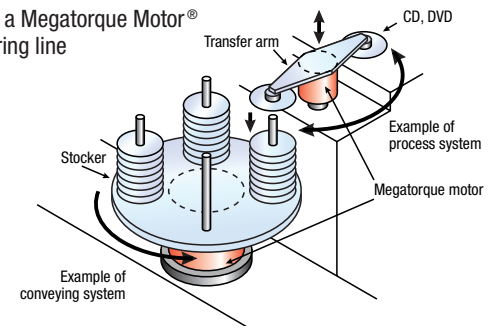
Features

1. **Achieves high resolution and rotational speed**
2. **Motor is more compact with high output torque (twice that of previous NSK models)**
3. **Built-in position detector for precision accuracy**
4. **More compact drive unit (35% smaller than previous NSK models)**



Megatorque Motor® PS series

Example of a Megatorque Motor® manufacturing line



High-speed, Low-noise BSS Series Ball Screws: Reducing Irritating Noise and Vibration Around Machinery

Environmentally friendly products (Energy and resource conservation, health and safety)

The typical setup for conveying a given object usually requires chains, belts, rubber, gears, hydraulic pressure and screws (both square and ball screws), among other elements. One of the most reliable of these is ball screws, used in a range of industrial fields due to their high precision and superb durability. NSK began producing ball screws 45 years ago, and has lived up to its name as the world's leading ball screw manufacturer by launching a long list of groundbreaking products. But in recent years, the basic requirement for outstanding product performance and quality has been eclipsed by demands for products that incorporate concern for the natural environment.

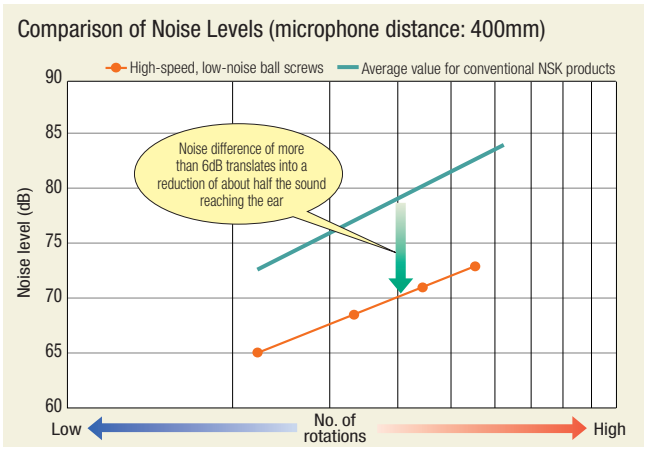
Technical expertise honed over the years has enabled NSK to develop the next generation of ball screws—the high-speed, low-noise BSS Series. Adopting a new ball revolving technique allows BSS ball screws to move at 200m/min., the world's fastest speed. Compared to earlier NSK ball screws, the BSS Series cuts noise levels by a significant margin, with the external diameter of the nut reduced by 30%. The end-result is a product that is faster, quieter and more compact than before.

Rotating faster, yet with less noise than previous models, the BSS Series of ball screws is contributing to improved energy and resource conservation for a variety of conveyor systems and machine tools, as well as helping to improve the working environment.

Features

1. **Noise reduction of more than 6dB compared to conventional products, more agreeable sound**
2. **World's fastest dn value of 220,000**
3. **External diameter of nut reduced by 30% for a more compact product**

High-speed, low-noise BSS Series ball screws



EPS (Electric Power Steering) Improves Automobile Fuel Efficiency

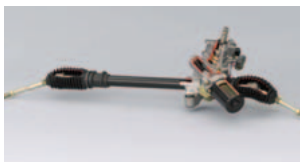
Environmentally friendly product (Energy conservation, clean)

EPS equipment uses a motor to assist the driver in vehicle handling. Compared to current mainstream hydraulic power steering, EPS is easier to install in vehicles, with the added benefit of improving gas mileage by 3% to 5%. Since power steering fluid is not used, EPS releases no pollutants, from production through to final disposal. This point enables EPS to contribute to environmental measures. EPS also contains an onboard ECU (electric control unit), a step taken not only in pursuit of enhanced auto safety technology and comfort, but to optimize EPS for the emerging information systems of tomorrow's advanced IT society.

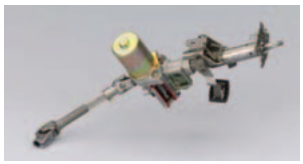
NSK's EPS was first deployed in subcompact cars in 1988. From there, EPS expanded beyond the small car market, helping NSK secure its spot as a

leading manufacturer of EPS as automakers in Japan and overseas increasingly adopted these components for compact cars. With mechatronics technology already in hand, NSK proceeded to develop its own motors and ECU, resulting in an integrated framework that even allows NSK to evaluate performance in actual vehicles.

In the past few years, NSK has developed EPS systems that combine its high-output motors and unique automated control technology with mechatronic parts that effectively transmit the power generated. The result is EPS that is now compatible with mid-size cars in the 2,000cc class.

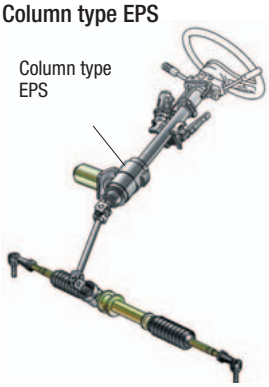


Pinion type EPS



Column type EPS

Configuration of Column type EPS



High-performance Cylindrical Roller Bearings— Double-row Cylindrical Roller Bearings, Ultra High-speed Single-row Cylindrical Roller Bearings—

Environmentally friendly products (Energy and resource conservation, health and safety)

The drive to raise the productivity of machine tools in recent years is sparking the need for high-speed, high-rigidity bearing products. NSK is responding by developing bearings to meet this demand, contributing to greater energy and resource conservation, as well as an improved working environment.

● High-rigidity Series of Double-row Cylindrical Bearings

The past few years have witnessed the growing use of hybrid processing machinery, composed of lathes equipped with machining functions. What is more, the maximum rotating speed (d_mn value) of the main shaft of such machinery is now as high as 800,000. This has led to a sharp rise in the heat generated by bearings and motors. The danger of thermal displacement of the shaft caused by this heat has sparked concerns over a decline in the degree of processing precision. Built using new technology unique to NSK, the high-rigidity series of double-row cylindrical bearings are longer lasting, quieter, faster, generate less heat and enable greater precision than conventional models.

Features

1. Longer life

Superior resistance to heat, coupled with adoption of a high-rigidity PPS plastic bearing retainer, reduces initial wear and raises the useful life of grease.

2. New type of bearing retainer for lower noise

3. Higher speeds with less heat

Simple, high-precision bearing retainer design allows for speeds of more than 1 million d_mn value.

4. Greater precision

Shaft runout is minimized thanks to the out-of-roundness and diameter difference of each roller.

● ROBUST Series of Ultra-high-speed, Single-row Cylindrical Roller Bearings

Machining centers of late have tended to opt for built-in motors, particularly high-speed types capable of more than 15,000 rpm. Because the bearings in the main shaft of these motors require a small amount of lubricant, cylindrical roller bearings cannot be used for this application, leading to the use of angular-type ball bearings.

With new technology, NSK's newly developed ROBUST series of ultra-high-speed, single-row cylindrical roller bearings allow for the ultra-high speeds required by integral motors, while generating less heat and improving heat seizure resistance.

Features

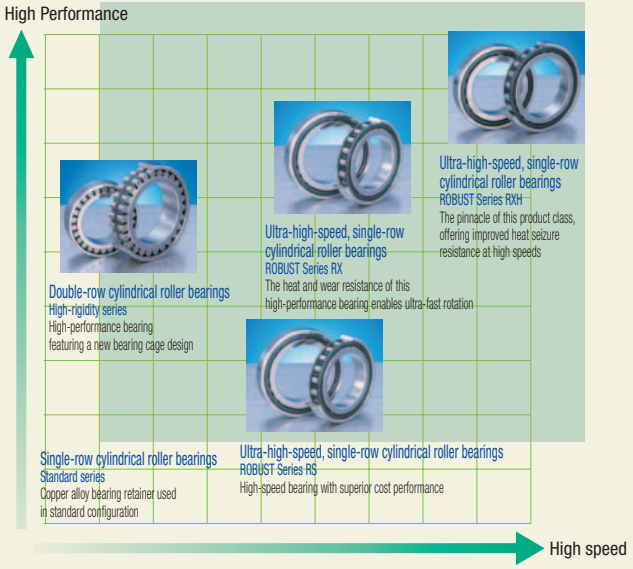
1. Ultra-high-speed and less heat

Adopting a bearing retainer made from highly heat-resistant PEEK resin enables an optimal design for generating less heat. An oil/air lubricant, meanwhile, allows for an ultra-fast 3 million d_mn.

2. Improved heat seizure resistance

Performance is improved by combining heat-resistant steel with ceramic rollers.

Responding to Diverse Needs with a New Series of High-performance Cylindrical Roller Bearings



Glossary

d_mn value: An indicator of the severity of rotational speed, determined by the speed and the size of the bearing.

Manufacturing

Measures Against Global Warming

By FY2010, NSK is aiming to reduce CO_2 emissions per production unit by 23% compared to levels in FY1990. In FY2003, CO_2 emissions per production unit fell by 7.4% year on year, or 21% less than FY1990. This achievement places NSK well ahead of its initial target. NSK subsidiaries also saw improvement, with emissions down 3.9% year on year.

Goals for Measures and Activities

NSK is lowering CO_2 emissions through more efficient energy use and by switching to cleaner alternative energy. The company is also enacting the following measures to combat global warming.

- **Reduction of fixed energy consumption (i.e. energy requirements not directly related to production)**
- **Conversion to high-efficiency energy facilities**
- **Establishment and enforcement of control standards for energy facilities**
- **Careful control of energy use**
- **Conversion to natural gas**

NSK will also reduce water consumption, in line with its policy to take as proactive a stance in conserving precious water resources as it does to energy conservation.

Cogeneration Systems and Other Methods for Achieving Objectives

NSK has installed cogeneration systems (see page 31) at its plants and taken other steps to actively promote activities for conserving energy.

Today, NSK is enacting a program for redefining its production framework called the Advanced Production System (APS). By completely eliminating systemic waste, NSK is seeking to improve production efficiency.

- **Upgrading High-efficiency Turbo Chillers**

As part of measures at the Fujisawa Plant to protect the ozone layer, NSK is upgrading its turbo chillers by replacing the CFCs typically used as a refrigerant with an alternative, HCFC-123. A balance of several characteristics make HCFC-123 a good refrigerant, including a smaller global warming coefficient and highly efficient refrigeration performance. HCFC-123 is also less likely to leak from equipment as it requires a lower operational pressure, and has a short life in the atmosphere, dissipating before it reaches the ozone layer. Upgrading these high-efficiency chillers allowed NSK to achieve an annual reduction in CO_2 emissions of approximately 180t-CO_2.

- **Reducing Energy During Idle Periods**

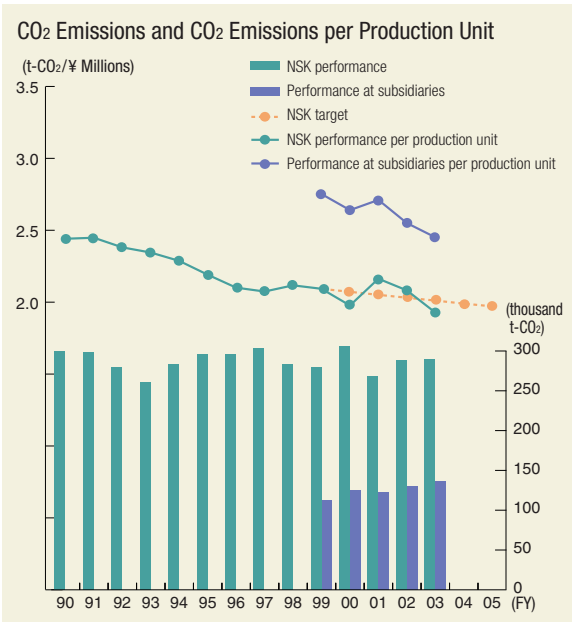
At each plant, activities are under way to reduce the amount of energy wasted by manufacturing lines used to produce specific product models when not operational. Realizing that motors driving the hydraulic pumps used to operate grinding tables at the Otsu Plant were running even when the tables were not in use, NSK switched to inverters to reduce this wasteful consumption of energy. While the energy savings per table are small, the aggregate benefit once expanded to all grinding tables is substantial.

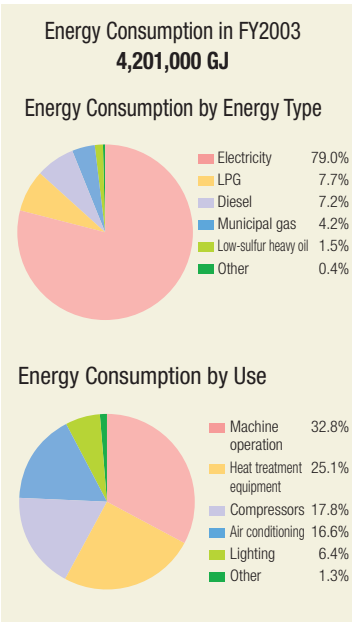
- **Saving Water Through Reusable Grinding Coolant**

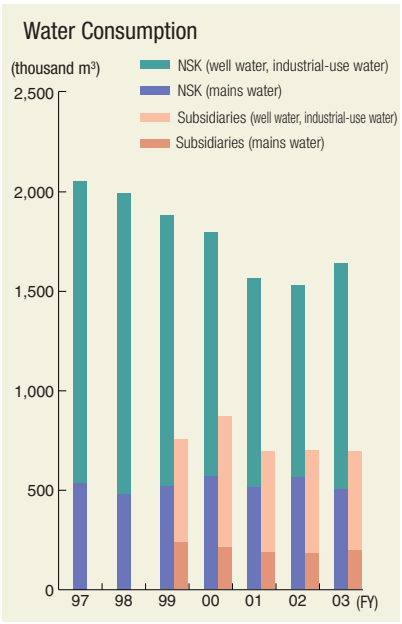
A large quantity of grinding swarf is generated during the grinding process. About 40% of grinding swarf typically consists of water used during grinding. While grinding swarf was previously recycled as is, compressing it into briquettes now squeezes free the water, allowing the water to be reused in the grinding process.

Promoting Fuel Conversion to Achieve Objectives for 2010

NSK subsidiaries posted a year-on-year improvement of 3.9% in CO_2 emissions per production unit. The NSK Group is continuing to make progress on improvements for reducing fixed energy consumption. To this end, expanding the installation of cogeneration systems, which efficiently utilize both heat and electricity, and converting to natural gas, which has a smaller CO_2 emissions coefficient, will become priority issues in the campaign to combat global warming.







Note: CO_2 emissions per production unit means CO_2 emissions per value-added production of ¥1 million (value-added production = production - disbursements).
CO_2 emissions of purchased electricity are calculated assuming that the electricity was generated using a thermal-power generation system.
Energy conversion values are calculated based on peak demand figures.
Conversion of LPG, kerosene, low-sulfur heavy oil, municipal gas, diesel and gasoline consumption to CO_2 emission values is based on guidelines from Japan's Ministry of the Environment.

Glossary

ESCO (Energy Service Company): Company that provides comprehensive services regarding energy conservation at industrial plants and buildings. One unique feature is that remuneration is performance based, with the ESCO receiving a certain percentage of the customer's energy savings in exchange for its services.

Measures at NSK Precision Co., Ltd.—Maebashi Precision Machinery & Parts Plant

Installation of a Hybrid Solar Cogeneration System Helps to Reduce Energy Consumption

The Maebashi Precision Machinery & Parts Plant of NSK Precision Co., Ltd., an NSK operating company, manufactures ball screws, linear guides and other precision machinery and parts. The plant has long taken a dynamic approach to addressing the problem of global warming. The impact of production trends in the last few years, however, has caused a sharp increase in CO_2 emissions per production unit. Because of the products it manufactures, working temperature management at the plant is extremely rigorous, requiring the year-round operation of air conditioning equipment to maintain a constant room temperature. The result is that electricity accounts for the bulk of the plant's fixed energy consumption.

To improve this situation, the plant hired an Energy Service Company (or ESCO), which installed a cogeneration system. This move enabled the plant to utilize excess generated heat for air conditioning and a range of other uses, raising heating efficiency by a substantial 52%. This positive result was further improved by the installation of solar cells and the adoption of inverters for air conditioner pumps. Despite only operating from mid-fiscal year, these additions helped the plant lower its average monthly output of CO_2 by 180t-Co_2, and improved CO_2 emissions per production unit by nearly 15% year on year.

Encouraged by these results, the Maebashi Precision Machinery & Parts Plant is working to use excess heat more extensively in a far-reaching effort to curtail CO_2 emissions.

NEDO (New Energy and Industrial Technology Development Organization), concerned with governmental policies in Japan related to the development of energy, industrial, and environmental technologies, has also recognized efforts at the plant by selecting it as a model facility.

Major Initiatives

● Installation of Cogeneration Equipment

Two 2,000kW-class diesel engines were installed that transfer exhaust and high-temperature water to an exhaust-gas steam boiler during operation. Direct-fired and hot-water fired absorption chillers convert the steam and heated water to cold water and vapor, which can then be used as a source of cold water for air conditioners and in other manufacturing equipment.

①Use of excess heat as a heating source for maintaining constant room temperature

Electric chillers were the previous choice as heating sources for maintaining constant room temperature. Now by utilizing excess heat, cogeneration equipment produces cold water that can be used for air conditioning. This has allowed NSK to simultaneously conserve energy and reduce its level of CFCs.

②Use of excess heat as an oil cooler for manufacturing equipment

Until recently, separate miniature chillers were required to maintain the temperature of grinding coolant for each piece of manufacturing and processing equipment. The cold water produced from the utilization of excess heat has since enabled NSK to redesign its conventional oil coolers.

③Use of excess heat as a pre-heater

Maintaining a constant room temperature in the winter requires a pre-heater to raise the temperature of outside air. Traditionally, this has meant the use of electric pre-heaters. By installing a heat exchanger on the component that draws in air from outdoors, steam from the cogeneration equipment acts as a pre-heater to warm the air, a step that has lowered electricity consumption.

④Use of excess heat as an ordinary heater

Today, kerosene powers most of the water cooling and heating units that provide the heat source for conventional heaters. Hot water produced by utilizing excess heat has helped to conserve fuel by reducing the load placed on water cooling and heating units.

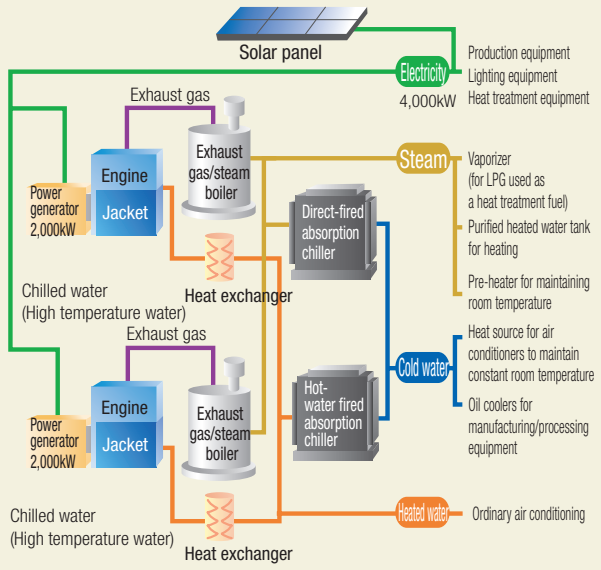
⑤Use of excess heat to vaporize LPG for use as a heat treatment fuel

Conventional vaporization of LPG, used to fuel gas furnaces during manufacturing processes, required the use of electric heaters in the past. Employing steam generated from utilizing excess heat has enabled NSK to eliminate the use of electric heaters for LPG vaporization.

● Solar Panels

While still small in scale, NSK has adopted renewable energy sources by installing solar panels on the rooftops of its plants, a measure that has helped to reduce power consumption in the administrative wings of these facilities.

■ Overview of the Hybrid Solar Cogeneration System



● Inverters as Air Conditioner Pumps

As part of safety design initiatives, NSK specifically selected pumps with excess volume for use in air conditioners. Steps have since been taken to install inverters for these large volume pumps, which operate for extended periods of time. This has reduced electricity consumption by a wide margin. The inverters adopted by NSK are relatively simple types that attach directly to ductwork.

● Review of Air Compressor Units

Previously, NSK regulated the number of air compressor units in operation by controlling the amount of pressure. NSK has also substantially reduced power consumption by adding an airflow control system and taking steps to curtail unnecessary compressor operation during times of low demand.

Manufacturing

Waste Reduction and Recycling Measures

In FY2003, NSK maintained the zero emissions status achieved by all plants in FY2002, and cut its volume of waste sent to landfill by 27t (45%) by raising the bar on its own waste reduction initiatives.

To boost its recycling ratio, NSK stepped up waste sorting and developed new recycling applications. These and other actions resulted in a recycling ratio of 94.8%, a year-on-year improvement of 0.4%.

Guiding Policies

Through extensive implementation of the 3Rs (Reduce, Reuse and Recycle), NSK is advancing measures designed to contribute to the development of a recycling-oriented society. These measures include zero emissions, which aims to completely eliminate the amount of unusable waste sent to landfill, and initiatives for boosting NSK's recycling ratio.

- **Reduce**
  Improve yield ratio by reviewing the processing conditions for products and by improving the production process.
- **Reuse**
  Reuse oils, cardboard boxes, containers and others.
- **Recycle**
  Improve the recyclability of non-product waste and develop uses for recycled materials.

Maintaining Zero Emissions and Promoting Recycling

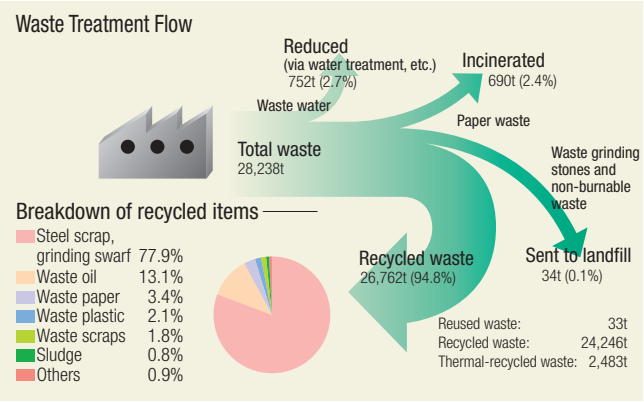
NSK defines zero emissions as sending 1% or less of the total volume of waste to landfill. Efforts to realize zero emissions began in 2000. By FY2002, NSK had achieved this status at all of its plants. NSK maintained this status in FY2003, and enhanced its efforts by encouraging each plant to share the measures responsible for its success among NSK's plant network. The result was a reduction of 27t, or 45%, in the amount of waste sent to landfill compared with FY2002, accounting for 0.1% of NSK's total volume of waste generated. The recycling ratio also rose 0.4% to 94.8%.

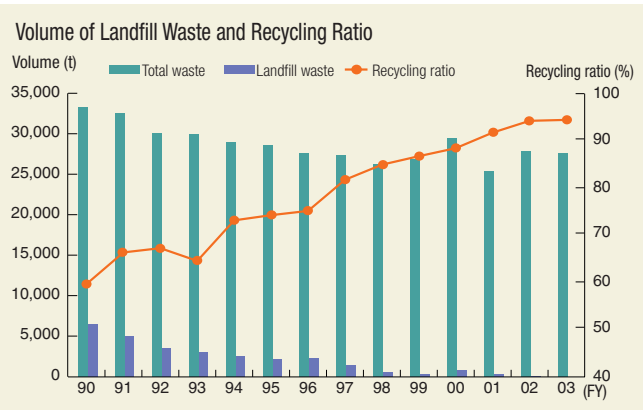
● Recycling Grinding Stones

In the past, the difficulty of recycling grinding stones meant most were sent to landfill after use. The Ohtsu Plant became a model for measures to recycle these stones by developing recyclable abrasives in collaboration with a grinding stone manufacturer in FY2001. NSK Fukushima Co., Ltd. soon followed suit, resulting in a reduction of approximately 2t in the amount of waste sent to landfill.

● Recycling Plastic Waste

Megatorque motors are just some of the mechatronic products manufactured at NSK Precision Co., Ltd.'s Kirihara Precision Machinery & Parts Plant. Certain controller parts and other defective components generated in the manufacturing process were typically crushed and sent to landfill. Meticulously sorting this waste into metal components, plastic components, printed circuit boards and other categories enabled NSK to reduce its volume of waste sent to landfill by 5t.

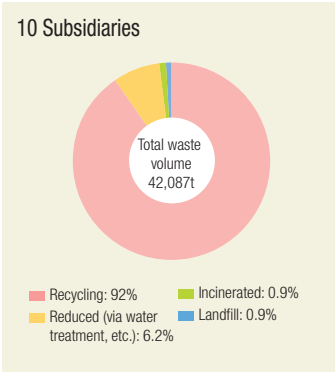




● Zero Emissions at Subsidiaries

The six NSK subsidiaries achieving zero emissions as of FY2002 maintained that status in FY2003. Successful measures at plants operated by these companies gave further momentum to zero emissions activities, yielding a recycling ratio of 92%, up 1.7% from the previous fiscal year.

Sights are now set on zero emissions at all NSK Group companies by enacting measures to achieve this milestone by FY2004.



Recycling Ratio Above 98% by FY2010

By maintaining zero emissions, and through better waste sorting and reductions in waste volume, NSK is redoubling efforts to raise its recycling ratio to at least 98% by FY2010.

Glossary

Zero emissions: Defined as the state where direct landfill waste accounts for less than 1% of total waste emissions. Landfill encompasses waste after intermediate treatment, such as dehydration, crushing or compressing, as stipulated under Japan's Waste Disposal Law. Landfill includes industrial waste such as metal by-products, oil and sludge, as well as business-related municipal waste such as waste paper and wood scraps.

Hazardous Substance Countermeasures

NSK has a variety of measures designed to minimize its use of hazardous substances. In FY2003, the total volume of substances subject to the PRTR Law handled by NSK fell 33% compared to FY2000. In initiatives to protect the ozone layer, NSK worked to eliminate substances not ordinarily released into the environment, such as specified CFCs used as refrigerants and halon employed in fire extinguishers. NSK met its FY2003 targets, reducing each by 64% and 36%, respectively.

Reduction Targets

NSK has regulations in place governing the management of hazardous substances used in the course of plant operations and production, and is systematically reducing or replacing such substances with less harmful alternatives.

- Completely eliminate ozone-depleting substances (specified CFCs, halon-based fire extinguishers) by FY2005
- Reduce substances subject to the PRTR Law by 50% (compared to FY2000) by FY2005
- Reduce use of machining oil with chlorine-based additives by 50% (compared to FY2000) by FY2005.

Reduction of Ozone-depleting Substances and Promotion of Alternatives

● Reduction of Ozone-depleting Substances

NSK abolished the use of ozone-depleting substances for cleaning processes in 1994, and is now reducing other types of ozone-depleting substances, namely specified CFCs used as refrigerants and halon employed in fire extinguishers.

In FY2003, NSK upgraded its turbo chillers and machine oil coolers, shrinking the volume of CFCs by 64% compared to FY2000. Similarly, the adoption of alternatives lowered the amount of halon-based fire extinguishers at NSK sites by 36%.

● Reduction of Substances Subject to the PRTR Law

In FY2003, NSK replaced 38 products containing substances subject to the PRTR Law at each of its plants, for a reduction of 6.4t. Among the substances replaced were a grinding coolant containing 2-amino ethanol and a cleaning fluid containing poly (oxyethylene) alkyl ether. The total volume of substances subject to the PRTR Law handled by NSK declined 33% compared to FY2000.

Xylene and toluene, contained in diesel and gasoline used mainly to fuel air-conditioning systems and forklifts, accounted for nearly 95% of substances at NSK subject to the PRTR Law.

In a breakdown of released and transferred substances, release to the atmosphere accounted for 16%, due to evaporation of cleaning solvents, paints and thinners. The bulk of substances subject to the PRTR Law (78%) consumed by NSK were incinerated.

● Reducing Use of Chlorine-based Machining Oil

Following a string of tests to determine product quality and process durability, NSK found non-chlorinated alternatives for eight varieties of grinding coolant. This step reduced its use of chlorine-based machining oil by 1t. In FY2003, the total volume of these substances handled by NSK declined 39% compared to levels in FY2000.

● Controlling Banned Substances at the Source

NSK has stringent internal controls for fully preventing the use of banned substances in primary and secondary materials used in manufacturing processes and in packaging and packing materials. NSK manages these substances at source, namely during the purchasing and procurement stages.

Initiatives at Subsidiaries

Together with the parent company, NSK subsidiaries have common objectives and conduct activities regarding the elimination of hazardous substances. NSK, for example, abolished the use of chlorinated solvents, specifically dichloromethane, in 1999. The few remaining subsidiaries that used dichloromethane have since followed suit by improving cleaning techniques, resulting in the complete elimination of this chemical within the NSK Group. NSK subsidiaries will remain committed to enhancing their environmental quality management systems to ensure full compliance throughout the entire Group with regulations and demands for the elimination of hazardous chemical substances.

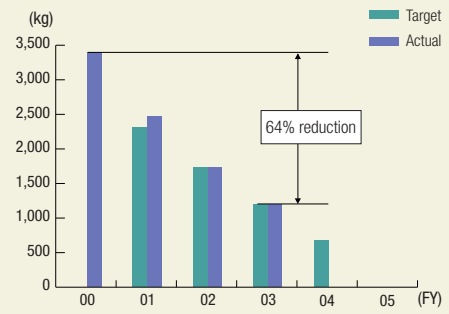
Survey of Substances Subject to the PRTR Law (FY2003)

(kg/yr)

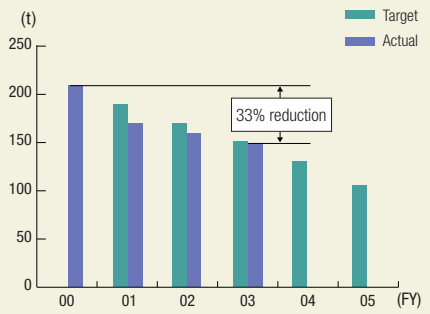
Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled	Number of sites where used
16	2-amino ethanol	1,014	0	0	710	304	0	0	1
40	Ethyl benzene	4,006	669	0	0	322	3,015	0	2
63	Xylene	102,991	15,053	0	0	2,084	82,116	3,738	8
224	1.3.5-trimethyl benzene	1,405	266	0	0	129	1,010	0	1
227	Toluene	35,239	7,681	0	0	1,195	26,362	0	5
299	Benzene	724	2	0	0	0	722	0	1

Note: The annual volume of Class 1 designated chemical substances being handled exceeding 1t, and specified Class 1 designated substances exceeding 0.5t, are listed in the above table.

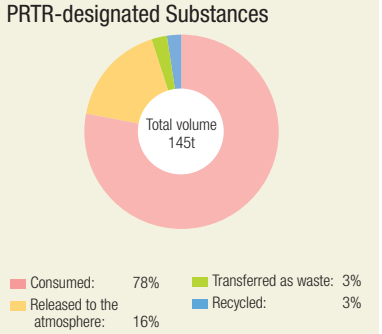
Stockpile of Specified CFCs



Volume of PRTR-designated Substances Handled



Release and Transfer Amounts of PRTR-designated Substances



Glossary

PRTR Law: Law concerning the reporting of releases to the environment of specific chemical substances, designed to encourage improvement in chemical management.
Consumed: Amount of substances subject to the PRTR Law converted to other substances following chemical reactions (incineration, etc.) incorporated in or included with products that are removed from the site.

Manufacturing

Compliance and Environmental Risk Management

NSK and its subsidiaries strive to reduce environmental risks by ensuring compliance with environmental laws and environmental conservation agreements at its plants, and by establishing voluntary standards for dealing with critical risk items. The Group also implements various measures to minimize its environmental impact on the air, water and soil.

Preserving Air Quality

The equipment used at NSK with the most pronounced impact on air quality includes air conditioning equipment and heat treatment facilities. NSK is minimizing this impact by using natural gas, LPG, kerosene and low-sulfur heavy oil as fuel. In FY2003, NSK recorded NOx emissions amounting to 82.9t, and SOx emissions of 4.6t, and is looking to further reduce this environmental impact. Particulate and smoke tests also indicated that the density of soot and dust and the volume of NOx and SOx emissions at all NSK plants satisfy emission standards.

Preserving Water Quality

Wastewater carrying the greatest impact on water quality includes water-based emulsified wastewater generated from grinding and heat treatment processes, and wastewater from the barrel process. NSK is systematically installing highly efficient "evaporator-concentrator" facilities in a drive to treat water-based emulsified wastewater. To treat potable and other mains water, NSK is connecting treatment equipment directly to sewer plumbing, and utilizing wastewater purifier tanks. In FY2003, NSK's BOD release into rivers totaled 3.6t. Going forward, the company is determined to lessen the environmental impact caused by the release of such wastewater into rivers and to reduce the total volume of wastewater it generates.

Responding to Environmental Risks

NSK established a Risk Management Committee to properly respond to various risks. This was followed by compilation of the *NSK Risk Management Manual*, to instill an awareness of risk management among employees throughout the NSK Group. The manual provides tips on preventing environmental and other accidents, as well as the correct methods and procedures for responding to crisis situations. Training and drills based on this manual take place at NSK on a daily basis.

● Preventing Accidental Oil Leaks

In accordance with *NSK's Voluntary Standards for Underground Tanks and Pipes Containing Dangerous Substances*, regular seal tests are performed on underground tanks and pipes to prevent accidental oil leaks. In FY2003, seal tests were conducted on 57 underground tank and pipe facilities, with no anomalies detected at these facilities. NSK has drawn up protocols for daily inspections carried out on equipment at each plant and built dikes in an additional effort to prevent accidental oil leaks. Discharge ponds and oil-water separation equipment have also been set up to contain the spread of pollution in the event of an accident.

● Auditing for Environmental Risks and Accidents

In FY2003, NSK adopted auditing for environmental risks and accidents. This step was viewed as an opportunity to devise protocols for underground oil tanks, machine coolant equipment and heat treatment equipment at 19 Group sites, drafting measures for combating oil spills, and confirming the existence and status of emergency protocols and measures to prevent the recurrence of past accidents. The results of these audits led NSK to review locations where oil drums are stored, measures for preventing accidental spills when receiving oil, and the stockpile of oil kept on premises.

Auditing at NSK

● Emergency Drills

NSK has equipment on hand such as sandbags and oil-absorbing mats, conducts drills and has an emergency response structure in place to minimize environmental impact in the event of an accident.

NSK and its subsidiaries carried out 119 drills in FY2003, and have taken precautions to contain the spread of pollution should an accident take place. At NSK Precision Co., Ltd.'s Maebashi Precision Machinery & Parts Plant, one drill was based on the assumption that a vacuum hose used by a waste processing company to collect waste had become disconnected with waste liquid still inside, spilling the contents on the ground. Actions then focused on containing the hypothetical leak and verifying the plant's emergency response structure.

Drill for containing the spread of a waste fluid leak

Complaints From Local Residents

In recent years, NSK has fielded complaints related to the living environment around its plants amid the increasing urbanization of the surrounding regions. In FY2003, NSK received 4 complaints from local residents regarding noisy exhaust fans, oil smells and others issues. These concerns prompted NSK to implement measures for improving its facilities and environmental management systems, and the company is committed to ongoing improvements in this area. During FY2003, NSK was not subject to any fines or penalties due to accidents resulting in the release of pollutants or in connection to its environmental conservation activities.

Glossary

BOD: Biochemical oxygen demand. Used as an indicator to determine the density of organic water pollutants and indicates the volume of oxygen consumed in order to oxidize the pollutants contained in the water using microbes.

Logistics Measures

Comprehensive and environmentally sound logistics activities are one of NSK's goals. To this end, the company is stepping up measures targeting procurement logistics, integrating logistics between subsidiaries, and converting to recyclable packaging and packing materials, among other actions. In FY2003, logistics subsidiary NSK Logistics, Co., Ltd. acquired ISO 14001 certification. And in terms of gas emissions per production unit, CO_2 and NOx emissions improved 4.4% and 2.4%, respectively, compared to FY2002. Strict compliance with diesel vehicle regulations, meanwhile, helped cut PM emissions by 14.9%.

Guiding Policies

● **Reduce the Environmental Impact Arising From Transportation (Reduce emissions of CO_2, NOx and PM)**

- Improve loading efficiency by combining product logistics with procurement logistics
- Reduce vehicle mileage and number through implementation of joint deliveries and "milk-run"-style delivery routes
- Promote eco-oriented driving styles and shift to low-emission vehicles

● **Reduce Environmental Impact of Packaging and Packing**

- Promotion of 3Rs (reduce, reuse and recycle) in packaging and packing materials
- Review recycling of plastic boxes

Reducing the Environmental Impact of Transportation

● **Promoting Joint Transportation Through Stronger Group Ties**

Previously, logistics activities were carried out independently by NSK plants and those operated by NSK subsidiaries. NSK reviewed this situation, with the goal of boosting transportation efficiency by taking advantage of joint transportation activities, return trips and other logistics elements. The result was a tie-up between NSK and subsidiary NSK Logistics Co., Ltd. that is improving logistics efficiency through integrated operations.

In December 2003, the product transportation arm of NSK Needle Bearing Ltd. was merged with NSK Logistics, enabling NSK to further lessen its impact on the natural environment when delivering products to customers.

● **Compliance With Diesel Ordinances in the Tokyo Metropolitan Area**

NSK outsources the transport of products, components, materials and waste to regional logistics professionals. As a shipper of goods, NSK meets its legal and regulatory obligations by demanding that these professionals are in strict compliance with diesel ordinances in the Tokyo Metropolitan Area and laws regarding NOx and PM. NSK has also added other environmental criteria to its standards for evaluating and selecting new logistics professionals, including the degree of compliance with laws and regulations.

● **Awareness of Eco-oriented Driving Styles**

The topic of eco-oriented driving is incorporated into the training curriculum for drivers employed at NSK plants and logistics bases. At the same time, NSK is helping to place more signboards about turning engines off when parked, in a bid to raise the environmental consciousness of both its own employees and logistics professionals.

Reducing the Impact of Packaging and Packing Materials

● **Promoting Returnable Export Packing Containers**

In addition to containers used domestically, NSK is also converting to returnable packaging used to transport exported products. With concern for the environment in mind, NSK began shifting to the same returnable plastic boxes used in Japan, rather than conventional cardboard containers, for products imported from a joint venture in China, where production commenced earlier in the year.

Recycling Plastic Boxes at the Fujisawa Plant

At the Fujisawa Plant, the need arose for the replacement of an enormous volume of plastic boxes due to the large number used within the plant itself. To cope with this, the plant's environmental management team, in cooperation with Mitsubishi Plastics, Inc., converted this large volume of plastic boxes into raw materials for the fabrication of approximately 20,000 new boxes. NSK already has a track record in recycling boxes used to transport products, having converted some 70,000 plastic boxes into reusable material in FY2003.

Unused plastic boxes

Newly colorized plastic boxes

"Get rid of unused boxes ASAP"
"Can't we use different colored boxes to distinguish work in progress from finished goods?"
These were the sorts of instructions and inquiries put to the environmental management team headed by team manager Tadashi Kozasa by the plant manager and the manager of the manufacturing division at the Fujisawa Plant. As the benefits of NSK's Group-wide APS production innovation activities began to emerge at the plant, the level of work in progress began to gradually decline at the manufacturing stage, leaving a mountain of leftover plastic boxes that was pointed out by local residents during a tour of the plant grounds. Another issue was presented by the manager of the manufacturing division, who was seeking a way to quickly distinguish work in progress from goods in storage within the plant. Until that time, the given contents of a box could only be known by reading the attached label. As team manager, Kozasa compiled this input, and eventually struck upon the idea of reusing plastic boxes in this way by changing their color. In conjunction with Mitsubishi Plastics, Inc. the original manufacturer of the boxes, the team researched the color, size and condition of its stockpile of unused plastic boxes, and conducted a battery of quality tests on recycled boxes. Leftover yellow and white boxes and those of odd sizes were then used as raw materials to create new plastic boxes in green, a color exclusive to the Fujisawa Plant. The introduction of these boxes at manufacturing sites has become a part of ongoing APS activities, allowing the observer to instantly identify work in progress and finished goods.

Glossary

PM: Particulate matter emitted from diesel engines.

Milk run: System of delivery resembling milk delivery routes, where delivery is performed through a single circulatory route by traveling to multiple pick-up points and delivery destinations. In comparison with repeated trips between pick-up points and delivery destinations, the system reduces mileage and the number of trips, as well as environmental impact.

Eco-oriented driving: Refers to an environmentally sensitive style of driving for reducing fuel consumption by avoiding sudden acceleration and stopping, as well as shutting off engines when parked.

Procurement

Green Procurement

NSK's efforts to deliver products to customers with a lower impact on the environment are not limited to its own organization. Accordingly, NSK has embarked on initiatives at a new stage, procurement, reviewing the *NSK Green Procurement Standards* by emphasizing the vital link between reducing the environmental impact of components and raw materials and the environmental conservation measures taken by suppliers.

Action Guidelines

● **Green Procurement (Raw Materials, Parts and Materials)**

- Reduce the environmental impact of raw materials, parts, materials and packaging materials
- Promote the management and elimination of hazardous substances
- Encourage efforts by suppliers

● **Green Purchasing (Purchase of General Goods)**

- Reduce the environmental impact of purchased goods
- Raise employee awareness of environmental issues

Reducing Environmental Impact Through the Supply Chain

● **Revising the *NSK Green Procurement Standards***

From product development to manufacturing, NSK is striving to reduce environmental impact at every stage, providing customers with the environmentally friendly products they need and conserving energy and resources. Reducing the environmental impact of components and basic materials at the manufacturing stage is indispensable to enhancing these efforts, which NSK is pursuing in partnership with its suppliers. NSK revised its *NSK Green Procurement Standards* as one such action, specifically clarifying items involving requests for green procurement from suppliers as well as the subsequent required measures.

● **Eliminating Hazardous Substances**

NSK products and oils used in internal manufacturing processes can contain hazardous substances. NSK is strengthening its own internal management of these substances to verify the levels present and to mark them for elimination. Moreover, NSK is asking suppliers to provide documented evidence that substances prohibited by NSK have not been used, and to conduct surveys of the chemicals contained in the products they supply. NSK technology divisions are also driving the switch to alternatives to hexavalent chromium, used in trace amounts for the surface treatment of metal components, by supporting suppliers in eliminating this substance. In another move, NSK is asking suppliers still using chlorinated solvents in their manufacturing processes to abolish the use of this substance out of concern for the pollution risk it poses.

Uniforms Made From Recycled PET Bottle Fibers

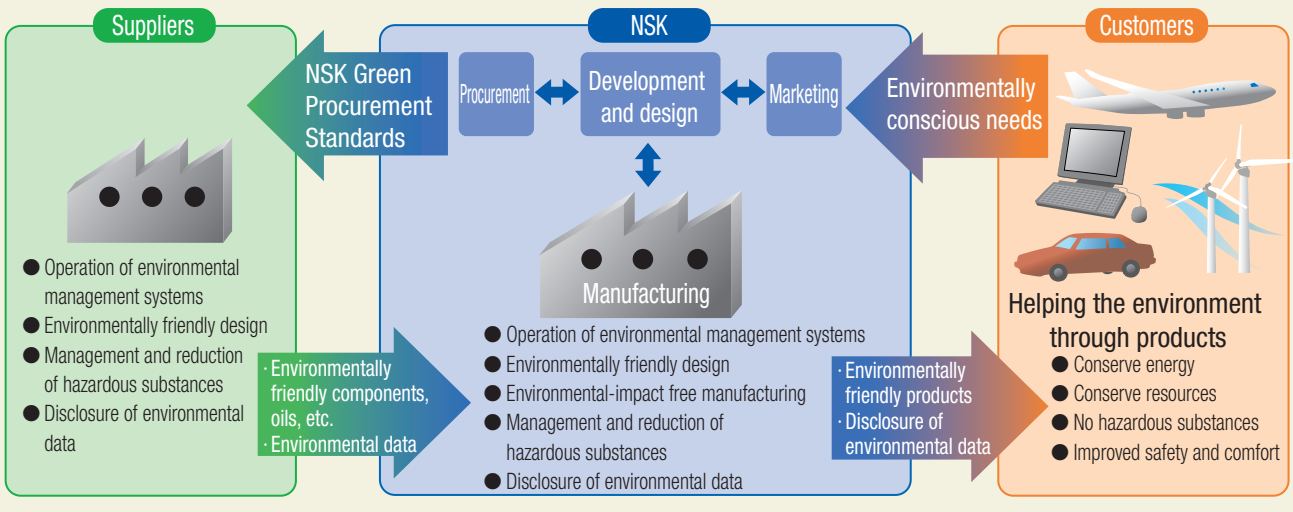
● **Green Purchasing**

Determined to lessen the environmental impact of office supplies and other general goods purchased and to boost environmental awareness among its employees, NSK issued its *NSK Green Purchasing Guidelines* in FY2001. NSK has since followed up these guidelines with a raft of related measures. In FY2003, NSK shifted to products made from recycled PET bottle fibers for approximately 4,500 newly purchased office and work uniforms. NSK also chose low-emission models for all of its replacement office equipment and vehicles. These included 872 PCs, 89 printers and 19 photocopiers, as well as 14 out of 15 new vehicles purchased (no low-emission model was available for one vehicle purchased).

Upcoming Initiatives

NSK sponsors conferences on green procurement in each region where it operates, ensuring that suppliers have a clear understanding of green procurement and formulate definitive green procurement measures. Through tighter bonds with suppliers, the systematic elimination of hazardous substances and other measures, NSK is working hard to reduce environmental impact via its supply chain.

■ Overview of Green Procurement

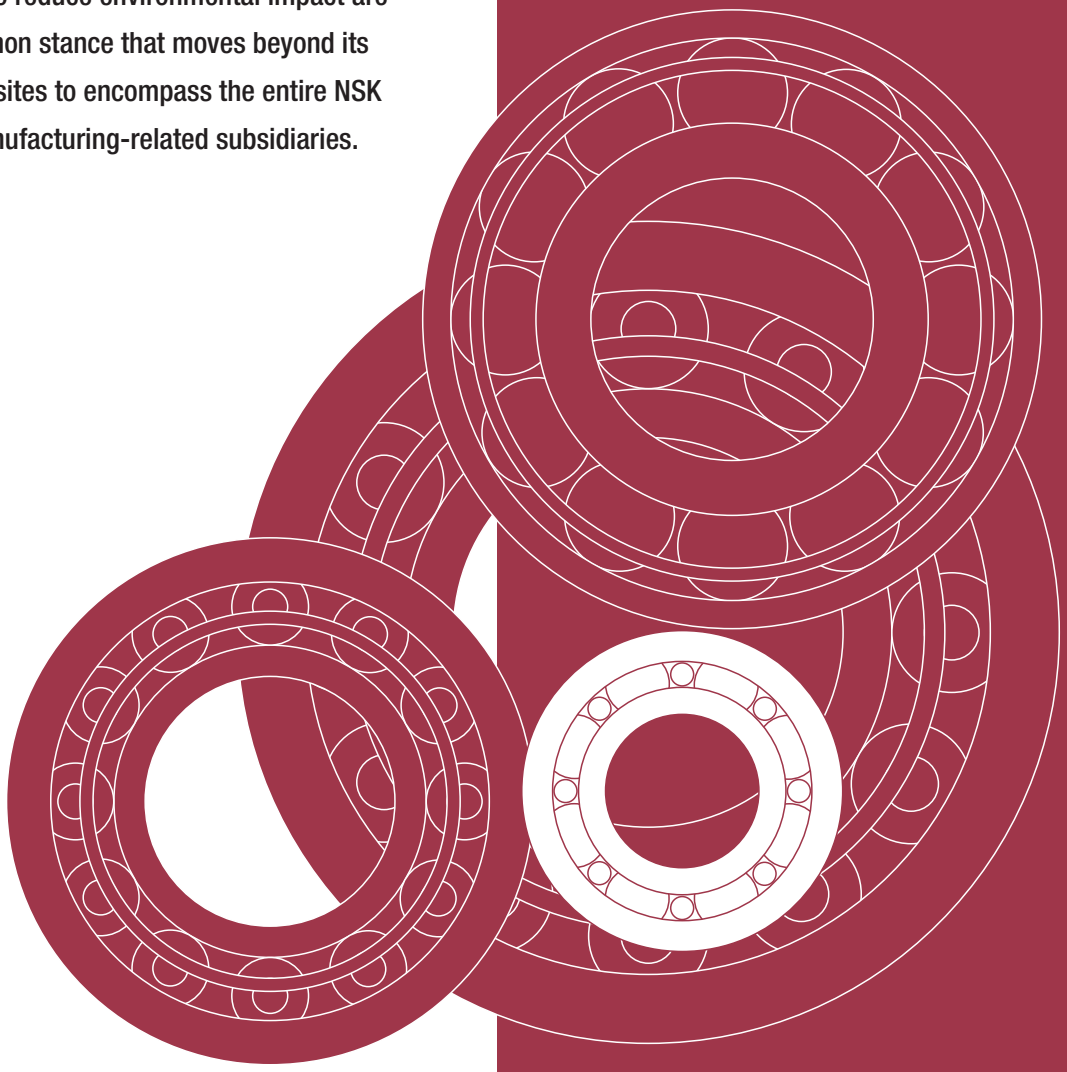


Glossary

Supply chain: Refers to the integrated network of development, transport, purchasing and sales operations linking raw material suppliers through to customers.

Initiatives at NSK Sites

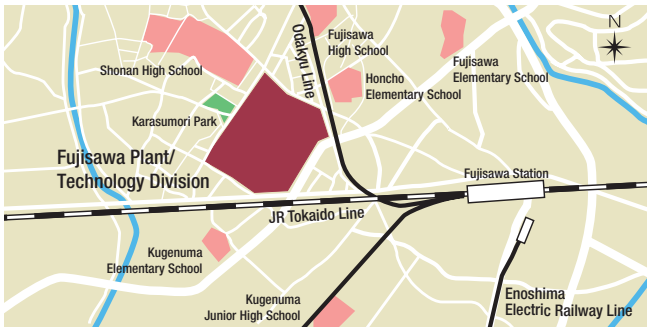
NSK's efforts to reduce environmental impact are part of a common stance that moves beyond its own business sites to encompass the entire NSK Group and manufacturing-related subsidiaries.



Fujisawa Plant/ Technology Division

Overview:

Location:	1-5-50 Kugenuma Shinmei, Fujisawa-shi, Kanagawa
Site area:	163,851m²
Number of employees:	1,542 (as of March 31, 2004)
Products:	Large ball bearings, roller bearings
ISO 14001 certified:	September 1999



Summary of environmental measures

The Fujisawa Plant/Technology Division is situated in Shonan, a region rich in natural beauty overlooking scenic Enoshima Island in eastern Japan. The plant is approximately ten minutes' walk from Fujisawa Station. The plant manufactures ball and roller bearings of every size, from compact to super-large sizes, and is the oldest plant within the NSK Group. The Technology Division designs and develops all bearings types, as well as machine and automotive components, chiefly at the seven-story Research and Development Center completed in April 2003. Convenient rail access and the construction of a number of large-scale condominiums nearby have radically transformed the surrounding environment in recent years, prompting NSK to enact measures that target concerns over noise, vibration and smells emanating from the plant.

Coexistence with the region and environmental measures

At the Fujisawa Plant, highest priority has been placed on addressing environmental problems. Particular attention is given to measures preventing unpleasant odors and fire, which are treated as special ongoing projects at the plant. This has resulted in the inclusion of a dedicated environmental initiatives team within the organizational structure of the plant.

Major activities include a monthly rally of environmental initiatives teams; the selection of environmental topics submitted by local residents; proposals, implementation and follow-up concerning environmental measures, and other proactive initiatives.

Plans are also in the works to establish a contact point for enhancing communication with the local community.

Development and promotion of environmentally friendly products

The Technology Division, located on the grounds of the Fujisawa Plant, carries out research and development into environmentally friendly products and all types of environmental conservation technology. The main examples of the division's work are listed below.

1. Development of biodegradable grease and plastics
2. Development of energy- and resource-conserving products
3. Development of maintenance-free products and products that enhance living environments
4. Development of energy-saving, compact grinding machines

Energy savings through adoption of high-efficiency turbo chillers

As part of efforts to protect the ozone layer and address concerns over global warming, the Fujisawa Plant upgraded its turbo chillers, which use specified CFCs, to high-efficiency versions that use a substitute CFC refrigerant. Reduction benefits from this change were substantial, cutting annual CO_2 emissions by almost 180t-CO_2. Other energy-conserving actions included the upgrade to amorphous-type transformers. All told, these efforts enabled the Fujisawa Plant to attain its FY2003 objectives for CO_2 emissions per production unit.

Environmental Management Representative:
Kenichi Uehara

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.0~9.0	5.3~8.8	7.4
BOD (mg/l)	600	540	27.8
Discharge point	Sewer		

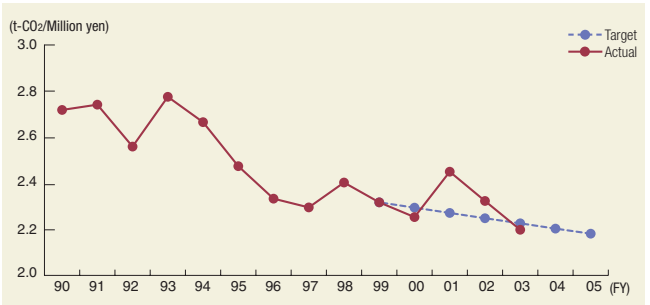
No direct discharge to rivers or streams

Air quality

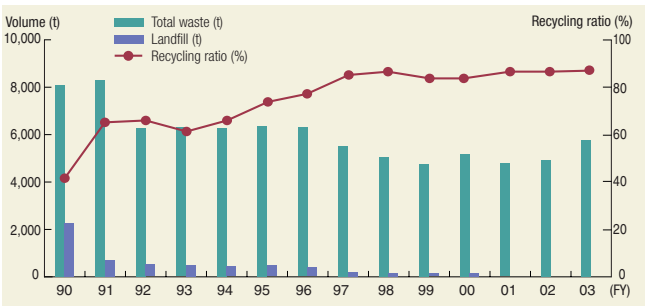
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	250	225	100
	Metal furnace	200	180	120
Soot and dust (g/m³N)	Boiler	0.3	0.27	0.0004
	Metal furnace	0.25	0.225	0.0066
SOx (m³N/hr)	Boiler	3.11	2.80	Less than 0.01
	Metal furnace	1.21	1.09	0.007

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Recycling ratio and landfill waste



Release and transfer volume of PRTR-designated substances

(kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
40	Ethyl benzene	1,146	295	0	0	0	851	0
63	Xylene	43,138	3,541	0	0	0	38,432	1,165
227	Toluene	6,553	314	0	0	0	6,239	0

Glossary

pH: Hydrogen-ion concentration

COD: Chemical oxygen demand. Used as an indicator to determine the density of organic water pollutants and indicates the oxygen in the oxidant consumed in order to oxidize the pollutants contained in the water.

BOD: Biochemical oxygen demand. Used as an indicator to determine the density of organic water pollutants and indicates the oxygen consumed in order to oxidize the pollutants contained in the water using microbes.

Ohtsu Plant (Former Shiga Manufacturing Division, Ohtsu Plant)

Overview:

Location:	1-16-1 Seiran, Ohtsu-shi, Shiga
Site area:	53,279m²
Number of employees:	526 (as of March 31, 2004)
Products:	Ball bearings
ISO 14001 certified:	November 1999

Summary of environmental measures

Facing Japan's picturesque Lake Biwa and flanked by Mt. Hira and other prominent peaks, the Ohtsu Plant manufactures ball bearings in a natural environment replete with water and greenery. For the Ohtsu Plant, maintaining harmony with its rich natural surroundings, conserving the environment and ensuring continued coexistence, are all factors indispensable to conducting plant operations. Because the Ohtsu Plant is only a five-minute walk from the nearest rail station, the surrounding area is dotted with residential dwellings. Accordingly, in addition to ongoing activities aimed at reducing environmental impact, the Ohtsu Plant remains in close contact with the local community as it aggressively pursues environmental conservation activities.

Reduced CO_2 emissions per production unit by 3% year on year through adoption of inverters for air conditioners and the shift to high-efficiency equipment

The Ohtsu Plant, as part of measures to prevent global warming, is taking vigorous steps to curtail energy consumption by using more efficient electrical equipment inside the plant. Steps implemented included the adoption of inverters for air conditioning units and manufacturing equipment, and the switch to high-efficiency equipment to replace large-capacity motors and lighting fixtures. These actions reduced the plant's total CO_2 emissions, roughly equal to that produced by 300 ordinary households, reducing CO_2 emissions per production unit in FY2003 by approximately 3% year on year.

Improved drills for better crisis response

A river that runs through the plant compound empties into Lake Biwa, leaving no room for environmental mishaps. As a preventive measure, drills and procedural tests involving the entire plant and each department are conducted annually under the premise that an oil spill has occurred on the plant grounds. In FY2003, the Ohtsu Plant improved the level of these exercises by carrying out late-night drills. Several topics emerged from this, including the need for different lighting configurations than those used during daylight hours. Today, the Ohtsu Plant is improving its state of preparedness, ensuring that every contingency is covered. In addition to drills, the plant also conducts regular environmental patrols in an effort to remain free of accidents.

Aiming for zero landfill waste

The Ohtsu Plant was the first NSK plant to achieve zero emissions in 2001. In FY2003, the plant lowered its percentage of all waste sent to landfill to 0.02% by promoting the compacting of grinding swarf, and the recycling of all grinding stones and solid waste plastics. The result was an improved recycling ratio for the Ohtsu Plant of 97.4%. In FY2004, the plant will enact measures to convert its remaining solid waste, particularly ceramic filters and glass bottles used to hold reagents, back into useable resources. The ultimate goal is a recycling ratio of 98% and a landfill ratio of zero.

Environmental Management Representative:
Kouji Uchiyama

Water quality

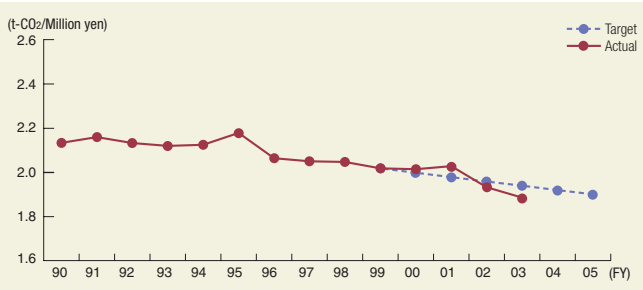
Item	Regulation requirements	NSK control value	Actual value
pH	6.0~8.5	6.3~8.0	7.3
BOD (mg/l)	70	25	10.4
COD (mg/l)	70	25	5.1
Suspended solids (mg/l)	90	30	2.1
Oils (mg/l)	5	4	1.1
Nitrogen (mg/l)	40	20	7.0
Phosphorus (mg/l)	2	1.8	0.3
Discharge point	River (Morikoshi River)		

Air quality

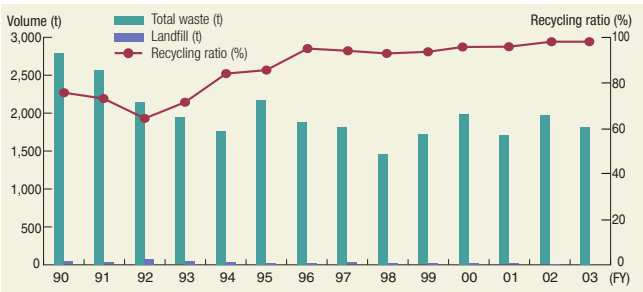
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	180	120	100
	Metal furnace	No such facility		
Soot and dust (g/m³N)	Boiler	0.3	0.05	0.003
	Metal furnace	No such facility		
SOx (K value)	Boiler	8.76	5	Less than 0.01
	Metal furnace	No such facility		

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Recycling ratio and landfill waste



Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	9,504	1,263	0	0	0	7,717	524

Glossary

NOx: Nitrogen oxides, mainly nitrogen monoxide and nitrogen dioxide, produced when fuel is burned in boilers and other equipment.

SOx: Sulfur oxides, particularly sulfur dioxide and sulfur trioxide, produced when fuels containing sulfur are burned in boilers and other equipment.

NSK Precision Co., Ltd.
Maebashi Precision Machinery & Parts Plant/Technology Division

Overview:

Location:	78 Toriba-machi, Maebashi-shi, Gunma
Site area:	94,500m²
Number of employees:	574 (as of March 31, 2004)
Products:	Precision machinery and parts
ISO 14001 certified:	December 1999

Summary of environmental measures

Ball screws and Monocarriers—a related application product—are among the precision machinery and parts designed, developed and manufactured at the Maebashi Plant. The site is located near a strategic crossroads where the Kanetsu Expressway's Maebashi Interchange (I.C.) connects to National Highway Route 17. In recent years, a bustling new downtown area has emerged, influenced by a commercial district filled with a variety of large discount shops. In such surroundings, the main thrust of environmental activities at the plant is to reassure the multitude of people that live in and travel through the area with insightful measures targeting noise, vibration, smoke, and odors.

Reduction in CO_2 through a hybrid solar cogeneration system

To reduce its total CO_2 emissions, the Maebashi Plant brought its hybrid solar cogeneration system online in August 2003. The system was installed by an ESCO, a company specializing in streamlining energy usage based on NEDO criteria. Nearly 65% of the electricity consumed at the plant is produced by two 2,000kW diesel power generators. Heat from these generators is channeled into boilers, direct-fired absorption chillers and hot-water fired absorption chillers to produce cold water. This water is then used as a cooling and heating source for air conditioners for maintaining constant room temperature. Lighting in the plant's administrative offices is powered by a 4kW solar panel installed on the roof of the administration wing. The result has been a substantial year-on-year reduction of more than 15% in CO_2 emissions per production unit at the plant.

Ten fewer products containing PRTR-designated substances and four fewer chlorine-based machining oil products

In FY2003, efforts were made to purchase alternatives to products incorporating substances subject to the PRTR Law in amounts that exceed specified content ratios, such as machine oils used during the manufacturing process and secondary materials. This resulted in 10 fewer products at the Maebashi Plant containing PRTR-designated substances. Furthermore, an ongoing shift to non-chlorinated machining oils reduced the number of chlorine-based machining oil products by four during the year.

Zero emissions maintained and 93% recycling ratio achieved

Steps to reduce the amount of waste at the plant include converting cuttings and grinding swarf, generated during the processing of metal products, into useable resources, the recycling of viable grinding coolant through in-house evaporation and condensation treatment, and the conversion of waste plastics into Refuse Paper & Plastic Fuel, or RPF. In FY2003, promoting these actions enabled the Maebashi Plant to maintain its zero emissions status achieved in FY2002, and to boost its recycling ratio to 93%.

Crisis response and nighttime firefighting drills

A potential machining oil spill is a major environmental risk faced by the Maebashi Plant. Because of this risk, all departments at the plant participate in general crisis drills, with specific drills conducted by each department where machining oil is used. This far-reaching program is an important factor in reducing environmental risk. Firefighting drills, which took place under the premise of a nighttime fire at the plant, were also conducted to prepare staff in the unlikely event that such an accident should occur.

Environmental Management Representative:
Youichi Sato

Water quality

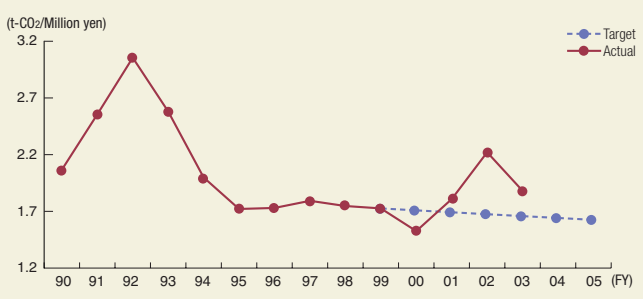
Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.9~8.5	7.6
BOD (mg/l)	25	24	1.2
COD (mg/l)	25	24	1.3
Suspended solids (mg/l)	50	45	2.5
Oils (mg/l)	5	4	1.0
Nitrogen (mg/l)	120	100	0.8
Phosphorus (mg/l)	16	14	0.2
Discharge point	River (Someya River)		

Air quality

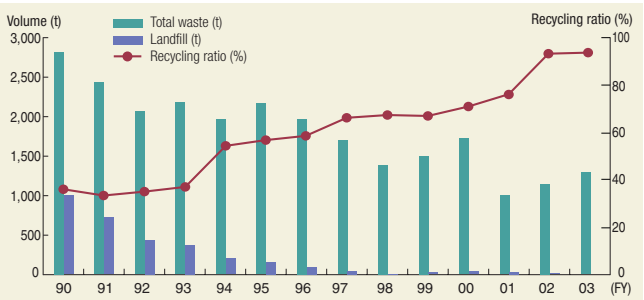
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	180	150	120
	Metal furnace	No such facility		
Soot and dust (g/m³N)	Boiler	0.3	0.2	Less than 0.008
	Metal furnace	No such facility		
SOx (m³N/hr)	Boiler	0.4	0.3	Less than 0.02
	Metal furnace	No such facility		

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Recycling ratio and landfill waste



Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	7,170	31	0	0	0	6,917	222
227	Toluene	3,089	1,409	0	0	0	1,679	0

NSK Fukushima Co., Ltd.

Overview:

Location:	180-1 Nikaki, Tsutsumi, Tanagura-machi, Higashishirakawa-gun, Fukushima
Site area:	193,313m²
Number of employees:	414 (as of March 31, 2004)
Products:	Small diameter, small and medium-sized bearings
ISO 14001 certified:	July 1998

Summary of environmental measures

Nestled in the greenery of the Abukuma Mountains and a belt of lush pasture, NSK Fukushima manufactures small to medium-sized bearings. The environmental impact of the site has undergone significant change as the manufacture of small diameter bearings, once a mainstay product, has diminished in light of increased production of medium-sized products. Lessening environmental impact remains a primary goal as NSK Fukushima conducts its environmental conservation activities.

Maintaining zero emissions

Changes in the types of products manufactured at NSK Fukushima have significantly altered the kind of waste produced on-site. Despite this, continued efforts to recycle waste grease, waste grinding stones and waste plastic has made it possible for NSK Fukushima to maintain the zero emissions status it first attained in FY2001. To better manage risks associated with waste, NSK Fukushima continually monitors waste management professionals to ensure that the collection, transport and disposal of waste are handled properly.

Conserving energy by reassessing equipment and improving productivity for new product varieties

As production of hard disk drive (HDD) bearings, once a mainstay product, has declined, NSK Fukushima is consolidating production line equipment and taking other actions to conserve energy. These steps have lowered overall CO_2 emissions by 10% year on year, although emissions per production unit have increased. FY2004 plans call for improving this situation by reassessing the manufacturing equipment used and raising productivity for new product varieties.

40% reduction in PRTR-designated substances and elimination of specified CFCs as refrigerants

By FY2005, NSK Fukushima will seek to reduce its use of substances subject to the PRTR Law by 50%. A drive is currently under way to find alternatives for products containing PRTR-designated substances, such as grinding coolant and cleaners. By FY2003, NSK Fukushima had reduced its use of such products by 40% compared to FY2000. NSK Fukushima has also abolished the use of specified CFCs, once used in refrigerated vehicles, following a shift to alternatives. This move was part of larger plans to eliminate ozone-depleting substances. The search is now on to find alternatives to equipment that uses halon.

NSK Fukushima is also involved in activities that keep channels of communication open with local communities, among them cleanup campaigns in the surrounding area and the distribution of NSK's *Social and Environmental Report* to local government officials.

Environmental Management Representative:
Hiroyuki Kato

Water quality

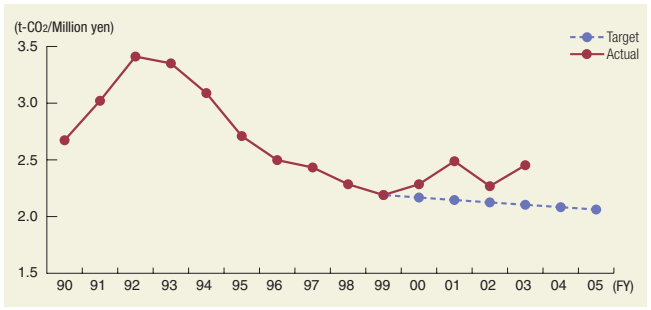
Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	6.0~8.4	7.2
BOD (mg/l)	20	18	3.7
Suspended solids (mg/l)	50	25	3.6
Oils (mg/l)	5	4.0	0.5
Nitrogen (mg/l)	60	30	2.1
Phosphorus (mg/l)	8	4	0.2
Discharge point	River (Yashiro River)		

Air quality

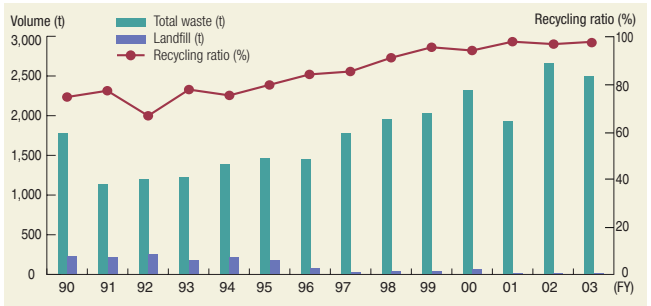
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	180	135	91
	Metal furnace	No such facility		
Soot and dust (g/m³N)	Boiler	0.3	0.05	0.011
	Metal furnace	No such facility		
SOx (K value)	Boiler	17.5	1.5	0.45
	Metal furnace	No such facility		

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Recycling ratio and landfill waste



Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	2,764	1,513	0	0	0	603	648

NSK Micro Precision Co., Ltd. (Nagano) Matsukawa Plant

Overview:

Location:	2953 Motoohjima, Matsukawa-machi, Shimoina-gun, Nagano
Site area:	16,343m²
Number of employees:	210 (as of March 31, 2004)
Products:	Miniature ball bearings
ISO 14001 certified:	April 2004

Summary of environmental measures

NSK Micro Precision's Matsukawa Plant is located in Inadani, a region in southern Nagano Prefecture. The scenery surrounding the plant is breathtaking, with the Tenryu River flowing nearby, the Southern Alps to the east and the Central Alps to the west. Amid this abundant natural environment, where changes in the four seasons are strikingly visible, the Matsukawa Plant manufactures its core product: miniature ball bearings with a diameter of 10mm or less.

The Matsukawa Plant is doing its part for environmental conservation through manufacturing that places less of a burden on the environment, ensuring that future generations have a chance to enjoy the natural beauty of the surrounding region.

Proper waste management via a newly established Recycling Center

By the spring of 2004, the Matsukawa Plant had eliminated the use of dichloromethane, a chlorinated solvent with a substantial environmental impact once used in cleaning fluids, having completed the shift to alternative products.

In addition, the plant continued its vigorous efforts to conserve energy by improving air compressor control and electrical equipment. Even amid the current recovery in product demand, the plant remains committed to raising energy efficiency by consolidating equipment and manufacturing times.

To properly manage waste, the Matsukawa Plant established a temporary storage facility for the waste it generates. Since the objective is, through extensive sorting, to reuse waste stored there effectively as natural resources, this facility has now been renamed the Recycling Center.

The Matsukawa Plant is also boosting its recycling ratio by communicating regularly with waste treatment professionals on the optimal configuration for storage containers and the best methods for disposing of waste.

Raising environmental awareness among employees through ISO 14001 certification

To sustain its environmental activities, the Matsukawa Plant developed an environmental management system and acquired ISO 14001 certification in April 2004. Raising environmental awareness among employees is a vital element in conducting environmental activities. In doing so, plant employees are made to recognize that along with reducing paper consumption, refuse, and electrical usage, working toward the longstanding goal of enhanced product quality and productivity at the plant also contributes to environmental conservation. A comparison of surveys conducted in July 2003 and March 2004 showed that environmental awareness has indeed risen among most employees at the Matsukawa Plant.

As the environmental conference for regional and municipal governments hosted by the neighboring city of Iida illustrates, a large number of companies in the area have acknowledged the importance of environmental activities from an early stage. As one such company, NSK, through the Matsukawa Plant, intends to step up its exchange of information with the local community and broaden the scope of its environmental activities.

Environmental Management Representative:
Nobuhiko Kiyota

Water quality

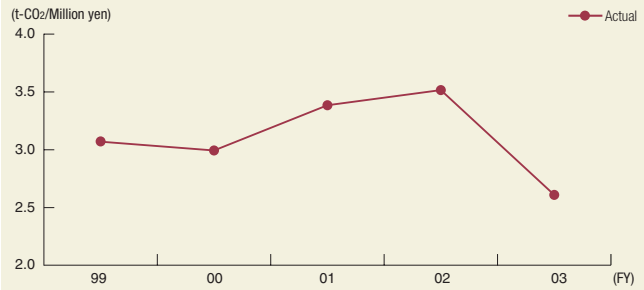
Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.9~8.5	7.3
BOD (mg/l)	160	152	62.0
COD (mg/l)	160	152	10.3
Suspended solids (mg/l)	200	190	27.6
Oils (mg/l)	5	4.9	4.7
Discharge point	River (Katagirimatsu River)		

Air quality

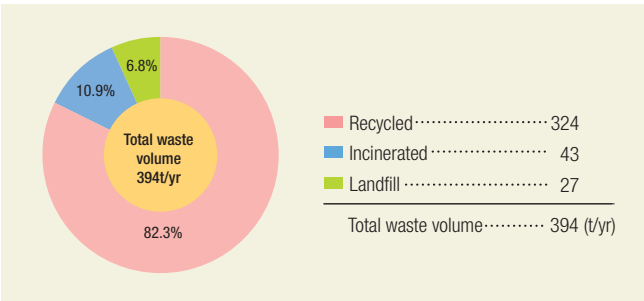
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	No such facility		
	Metal furnace			
Soot and dust (g/m³N)	Boiler			
	Metal furnace			
SOx (K value)	Boiler			
	Metal furnace			

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Breakdown of waste



Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
145	Dichloromethane	6,188	4,588	0	0	0	0	1,600

NSK Needle Bearing Ltd. Haruna Plant

Overview:

Location:	941-2, Nakasatomi Nakagawa, Haruna-machi, Gunma-gun, Gunma
Site area:	88,187m²
Number of employees:	352 (as of March 31, 2004)
Products:	Thrust needle bearings
ISO 14001 certified:	January 2001

Summary of environmental measures

Established in 1963 as a joint venture between NSK and The Torrington Company, a major U.S. bearing manufacture, NSK Needle Bearing marked its new start as a consolidated subsidiary of NSK after joint venture ties were officially dissolved in 2003. Located in a verdant and scenic area surrounded by three mountains—the Akagi, the Haruna and the Myogi—the Haruna Plant manufactures mainly needle bearings of world-class quality using some of the most advanced technology available. The importance of protecting both its rich natural surroundings and the global environment has made environmental conservation measures a top priority for NSK Bearings' business operations. The following are some of the initiatives implemented at the Haruna Plant.

Substantially reducing set air pressure to conserve energy

The Haruna Plant is working to reduce environmental impact by using clean-burning municipal gas as an energy source for heat treatment and air conditioning equipment, and steam boilers. The installation of a centralized monitoring system is also leading to improved energy efficiency.

To lower electricity usage, the plant installed a 75kW compressor and decreased the total number of compressor units, in addition to optimizing each compressor by reducing the set air pressure used by over 20%. An increase in the installation of heat treatment equipment and other factors, however, outweighed these efforts, causing CO_2 emissions per production unit to deteriorate. To ensure more effective energy use, a plan is being formulated to reduce power consumption further by installing an exhaust gas boiler that utilizes exhaust emitted by the plant's on-site power generators.

Managing risk through a centralized monitoring system

As part of environmental conservation activities and to improve response to crisis situations, a centralized monitoring system has been installed at the Haruna Plant to monitor wastewater, compressed air, kerosene, groundwater, water mains and on-site power generators 24 hours a day. Advanced equipment employing microorganisms has been installed to treat wastewater at the plant, while sound-dampening devices that enclose the entire mechanism have been affixed to machine presses to reduce noise. Other improvements at the Haruna Plant include measures to prevent oil leaks and spills through the installation of special redirection channels.

Maintaining zero emissions

Efforts are under way to convert all of the grinding swarf generated at the Haruna Plant into useable steel materials. In conjunction with extensive waste sorting and recycling activities, the plant successfully maintained its zero emissions status first attained in FY2002. The plant has plans to introduce more expansive environmental measures in the near future.

Environmental Management Representative:
Takefumi Hirabayashi

Water quality

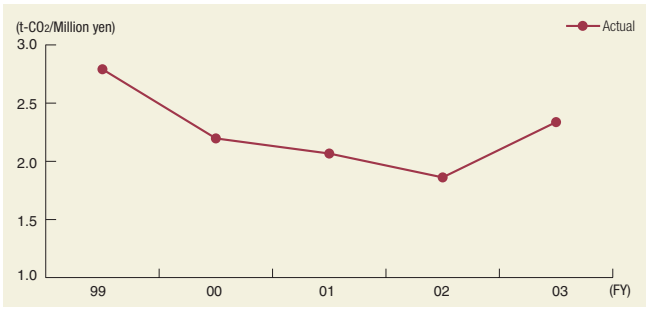
Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.9~8.5	7.7
BOD (mg/l)	25	24	4.0
COD (mg/l)	25	24	4.0
Suspended solids (mg/l)	50	45	2.0
Oils (mg/l)	5	4	1.0
Nitrogen (mg/l)	120	100	38.3
Phosphorus (mg/l)	16	14	0.4
Discharge point	River (Mukai River)		

Air quality

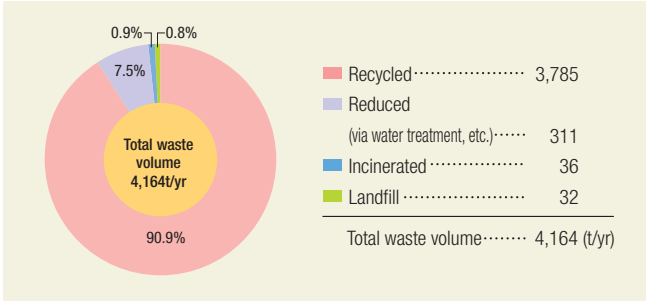
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	150	140	76
	Diesel engine	950	900	628
Soot and dust (g/m³N)	Boiler	0.1	0.09	Less than 0.004
	Diesel engine	0.1	0.09	0.006
SOx (K value)	Boiler	17.5	7	Less than 0.1
	Diesel engine	17.5	7	0.92

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Breakdown of waste



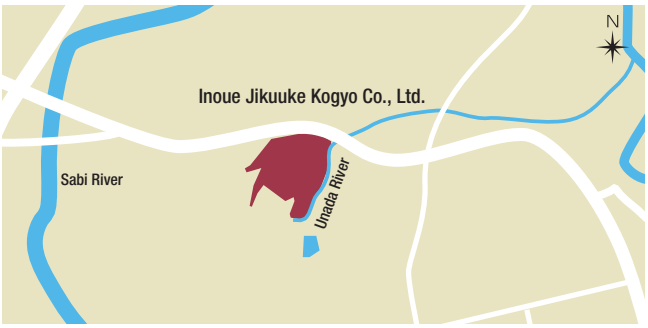
Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
16	2-amino ethanol	3,137	0	1,255	0	1,882	0	0
224	1.3.5-trimethyl benzene	1,374	932	0	0	0	42	400

Inoue Jikuuke Kogyo Co., Ltd.

Overview:

Location:	1640-1 Sabi, Tondabayashi-shi, Osaka
Site area:	20,682m²
Number of employees:	236 (as of March 31, 2004)
Products:	Ball bearings and related components
ISO 14001 certified:	February 2001



Summary of environmental measures

With the water resources and greenery of Kongo-Ikoma Quasi-National Park as a backdrop, Inoue Jikuuke Kogyo Co., Ltd. manufactures an array of ball bearings to meet the diverse needs of industry. Because the plant is adjoined by rice paddies, managing water quality and addressing other issues in the local environment has consistently been a priority over the years, particularly due to the large amount of machining oil and other materials used on-site. While concern for the environment has long been a normal part of its business activities, Inoue Jikuuke moved to enhance the efficiency of its environmental conservation measures by developing an environmental management system and acquiring ISO 14001 certification. Last year, the company successfully renewed this certification for the third straight year.

In FY2003, three main objectives underpinned environmental measures at Inoue Jikuuke: prevent environmental contamination, reduce environmental impact while raising related benefits, and protect the natural environment.

Raising environmental benefits by lowering the level of product defects

From raw materials for cement to raw materials for steel, Inoue Jikuuke is changing the ways that it treats grinding swarf by recycling it as useable material. This approach, in turn, improves the quality of the company's recycling efforts. Thermal recycling has also enabled Inoue Jikuuke to avoid sending most of the other waste it generates to landfill, allowing it to achieve zero emissions. In FY2003, each on-site department joined in a common drive to lower the percentage of manufacturing-related product defects, part of specific actions taken to raise the benefits associated with environmental activities.

Lowering risk by eliminating dichloromethane

To prepare for and ensure a proper response to crisis situations, Inoue Jikuuke conducted a simulated leak using water to review response procedures. Moreover, after resolving product quality issues by adopting refined kerosene as an alternative cleaner, Inoue Jikuuke ended the use of the chlorinated organic solvent dichloromethane. This move effectively minimized what had previously been a significant environmental risk.

Environmental conservation activities unifying quality, manufacturing and safety

As a strategy for keeping the local environment pollution-free, Inoue Jikuuke regularly cleans the irrigation channels crisscrossing the plant grounds and the surrounding area. Environmental activities of this kind help to maintain close ties with the local community.

To give environmental activities a greater role in improving its corporate structure, Inoue Jikuuke has decided to draft a common policy for FY2004, fully incorporating an environmental management program into the policies guiding plant operations. This common policy will establish links between product quality, manufacturing and safety programs, which should result in more efficient environmental conservation activities.

Environmental Management Representative:
Takanobu Harada

Water quality

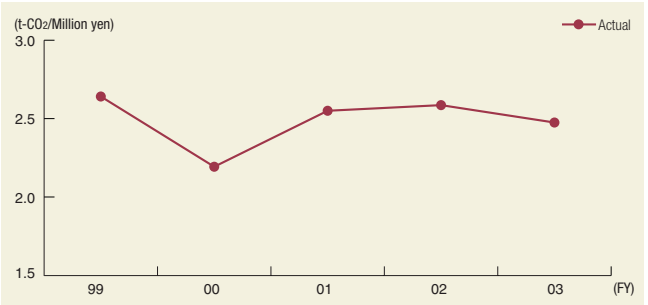
Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	6.0~8.3	7.2
BOD (mg/l)	150	100	36.3
COD (mg/l)	150	100	18.1
Suspended solids (mg/l)	200	120	2.6
Oils (mg/l)	4	3	1.0
Nitrogen (mg/l)	60	—	35.1
Phosphorus (mg/l)	8	—	0.4
Discharge point	River (Unada River)		

Air quality

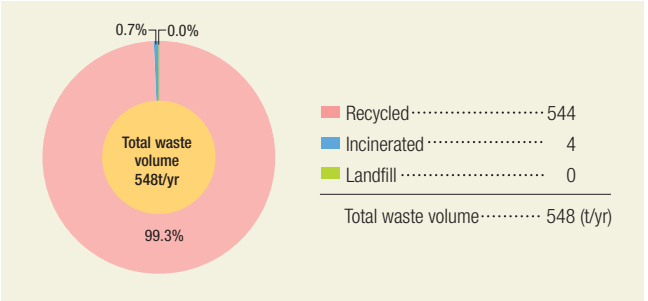
Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	No such facility		
	Metal furnace			
Soot and dust (g/m³N)	Boiler			
	Metal furnace			
SOx (K value)	Boiler			
	Metal furnace			

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

CO_2 emissions per production unit



Breakdown of waste



Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	1,876	363	0	0	0	1,140	374
145	Dichloromethane	1,120	80	0	0	1,040	0	0
227	Toluene	1,096	0	0	0	0	1,096	0

Asahi Seiki Co., Ltd.

Overview:

Location:	3-7 Tenjinmae, Kamo-cho, Toyohashi-shi, Aichi
Site area:	56,885m²
Number of employees:	128 (as of March 31, 2004)
Products:	Lathe rings for conical and cylindrical roller bearings; thrust ball bearings; manufacture of automotive parts
ISO 14001 certified:	December 2003

Summary of environmental measures

Adjoined by the abundant greenery of Kamo Shrine and the blossoming beauty of a Japanese iris garden and overlooking fertile rice paddies, Asahi Seiki conducts production activities in its capacity as an NSK subsidiary. In terms of environmental activities, efforts to obtain ISO 14001 certification unified Asahi Seiki employees in a drive to conserve resources and energy, and reduce waste and harmful substances. Ongoing improvement in these and other areas remains one of Asahi Seiki's goals.

Obtaining ISO 14001 certification

Asahi Seiki acquired ISO 14001 certification in December 2003. The first stage in this process, following the inauguration in January 2002 of a three-member team for promoting certification activities, was to carry out an in-depth study of procedures for acquiring certification. The push for certification kicked off in October that same year. From that point, while each day was a race to keep pace with the hectic certification schedule, one of the most noticeable benefits of certification is that it raised the level of environmental awareness among employees.

Reducing compressed air usage and other energy conservation activities

Participation by all employees is a basic principle of environmental activities at Asahi Seiki. In administrative offices and plants on-site, all lights are turned off during regular work breaks and meal times. Accordingly, all machinery, except for that requiring constant supervision, is unmanned and set to automatic during these periods to maintain workplace safety. Moreover, administrative offices have "pull-string" lighting fixtures, which staff can easily switch off when leaving their desks. Each department is also responsible for regularly checking and repairing compressed air leaks, with follow-up patrols carried out by on-site administrators. Optimizing the diameter of air blower pipes, meanwhile, represents one of the smaller scale improvements under way at Asahi Seiki.

Preventing accidental oil and grinding coolant spills

Based on a set of instruction manuals and checklists, all centralized grinding coolant supply equipment at Asahi Seiki is inspected daily by each department, while drills are carried out to prepare for potential crises. A new valve to shut off water during an emergency was installed at the final discharge outlet at the site. Asahi Seiki has also formulated a step-by-step procedural guide for crisis situations, providing the basis for emergency drills and enhancing measures for responding to the unexpected.

Environmental Management Representative:
Kazuyoshi Yamada

Chitose Sangyo Co., Ltd.

Overview:

Location:	561 Komagata, Hatsuma, Kakegawa-shi, Shizuoka
Site area:	29,046m²
Number of employees:	113 (as of March 31, 2004)
Products:	Processing (turning) of bearing components; processing (turning) and assembly of automotive transmission and motorcycle parts
ISO 14001 certified:	November 2003

Summary of environmental measures

Located in western Shizuoka Prefecture, Chitose Sangyo is constantly aware of environmental concerns during the course of its operations, namely processing (turning) of the inner and outer rings of bearings, and the turning and assembly of automotive transmission and motorcycle parts. Manufacturing activities consistent with activities for improving the environment remain a constant goal of Chitose Sangyo.

Acquisition of ISO 14001 certification in November 2003

Chitose Sangyo began developing an environmental management system in line with the *NSK Environmental Policy* and took steps to obtain ISO 14001 certification, which it received in November 2003.

To build a system responsive to current needs, Chitose Sangyo is striving toward environmental improvements by extending the scope and understanding of its ISO certification, as well as establishing a PDCA cycle like that used to attain environmental objectives at other NSK subsidiaries.

Recycling waste, preventing soil and water contamination and reducing electricity consumption

Major environmental improvement activities at Chitose Sangyo are outlined below.

1. Recycling of waste
   Although Chitose Sangyo has a recycling ratio of 98.2% for waste generated at its plants, recycling of waste plastic and waste paper has surfaced as a key topic. To address this, Chitose Sangyo is promoting activities designed to increase its recycling ratio, such as extensive sorting of waste throughout the site and thermal recycling.
2. Preventing soil and water contamination
   The water that drains from air compressors and related equipment contains only trace amounts of oil. Nonetheless, Chitose Sangyo has oil-water separation tanks for managing this water, allowing none of it to seep to the outside. Cuttings produced during the machining process often become coated with oil. To prevent this oil from contaminating the soil, Chitose Sangyo is refurbishing its workroom floors and reviewing the containers that waste management professionals use to transport this waste, among other actions.
3. Reducing electricity consumption
   Extinguishing lights during break times and eliminating the unnecessary operation of manufacturing equipment are some of the on-site energy conservation measures being pursued to reduce electricity consumption.

Environmental Management Representative:
Jinichi Okabe

NSK Corporation (USA) Clarinda Plant

Overview:

Location:	1100 North First Street, Clarinda, Iowa, USA
Site area:	72,843m²
Number of employees:	291 (as of March 31, 2004)
Products:	Ball bearings
ISO 14001 certified:	July 2002

Summary of environmental measures

The Clarinda Plant is located in the city of Clarinda in southwestern Iowa, a state in the American Midwest. Nicknamed "the Corn State," Iowa is noted for wide stretches of corn and soybean fields across much of the state, including the area surrounding Clarinda. But while Clarinda may be a small and tranquil town of around 5,000 residents, a thriving music culture and volunteer activities are part of its heritage as the birthplace of the renowned musician Glenn Miller and the 4-H Club.

Operations at the Clarinda Plant began in 1975. In the three decades since, the Clarinda Plant has developed into a key member of the community through its business activities.

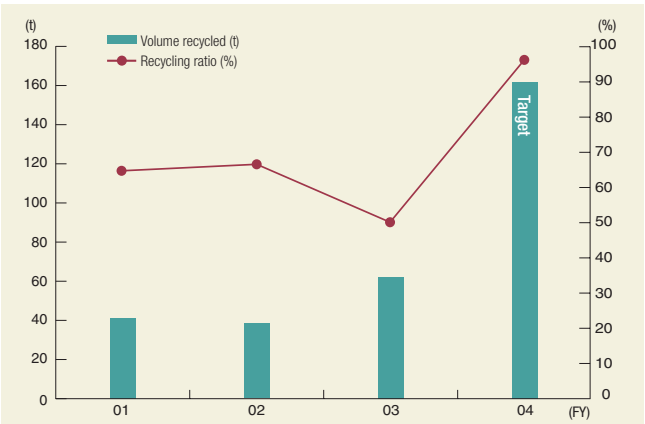
Environmental management

Since operations first started, striking a balance between manufacturing and environmental conservation has been a constant consideration for business activities at the Clarinda Plant, where contributing to the local community and environmental conservation are longstanding ideals. The plant acquired ISO 14001 certification in July 2002 as a means of systemizing its environmental conservation program.

Waste and recycling measures

The Clarinda Plant is enacting initiatives to recycle the array of waste it produces. Some of this waste includes cuttings generated from machining during the manufacture of bearings, grinding swarf from grinding processes, waste oil—including machinery oil, oil from cuttings and cleaning oil, cardboard, wood scraps and waste paper. The plant has seen a recent surge in the number of tri-wall containers—large, triple-walled cardboard containers with wooden frames used to ship pre-processed bearing rings—it receives from overseas. Steps to reduce the volume of waste stemming from these containers are now under way, and mainly involve processing the cardboard through a recycling professional by first separating it from the wooden frame. The leftover wood is then donated to local businesses as a heating source for thermal recycling. For 2004, the Clarinda Plant has set its target recycling ratio for tri-wall containers at 95%. The plant also recycles discarded grease by converting it into a fuel mixture.

Tri-wall Recycling



Energy conservation activities

Energy management at the plant has the twin goals of reducing both energy consumption and related costs. The plant has upgraded to self-ballasted lamps to provide lighting during the assembly process. Switching to high-efficiency devices, which is lowering power consumption by 366,000kWh per year, and striving to improve manufacturing efficiency, are two prominent features of the plant's ongoing energy conservation activities.

Preventing air pollution

The Clarinda Plant uses refined kerosene in certain cleaning processes. As part of initiatives for dealing with volatile organic compounds (VOCs), the plant has introduced a regenerative thermal oxidizer (RTO) that renders VOCs in refined kerosene harmless after use. The search is also on for an alternative to refined kerosene to eliminate the risk posed by VOCs at the source.

Regenerative thermal oxidizer
Emissions collected in a single location are passed through a ceramic absorbers and oxidized by catalysts.

Social contribution activities

A ceremony was held in August 2003 to commemorate Clarinda's 150th year as a city. The Head of Production at NSK Corporation and the manager of the Clarinda Plant had a major role in the ceremony, delivering congratulatory speeches and presenting a donation for a new city library. As the birthplace of the legendary Glenn Miller, Clarinda also hosts an annual festival in his honor, with a marching band contest and other events attracting visitors from a wide area. In addition to the Glenn Miller Orchestra, a high school band from Tamana, Clarinda's sister city in Kumamoto, Japan, also participates in the contest every two years. Last year, a brass band from Tamana composed of elementary school and junior high school students was invited to take part. Besides being loudly applauded, their outstanding performance did much to deepen ties of friendship between Japan and the U.S. Through this festival, NSK fulfills a role in supporting local enterprise in Clarinda. In this way, NSK and Clarinda have made good business partners over the years. While maintaining bonds of friendship with the city and its citizens, NSK will continue its work to promote Clarinda's growth and development.

Head of Production at NSK Corporation delivering a speech at Clarinda's 150th anniversary ceremony
(Above right) Brass band made up of elementary and junior high school students from Japan

Reference Data

Results of tests on the quality of discharge water and soot and smoke emissions at facilities, and the release and transfer volume of substances subject to the PRTR Law in FY2003

NSK and Newly Spun-off Subsidiary Plants

Ishibe Plant

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	6.0~8.5	6.3~8.3	7.2
BOD (mg/l)	70	50	5.4
COD (mg/l)	70	50	6.7
Suspended solids (mg/l)	90	70	2.5
Oils (mg/l)	5	4	0.6
Nitrogen (mg/l)	40	30	2.2
Phosphorus (mg/l)	2	1.6	0.1
Discharge point	River (Yasu River)		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	150	120	79
	Metal furnace	No such facility		
Soot and dust (g/m^3N)	Boiler	0.1	0.05	Less than 0.02
	Metal furnace	No such facility		
SOx (K value)	Boiler	8.76	5	Less than 0.1
	Metal furnace	No such facility		

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	6,053	2,316	0	0	0	3,014	723

Saitama Plant/NSK Precision Co., Ltd. Saitama Precision Machinery & Parts Plant

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	6.0~8.4	7.3
BOD (mg/l)	25	20	10.6
COD (kg/day)*	4.22	4.0	1.8
Suspended solids (mg/l)	60	40	9.6
Oils (mg/l)	5	4	0.3
Nitrogen (mg/l)	120	30	18.7
Phosphorus (mg/l)	16	3	1.3
Discharge point	River (Naka River)		

*Total regulated COD volume for Tokyo Bay

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	150	135	120
	Metal furnace	180	150	120
Soot and dust (g/m^3N)	Boiler	0.1	0.08	Less than 0.003
	Metal furnace	0.25	0.15	0.011
SOx (m^3N/hr)	Boiler	1.18	0.6	Less than 0.003
	Metal furnace	1.53	0.75	Less than 0.006

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	11,266	3,741	0	0	0	7,068	456
227	Toluene	2,368	5	0	0	0	2,363	0

NSK Steering Systems Co., Ltd.

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.9~8.5	7.9
BOD (mg/l)	25	24	7.5
COD (mg/l)	25	24	7.5
Suspended solids (mg/l)	50	45	2.5
Oils (mg/l)	5	4	1.0
Nitrogen (mg/l)	120	100	4.2
Phosphorus (mg/l)	16	14	0.2
Discharge point	River (Taki River)		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	180	150	130
	Metal furnace	No such facility		
Soot and dust (g/m^3N)	Boiler	0.3	0.2	Less than 0.011
	Metal furnace	No such facility		
SOx (m^3N/hr)	Boiler	0.4	0.3	Less than 0.02
	Metal furnace	No such facility		

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
16	2-amino ethanol	1,014	0	0	710	304	0	0
40	Ethyl benzene	2,860	374	0	0	322	2,164	0
63	Xylene	23,096	2,648	0	0	2,084	18,365	0
224	1.3,5-trimethyl benzene	1,405	266	0	0	129	1,010	0
227	Toluene	23,229	5,953	0	0	1,195	16,081	0
229	Benzene	724	2	0	0	0	722	0

NSK Precision Co., Ltd. Kirihara Precision Machinery & Parts Plant

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	6.2~8.2	7.9
BOD (mg/l)	60	55	5.0
COD (mg/l)	60	55	4.8
Suspended solids (mg/l)	90	85	2.1
Oils (mg/l)	5	4	1.0
Discharge point	River (Hikichi River)		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	No such facility		
	Metal furnace			
Soot and dust (g/m^3N)	Boiler			
	Metal furnace			
SOx (K value)	Boiler			
	Metal furnace			

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances

No volume subject to the PRTR Law handled

Glossary

pH: Hydrogen-ion concentration

COD: Chemical oxygen demand. Used as an indicator to determine the density of organic water pollutants and indicates the oxygen in the oxidant consumed in order to oxidize the pollutants contained in the water.

BOD: Biochemical oxygen demand. Used as an indicator to determine the density of organic water pollutants and indicates the oxygen consumed in order to oxidize the pollutants contained in the water using microbes.

Subsidiary Companies

NSK Micro Precision Co., Ltd. Fujisawa Plant

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.8~8.5	7.4
BOD (mg/l)	60	58	5.5
COD (mg/l)	60	58	8.5
Suspended solids (mg/l)	90	88	10.0
Oils (mg/l)	5	4.4	1.0
Discharge point	River (Kashio River)		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	No such facility		
	Metal furnace			
Soot and dust (g/m^3N)	Boiler			
	Metal furnace			
SOx (K value)	Boiler			
	Metal furnace			

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances

No volume subject to the PRTR Law handled

NSK Kyushu Co., Ltd.

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.9~8.5	7.7
BOD (mg/l)	45	20	6.4
COD (mg/l)	45	20	7.0
Suspended solids (mg/l)	100	60	2.0
Oils (mg/l)	5	4	0.5
Nitrogen (mg/l)	120	100	17.0
Phosphorus (mg/l)	16	14	1.9
Discharge point	River (Shinta River)		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	180	160	71
	Diesel engine	950	—	945
Soot and dust (g/m^3N)	Boiler	0.3	—	0.02
	Diesel engine	0.1	—	0.002
SOx (K value)	Boiler	17.5	13	1.7
	Diesel engine	17.5	—	0.16

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances

No volume subject to the PRTR Law handled

NSK Needle Bearing Ltd. Takasaki Plant

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5~9	5.9~8.5	7.6
BOD (mg/l)	600	500	14.0
Cyanide (mg/l)	1	1	0.2
Discharge point	Sewer		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	150	140	118
	Diesel engine	950	900	867
Soot and dust (g/m^3N)	Boiler	0.1	0.09	Less than 0.003
	Diesel engine	0.1	0.09	0.023
SOx (K value)	Boiler	17.5	5	Less than 0.1
	Diesel engine	17.5	5	0.17

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
63	Xylene	10,217	5,619	0	0	0	2,190	2,408
108	Inorganic cyanide compounds	1,669	0	0	0	0	1,669	0
227	Toluene	3,187	0	0	0	0	3,187	0

NSK-Warner K.K.

Water quality

Item	Regulation requirements	NSK control value	Actual value
pH	5.8~8.6	5.8~8.6	7.3
BOD (mg/l)	22	20	4.1
COD (mg/l)	—	—	12.8
Suspended solids (mg/l)	40	30	2.4
Oils (mg/l)	5	—	0.7
Discharge point	River (Saka River)		

Air quality

Item	Facility	Regulation requirements	NSK control value	Actual value
NOx (ppm)	Boiler	180	—	68
	Metal furnace	No such facility		
Soot and dust (g/m^3N)	Boiler	0.3	—	Less than 0.02
	Metal furnace	No such facility		
SOx (m^3N/hr)	Boiler	3.64	—	Less than 0.002
	Metal furnace	No such facility		

Actual values for NOx, soot and dust and SOx are the maximum values recorded from among applicable facilities.

Release and transfer volume of PRTR-designated substances (kg/yr)

Substance no.	Substance name	Handled volume	Released to the atmosphere	Released into water	Transferred to sewer	Transferred as waste	Consumed	Recycled
16	2-amino ethanol	5,265	0	421	0	1,053	3,791	0
30	Bisphenol A	5,351	0	0	0	314	5,038	0
47	Ethylene diamine tetra acetic acid	1,338	0	107	0	268	964	0
63	Xylene	44,404	1,776	0	0	371	42,256	0
67	Cresol	2,121	1,898	0	0	124	99	0
227	Toluene	31,057	28,764	0	0	1,805	489	0
266	Phenol	93,002	1,760	0	0	5,449	85,793	0
309	Poly (oxyethylene) nonylphenyl ether	2,940	0	235	0	588	2,117	0

Glossary

NOx: Nitrogen oxides, mainly nitrogen monoxide and nitrogen dioxide, produced when fuel is burned in boilers and other equipment.

SOx: Sulfur oxides, particularly sulfur dioxide and sulfur trioxide, produced when fuels containing sulfur are burned in boilers and other equipment.

■ Related Information

Information regarding environmental activities can also be viewed at the NSK Website:

·URL: http://www.nsk.com

Other information related to NSK activities can be found in the following booklets. To obtain a copy, please file a request at the addresses listed below.

·Company Overview (Available in Japanese, English and Chinese)
·Annual Report 2004 (Available in Japanese and English)
·Technical Journal "Environmental Special" (Available in Japanese and English)
·Environmental Report 2001, 2002 and 2003 (Available in Japanese and English)

■ Scope of This Report

The NSK Environmental Report 2004 covers NSK Ltd. and newly spun-off subsidiaries, as well as manufacturing and logistics subsidiaries in which NSK owns a stake of at least 50%. Also included are subsidiaries that manufacture NSK-brand products, subsidiaries that perform pre-processing such as machining of bearing parts and those that manufacture machinery, despite their relatively small business scale and environmental impact. The inclusion of logistics subsidiaries was in line with NSK's belief that activities that encompass the entire NSK Group are vital to efforts to reduce environmental impact. Steel ball manufacturer Shinnippon Koukyu Co., Ltd. (now AKS East Japan Co., Ltd.) has been excluded from the scope of this report since NSK's stake in the company is less than 50%.

1. Companies practicing environmental management

·NSK Ltd.

Newly spun-off subsidiaries
·NSK Steering Systems Co., Ltd.
·NSK Precision Co., Ltd.
·NSK Fukushima Co., Ltd.

Subsidiaries manufacturing NSK-brand products
·NSK Micro Precision Co., Ltd.
·NSK Micro Precision Co., Ltd. (Nagano)
·NSK Kyushu Co., Ltd.
·NSK Needle Bearing Ltd.*1
·NSK-Warner K.K.
·Inoue Jikuuke Kogyo Co., Ltd.

Subsidiaries performing pre-processing
·Chitose Sangyo Co., Ltd.
·Asahi Seiki Co., Ltd.
·Shinwa Seiko Co., Ltd.

Machinery manufacturing subsidiary
·NSK Machinery Co., Ltd.

Logistics subsidiary
·NSK Logistics Co., Ltd.

Overseas manufacturing subsidiaries
Subsidiaries in which NSK has a stake of 50% or more follow a common environmental policy

*1 NSK Torrington Co., Ltd. was made a subsidiary in July 2003. The company's name was subsequently changed to NSK Needle Bearing Ltd.

2. Scope of performance data regarding NSK's Voluntary Action Plan

Since the launch of its Voluntary Action Plan in 1993, NSK has taken care to ensure the continuity of related data. Companies separated from NSK are treated as NSK plants for the purpose of collecting and reporting data. Data used from subsidiaries not included in the scope of this report are indicated when shown.

NSK Ltd.
·Fujisawa Plant
·Ohtsu Plant *2
·Ishibe Plant *2
·Saitama Plant

NSK Steering Systems Co., Ltd.
NSK Precision Co., Ltd.
·Maebashi Precision Machinery & Parts Plant
·Kirihara Precision Machinery & Parts Plant
·Saitama Precision Machinery & Parts Plant*3
NSK Fukushima Co., Ltd.

*2 The Ohtsu and Ishibe Plants were established as independent NSK plants following the dissolution of the Shiga Manufacturing Division in April 2004.

*3 Data for the Saitama Precision Machinery & Parts Plant is included with data for the Saitama Plant, since both are located on the grounds of the same business site.

Note From the Editor

Previous environmental reports from NSK have focused exclusively on data concerning the company's environmental activities. In addition to changes in layout and design, this Social and Environmental Report supersedes the scope of earlier publications by outlining NSK's approach to, and its relationship with, society, as well as some of its social contributions. Each page contains feature articles detailing NSK's role in supporting the safety and well-being of society, all presented in a more readily accessible format.

Reporting on its social citizenship activities is a new step for NSK with this report. The hope is that more people will read about this aspect of NSK, providing opinions and suggestions that can improve both the quality of future reports and NSK's social initiatives. In turn, this will enable NSK to fulfill its corporate social responsibilities in a broader context. Please feel free to share your frank and open opinions or insights with NSK.

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