



**NTN**

# CSR Report 2006

Corporate Social Responsibility Report

NTN Corporation

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## About this Edition

At NTN, we believe it is important for a corporation to take the requests of its stakeholders seriously and to improve how it works with society and its global activities.

### The change from an "Environmental Action Report" to a "CSR Report"

NTN has been issuing "Environmental Action Reports" since 1999, but starting this fiscal year, we will report NTN's overall efforts relating to CSR (Corporate Social Responsibility).

This report is broadly divided into three sections: "Philosophy and Structure", "Social Report", and "Environmental Report". In "Philosophy and Structure", we report the overall picture of NTN's management structure. In the "Social Report", we report our activities with respect to stakeholders such as customers, suppliers, employees, and local communities. In the "Environmental Report", we report in detail on the activities and results of all NTN departments. These activities are based on the theme "coexistence with the global environment".

We at NTN strive to create a "CSR Report" that is complete and easy to read. It would be most appreciated if you would share with us your honest opinions by filling out the questionnaire at the end of the report. Thank you for your cooperation.

### Guidelines used for reference

Ministry of the Environment "Environmental Report Guideline (2003 edition)"  
GRI (Global Reporting Initiative) "Sustainability Reporting Guideline 2002"

### Period of the Report

April 2005 to March 2006 (with some exception)

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## Contents

Corporate Data .....	1
Locations Mentioned in this Report .....	2
Message from the President .....	4
Philosophy and Structure .....	6
Awards Received in FY 2005 .....	10

### Working with Individuals and Society

For Customers .....	12
For Suppliers .....	16
For Employees .....	18
For Community .....	22

### Working for the Environment

NTN Environmental Policy .....	26
Environmental Conservation Structure and Related Initiatives .....	27
Environmental Targets and Results .....	28
Environmental Management .....	30
Conserving the Global Environment .....	34
Creating a Recycling Society .....	36
What Our Environmental Managers Have To Say .....	39
Environmental Initiatives at NTN Sites .....	42
Results of the NTN Environmental Action Report 2005 Questionnaire .....	51

# Corporate Data

(As of March 31, 2006)

Corporate Name	NTN Corporation
Head Office	1-3-17 Kyomachibori, Nishi-ku, Osaka, 550-0003 Japan
	Phone: 81-6-6443-5001 (switchboard)
Date founded	March 1918
Date incorporated	March 1934
President	Yasunobu Suzuki
Number of Employees	5,442 (non-consolidated) 14,631 (consolidated)
Fiscal term	March 31st
Capital	¥39.6 billion
Net Sales	¥434.8 billion (consolidated)
Stock	Listed on the first section of the Tokyo Stock Exchange and the Osaka Securities Exchange



Bearings

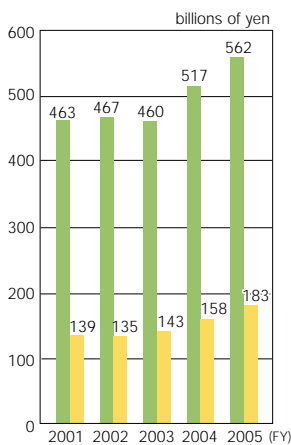


Constant Velocity Joints



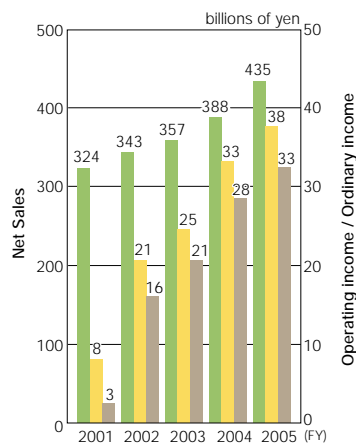
Precision Equipment and other

**Total Assets and Shareholders' Equity (Consolidated)**



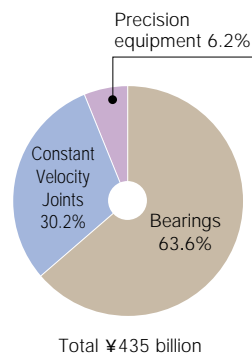
■ Total assets  
■ Shareholders' equity

**Net Sales and Income (Consolidated)**

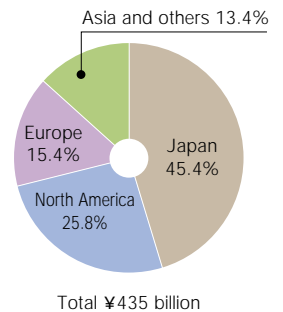


■ Net Sales  
■ Operating income  
■ Ordinary income

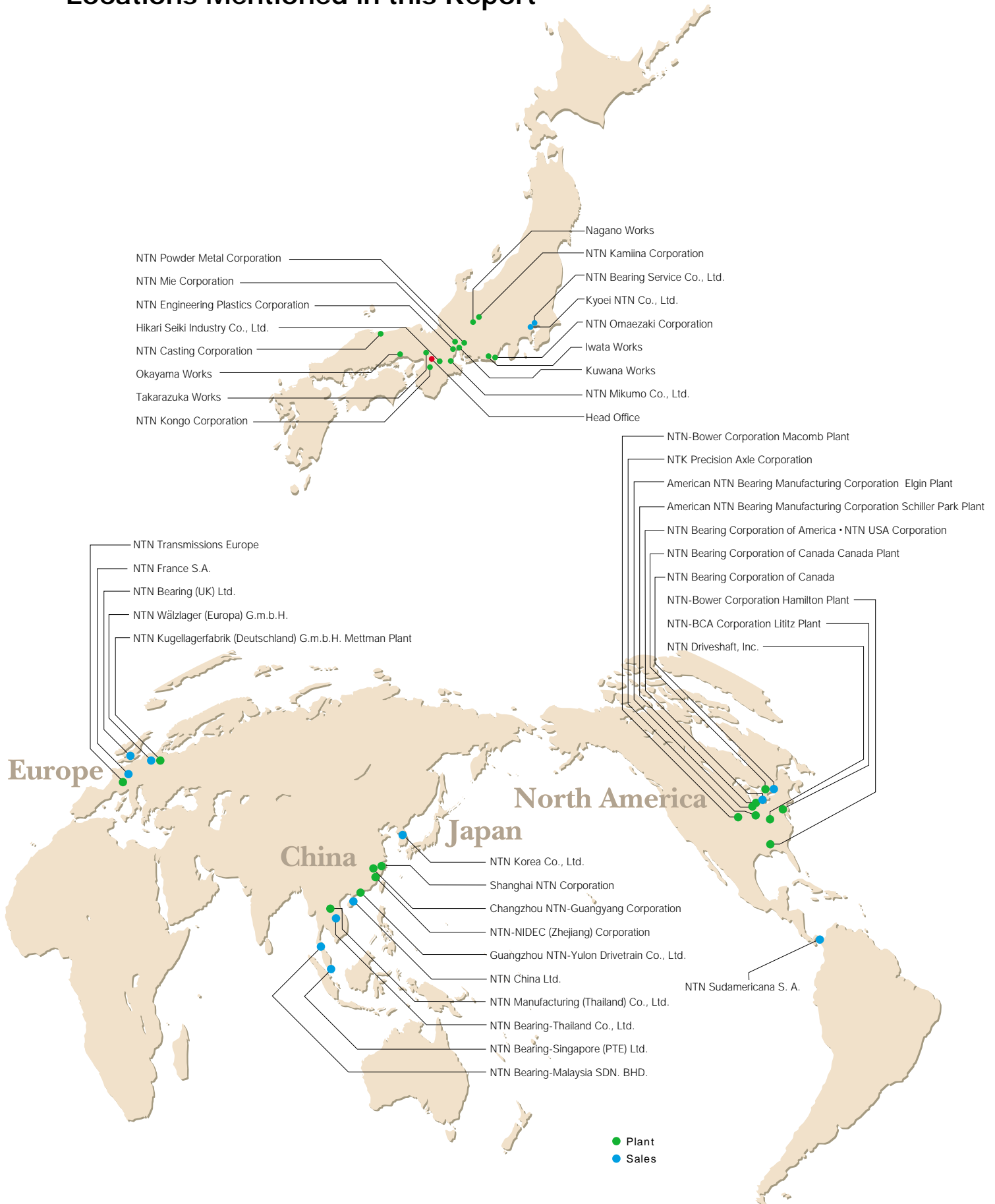
**Sales by Business Segment (Consolidated)**



**Sales by Region (Consolidated)**



# Locations Mentioned in this Report





# Corporate Governance Compliance Stakeholder



Through our daily business activities, we strive to create value in various ways and to attain a sustainable society.



# Message from the President



Yasunobu Suzuki, President

## About this report

With the objective of carrying out a structural overhaul of the NTN Group's CSR activities and improving these activities, we have established a CSR Department at our Head Office. We began strengthening NTN's CSR activities by setting out basic policies and establishing a committee.

To report NTN's social responsibility management, we have expanded our previous "Environmental Action Report" to create this "CSR Report". It is my sincere wish that it helps you gain a deeper understanding of the NTN Group.

## The corporate operating environment

As you know, corporations including NTN are in a constantly changing environment. Increased digitization and computerization is driving the globalization of corporate activities, and competition between corporations is intensifying.

Additionally, various environmental problems, including the concern about global warming, are affecting our corporate activities significantly. Issues range from energy conservation and resource conservation activities on a corporate level to energy-saving activities for society as a whole.

Recent economic development and globalization are creating a worldwide trend toward deregulation and vastly expanding the scope of corporate activities, that trends greatly affect the global environment.

Corporate stakeholders have become extremely diversified, and their demands have become more varied than before.

In terms of corporate activities, self-responsibility is becoming increasingly expected, and it is no longer enough to simply follow the law and provide good products; but it has also become expected for the corporation to have an outlook to improve society and to contribute to society. This is why CSR is something extremely important to corporations including NTN.

## NTN's social responsibility activities

NTN operates with the following as our corporate philosophy "We shall contribute to international society through creating new technologies and new products." In terms of our corporate development, we believe it is important to respect the countries and regions of the world as well as their cultures and practices, while at the same time to enrich these countries and regions through the creation of a sense of purpose in the work carried out by our employees. We further believe that it is important to carry out business activities that value the natural environment and ecosystem.

We are grateful that NTN has reached the 88th year in business.

Currently, we are concluding a 3-year management plan called "Rapid Advance 21" to expand our business globally and to strengthen our management system.

Fiscal 2006 is the final stage of "Rapid Advance 21". Through "Hito-Monozukuri innovation" (developing capable employees and an innovative production system), the enhancement of further global management by strategic alliances, and speeding up product development, we intend to achieve our plan.

By increasing NTN's corporate value, we hope to strengthen our brand power worldwide.



## Environmental activities

On the environmental side, we are proactively acting on various regulatory requirements, while at the same time reducing our impact on the environment and making every effort to create a recycling society.

Global problems such as global warming, environmental pollution, and the destruction of the natural world are becoming more serious. NTN regards co-existence with the environment as an issue of utmost importance and we are promoting the reduction of CO<sub>2</sub> emissions and total recycling on a global level. We are aiming to eliminate environmentally hazardous substances in our products and manufacturing processes, while at the same time proactively striving to develop environmentally responsive products.

Additionally, we are exporting our environmental management programs or philosophy overseas and including our suppliers.

The sites that received ISO 14001 certification last fiscal year were NTN Mie Corporation in Japan and Shanghai NTN Corp. overseas, bringing the total number of certified sites to 14 domestically and 13 overseas. To expand the scope of environmental stewardship, we have also requested our suppliers that they receive certification.

Furthermore, we are supporting our smaller suppliers in their attempts to gain the "Eco Stage" certification, in order to reduce the environmental burden throughout NTN's entire supply chain.

NTN's bearings and constant velocity joints are "eco-friendly products" in that they reduce losses during transmission of energy in the form of rotation and torque. At NTN, we are aiming to further improve transmission efficiency, and based on the technology we have developed so far, we are developing our very own next-generation products that have a wide range of applications in the environmental and energy fields. We are actively introducing wind and solar power generation systems at various sites, recognizing that the utilization of natural energy is one solution to promote environmental conservation.

## Social activities

From a social standpoint, we routinely conform to legal and regulatory requirements in the course of our corporate activities. We also intend to deepen our communication with our stakeholders and respond to various expectations.

Through locally-based activities to contribute to society -- such as the promotion of greening, environ-

mental beautification, and sports at the various sites of the NTN Group -- we intend to have an active relationship with local residents as a corporate citizen in addition to carrying out our business activities.

Also, we supply our products free of charge and give technical advice to university clubs related to motor sports to support Monozukuri activities at the student level.

With respect to our employees, we have established a "Human Resource Training Center" at our Monozukuri Headquarters based on the belief that "Monozukuri is based on activities to develop capable employees". At this center, technical knowledge and skills are passed on and safety education is carried out to actively develop the people who will be taking on the Monozukuri of tomorrow, as well as to create a safe and exciting workplace. Also, at our Iwata, Kuwana, and Okayama Works, we have "Ideal Workshops" (social welfare plants) where we support disabled persons in their efforts to become independent and to give them a sense of purpose in their work through our active efforts to employ disabled people.

## Lastly

The spirit of CSR already permeates society. However, we believe that making CSR a core management priority and actually putting it in practice will become a more substantial issue for corporations. NTN has acted to incorporate CSR into our management practices through strengthening our structure by creating a CSR Department and establishing a basic policy. We believe that CSR is a never-ending effort on the part of a corporation to determine its responsibilities, to create its own range of action, and to act accordingly.

NTN is putting CSR into practice based on the conception described above and we have created our first "CSR Report" here. It is far from being totally complete but we will strive to satisfy our social responsibilities as a corporation while listening to your views and we hope you will not hesitate to share them with us.

**Yasunobu Suzuki**  
President  
NTN Corporation

# Philosophy and Structure

A corporation must first and foremost realize that it is a social entity. NTN's CSR activities start with the question "How can we contribute to society?" In addition, we use NTN's corporate philosophy (which summarizes the ideal state of NTN) to provide perspective, while we are working to put CSR into practice at the entire NTN Group as adapted to local customs and laws.

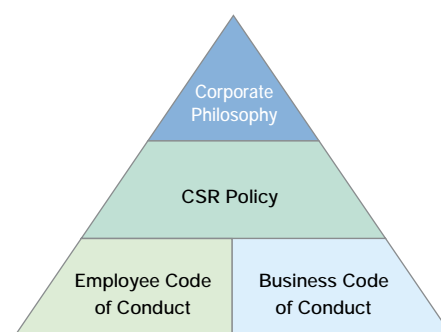
## Corporate Philosophy

**We shall contribute to international society through creating new technologies and new products**

For New Technology Network

- 1 Creation of original technologies
- 2 Offering the technologies for additional value and service that are suitable for each customer and end user
- 3 Improvement of employees' standard of living, distribution of fair returns to stockholders, and contribution to society based on the steady growth of our business
- 4 Promotion of globalization and formation of a corporate management system, which are essential for NTN as a leading international company

NTN's Conceptual Framework



## CSR Policy

The "CSR Policy" was created to specify the social responsibilities of a corporation and put a plan into place to completely fulfill these responsibilities. Each employee of NTN takes part in these eight policies, and is putting CSR into practice every day in the workplaces.

Under the "CSR Policy", we have established an "Employee Code of Conduct" to prepare our employees, managers, and supervisors. The "Business Code of Conduct" has already been in place for some time and contains rules that all executives and employees are to follow, but the objective of the "Employee Code of Conduct" is to actively encourage positive thinking and actions from all employees, managers, and supervisors in the course of putting CSR into practice.

1. Legal compliance / Policy for activities	We shall comply with both the letter and the spirit of laws and regulations, and carry out our business activities in an open and honest manner.
2. Customers	We shall strive to develop new technologies and new products, as well as to provide safe and reliable products.
3. Business partners	We shall engage in fair and free competition, and at the same time establish excellent partnerships with our business partners.
4. Stockholders / Disclosure of information	We shall work to develop this corporation and increase stockholder return, while at the same time communicating broadly with society and actively disclosing information.
5. Employees	We shall value the individuality and diversity of our employees, work to create a safe and pleasant workplace, and achieve comfort and prosperity.
6. The environment	With ample consideration to preserving the global environment and protecting the ecosystem, we shall work toward the creation of a sustainable progressing society.
7. Society	We shall actively make every effort to interact meaningfully with society on a local level, and to engage in activities that contribute to society.
8. International activities	We shall, as a matter of course, obey all international rules as well as the laws of each country and each region that we operate in; we shall also respect local cultures and practices and contribute to local development.



### CSR Promotion Structure

In April 2006, we established a CSR Department and started CSR activities in a fundamental way.

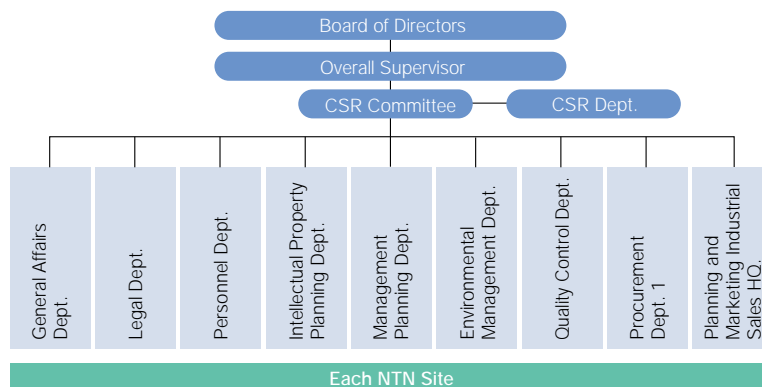
The CSR Department was established as a specialized department to oversee the NTN Group's CSR activities, working to strengthen and promote these efforts. The CSR Department established the "CSR Policy" and the "CSR Activity Management Regulations", which form the guidelines for NTN's CSR activities.

Also, we have established a CSR Committee made up of relevant departments, which is working to overhaul the corporate philosophy, to raise awareness, and to address issues related to CSR.

CSR activities can be defined as company-wide efforts by NTN Group companies to work as a corporation that is needed by society. By setting up a structure that vigorously promotes CSR activities, feedback from

stakeholders can be appropriately incorporated by each department and site into the next company-wide initiative, allowing us to become a corporation that is trusted by society.

**CSR Promotion Structure**



## Corporate Governance

Our company regards the strengthening and enrichment of corporate governance as one of our most important issues. As we pursue greater efficiency and soundness in our management, we are also striving to increase management transparency by disclosing information swiftly and accurately. Our company does employ an auditing system, but to reinforce our corporate governance structure, we are strengthening the board of directors and, through our corporate auditors, our management oversight structure.

### Board of Directors

The Board of Directors deliberates and makes decisions related to NTN's fundamental management policies and to laws and regulations, as well as to important management items; it also supervises the execution of business operations by our company officers. As a rule, the Board of Directors meets once a month, but meetings of the Board of Directors are carried out as required.

### Business Strategy Committee and the Executive Officer Structure

The Business Strategy Committee deliberates on basic management policies and important policies rela-

ted to management. As a rule, the Business Strategy Committee meets twice a month. In addition, in June 2004, the Board of Directors was slimmed down and an executive officer structure was introduced so that decisions can be made swiftly and functions can be executed promptly.

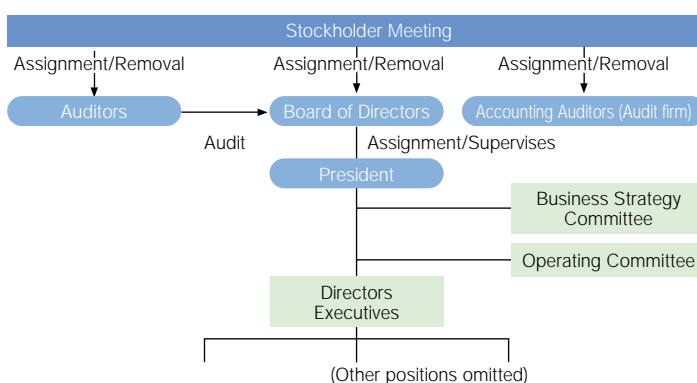
### Auditors

NTN has four corporate auditors, two of whom are standing auditors, and three of the four auditors are outside auditors. The auditors audit the board's execution of business operations by attending board meetings and expressing their opinions and by working to maintain and im-

prove the transparency and fairness of the management structure.

Standing auditors also participate in the meetings of the Business Strategy and Operating Committees and the system ensures that they can express their opinions on matters before those committees. Furthermore, the corporate auditors work to increase the efficiency of the overall auditor process, meeting regularly and cooperating with others regarding their own audits, audits by independent public audit firms, and internal audits.

**Corporate Governance Structure**



# Philosophy and Structure

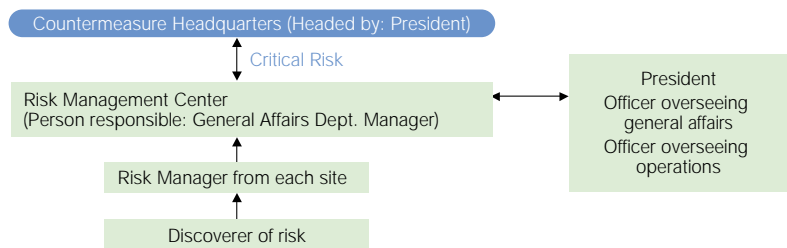
## Risk Management

There are many risks in business, and it is important to minimize the effects when these risks materialize. Our company has prepared for the advent of various risks, and we have established an "Emergency Management Center" to deal with them appropriately.

This center identifies risks inherent in daily operation, checks the causes of these risks, and reviews and implements countermeasures for when these risks do materialize. If a critical incident, accident, or problem does occur that seriously affects business operations, this center comprehensively gathers and disseminates information, devises countermeasures, and issues instructions swiftly so that damage is minimized.

These activities ensure that the reliability of the NTN Group as a whole is maintained.

### Risk Management Structure



For critical management risks, a Countermeasure Headquarters is established to address the risk. For anything else, the department that has jurisdiction addresses the risk. All information related to risk management goes through the Risk Management Center.

## Compliance

### Corporate Ethics Committee

With an increased concern regarding corporate social responsibilities, we have established an internal Corporate Ethics Committee to strengthen our compliance structure based on a corporate ethics (compliance) management standard established in May 2003.

In 2006, we distributed the "Revised Insider Trading Restrictions Q&A" published by the Tokyo Stock Exchange to our directors and management, and we are working to increase awareness of the relevant issues and to ensure total compliance. In accordance with the Whistleblower Protection Act, we have established internal and external reporting contacts, augmenting our compliance structure. In terms of export controls to protect security, we have finished creating an internal management structure. We are also strengthening our export controls by educating employees internally (focusing on the sales departments), as well as by implementing internal audits.

### Business Code of Conduct Compliance Structure



### Business Code of Conduct

With respect to thorough compliance at NTN, we have established a "Business Code of Conduct" based on our corporate ethics (compliance) standard that shows the laws, regu-

lations, and ethical standards that everyone including top management and all employees should abide by; by carrying out internal employee education and distributing cards, we are working toward the thorough establishment of these practices.



Business Code of Conduct NTN Corporation

### Help Line

When a director or employee observes actions that indicate the Business Code of Conduct is being contravened or if he/she has any suspicions that the Code is being contravened, he/she may contact the corporate ethics committee directly without going through regular management channels by contacting an internal or external "Help desk" we have set up. From April 1 of this year, it has become available for whistleblowers, too.

## Business Code of Conduct

1. Compliance with laws and norms	We shall do our utmost to act with conscience as corporate employees and as socially responsible adults, by complying with the law, our internal rules, and the ethical norms of society.
2. Pursuit of quality and safety	We shall deliver products that ensure reliability and customer satisfaction by enhancing quality and safety.
3. Proper labeling and specification	We shall properly label and specify the contents of our products and services.
4. Compliance with the Anti-Monopoly Law	We shall not violate the Anti-Monopoly Law and we shall make only fair trades.
5. Fair trade with suppliers	We shall follow fair trade practices with our suppliers and comply with the Subcontract Laws.
6. Refusal to engage in improper conduct with business partners	We shall decline any invitation to engage in improper or illegal conduct with any business partner.
7. Ensuring security by strengthening export controls	We shall not export any freight or provide any technology that may threaten international peace and security.
8. Honoring agreements	We shall enter into and honor fair agreements with our business partners.
9. Respect for intellectual property rights	We shall recognize that intellectual property rights are precious managerial resources, and show respect for and not infringe upon others' intellectual property rights, while making efforts to create and keep our own intellectual property.
10. Proper control of confidential information	We shall place proper controls on our proprietary information and also on such confidential information as we have obtained lawfully from others, and we shall not allow leaks to occur or disclose such information to any party outside our company without the relevant party's consent.
11. Compliance with industrial laws	We shall fully comply with industrial laws in all our business operations, and we shall not violate those laws.
12. Efforts to preserve the environment	We shall make positive efforts to preserve the environment and reduce the burden on our planet by creating a recycling society that will co-exist with the natural environment and contribute to the well-balanced development of society and Earth.
13. Proper disclosure of our managerial information	We shall properly disclose our managerial information, including our financial status, business operating conditions, etc., to relevant parties such as stockholders and investors, in addition to informing them clearly of our management policy and receiving in good faith their opinions or criticism regarding that information.
14. Positive contribution to society	We shall contribute to society through our business activities, and also continuously participate in social, cultural, educational, and sports activities as a good corporate citizen, active supporter, and conscientious contributor.
15. Compliance with labor-related laws and company work rules	We shall comply with labor-related laws, our company work rules, and any ancillary rules and regulations.
16. Realization of a safe, positive work environment	We shall understand and comply with the laws and internal rules concerning operational safety and hygiene in order to ensure our safety and good health in our offices and facilities and to form a positive work environment.
17. Respect for human rights	We shall respect human rights and shall not engage in conduct that might lead to discrimination by sex, age, race, handicap, etc.
18. Prohibition of sexual harassment	We shall recognize that sexual harassment harms our work environment and hinders the smooth operation of the workplace. Therefore, we shall prohibit sexual harassment in the workplace.
19. Proper control of information about individuals	We shall strictly control the information about individuals - executives, employees, and others - that is acquired and used in our business operations.
20. Prohibition of insider trading	We shall not violate nor shall we engage in conduct that even suggests actions contrary to the regulations against insider trading.
21. Confronting harmful social forces	We shall not submit to any social force harmful to society, and we shall resolutely confront any such force.
22. Self-restraint regarding entertainment and gifts	We shall not try to bribe domestic or foreign governmental officials or engage in any such suspicious behavior. We shall circumscribe entertainment or gift-giving in our relations with business partners by practicing proper judgment and common sense.
23. Lawful actions on behalf of political parties	We shall not illegally act on behalf of, or make contributions to, political parties.
24. Proper utilization of our information system	We shall use our information system only for our corporate operations and not for personal purposes.
25. Strict distinction between public and private matters	We shall strictly distinguish personal from corporate interests and carry out our duties in good faith.

## Evaluations by External Organizations

In recent years, there has been growing interest in socially responsible investment (SRI), which is regarded as a basis for making investment decisions. Investments are evaluated not only based on profitability and growth but on consideration of environmental conservation and contribution to society. NTN stock is included in the SRI indices shown on the right.

### MS-SRI

The first socially responsible investment index in Japan, which includes 150 companies of excellence chosen by Morningstar Japan K.K. from the approximately 3,600 companies listed within Japan.



### FTSE4Good

England's FTSE International evaluates corporations from the standpoints of environmental sustainability, social issues, and relationship with stakeholders.



### Ethibel

Belgium's Ethibel Group is a company that specializes in evaluating European SRI and CSR activities, and chooses companies that lead the way in terms of sustainability.



The NTN Group is involved in business activities such as next-generation technological development and research through business-academic partnerships that is carried out by our various employees, departments, and sites. Several of these activities have been brought to fruition and recognized, and are introduced below.

Monozukuri

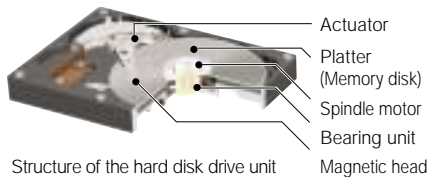
Outstanding Performance Prize of the First "Monozukuri Nippon Grand Award"

In August 2005, NTN was awarded the newly established Prime Minister's award, the Outstanding Performance Prize of the first "Monozukuri Nippon Grand Award", for a "fluid dynamic bearing unit used in hard disk drive spindle motors".

The award was given in recognition of the decreased noise and re-solution of



cost issues with a sintered oil-impregnated bearing in the fluid dynamic bearing unit for hard disk drives. The development of the non-contact spindle used in the device required overcoming the unique difficulties of machining dynamic bearings, and achieving mass production while maintaining ultra-high precision. The excellent results represent the culmination of a 2-year research effort by NIDEC and NTN.



Structure of the hard disk drive unit

"Innovative Product Award"

In April 2006, NTN was awarded the machinery parts division of the 3rd "Innovative Product Award", an award sponsored by the Nikkan Kogyo Shimbun and supported by METI and JCCI, for our "Monodrive Two-Way Feeder".

The first linear feeder to combine the functions of storage, alignment, and supply of parts in a single unit, the feeder has a simple structure and has received praise for its ease of use.



This prize is a "behind-the-scenes" type of prize, and spotlights parts that are low in cost but are high in quality. Parts are the well-spring of competitiveness in Monozukuri, and as a parts manufacturer, we feel that this prize is one that is well-deserved.

The Monodrive Two-Way Feeder is a parts feeder that can move parts to both the supply side and the opposite side of the feeder. The number of moving parts is half that of conventional models, and in addition to being smaller and lighter, it also saves energy and incurs low maintenance costs.



"Monodrive Two-Way Feeder"

Cutting-edge Technology

The first Beatrice Award winner from Japan in 20 years

At the International Solid State Circuit Conference held in February 2005 in San Francisco, an academic paper written in a joint effort between Shizuoka University and NTN won the "Beatrice Award for Editorial Excellence".



This is the largest conference related to integrated circuits and considered the Olympics of integrated circuits. It is the first time in 20 years that this award was given to Japanese recipients.

The award is presented to only one academic paper a year. The award was given for a joint paper titled "A rotary encoder system based on magnetic pattern analysis with a resolution of 10b per rotation". This item is not only significantly smaller than existing products, but also is able to use a 5mm square semiconductor to measure angles at a resolution of 1/1000th of a rotation. This academic paper represents innovative work on large-scale integration incorporating more than 4000 sensor elements and image analysis pattern measurement methods.



Award ceremony

Environment

Superior Energy Management at Plant



In February 2006, NTN's Okayama Works received an award from the Director of the Chugoku Bureau of Economy, Trade and Industry as a superior plant in energy management (electricity category) for fiscal 2005. This award is presented to plants that

promote and achieve major success in energy conservation and that serve as models for others.

This award recognizes Okayama Works' many years of energy management and conservation.



# Social Responsibility

For Individuals and Society



Can we earnestly accept the demands made on us and respond in a manner that increases trust and satisfies society? This question is the basis of our efforts.





# For Customers

We believe that quality is the essence of NTN's corporate brand, and we are constantly working to realize "dramatic increases in quality". By connecting these efforts to product manufacturing, we respond accurately to the diverse needs of the market, satisfying customers' needs and creating trust.

## Quality Management

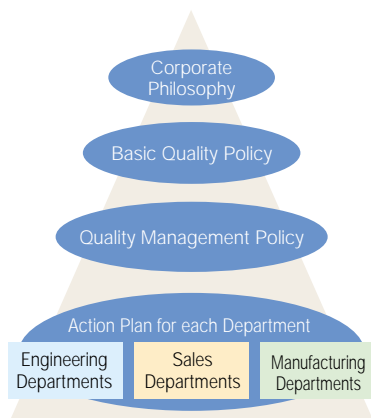
Based on our Corporate Philosophy, NTN has set out a "Basic Quality Policy" in order to earn the trust of our customers and fully satisfy customers' needs.

### Basic Quality Policy

"Provide appropriate quality that satisfies the customer's required functions and specifications"

- To respond promptly to changes in customer needs (Conformable quality)
- To be superior in competitive quality (Competitive quality)
- To pursue profit-making quality (Economic quality)

### Quality Assurance System



### Quality Management Policy

Based on the "Basic Quality Policy", the "Quality Management Policy" is established every year for the engineering, manufacturing, and sales departments to clarify the approach that each department should take to quality.

#### Engineering departments

"Continuously implementing the idea of 'Design determines everything'"

We will accurately grasp customer requirements to create "Designs that are easy to understand and manufacture and that prevent mistakes."

#### Manufacturing departments

"Preventing the recurrence of claims and ensuring the quality of new products"

In the course of Monozukuri, we will "build in" quality and develop our personnel by sharing quality techniques and skills to establish a global quality control system.

#### Sales departments

"To provide what the customer needs"

We will constantly work to grasp subtle changes in customer needs and by sharing these needs within the company improve customer satisfaction.

### Quality Improvement Conference for suppliers

NTN holds a yearly Quality Improvement Conference for suppliers in order to provide our customers with products which fulfill their needs. At this conference, top management from suppliers is invited with the objective of quality improvement. A main theme of the conference is set every year and the results of various activities are presented. In 2005, with the theme of "Increasing workplace vitality", both NTN and the suppliers presented the results of activities related to "Using visual controls in the manufacturing workplace", "Improving quality of bought-in parts and materials", and "Activities to reduce quality defects". Moreover, a lecture titled "The role of managers and supervisors in increasing workplace vitality" was presented, and attendees were reminded of the importance of the role of managers and supervisors.



### ISO/TS 16949 Certification

Most of NTN's manufacturing facilities have "ISO/TS 16949: 2002" certification, which is a global automotive quality standard. This standard is for the automobile industry and is reportedly the most stringent in the world. It sets out quality system requirements with respect to design, R&D, manufacturing, installation, and service.

The purpose of the standard is to provide high-quality products to worldwide automobile users through kaizen to prevent defects from happening, by preventing supply chain troubles, and by reducing quality variations and waste. As this standard focuses on customer satisfaction, certification in this standard makes us ready to access the automobile industries of the world.





Today, the key words that draw our attention in our everyday lives are “reliability” and “safety”. NTN has strived to develop products incorporating these key concepts since its early years. NTN technology, which supports reliability and safety, has produced a variety of product families, and with sure-footed experience in cutting-edge science and technology fields, we continue to receive commendations from customers.

## Products that support reliability and safety

### Continuing efforts with “high speed and safety”

Ensuring safety in an era of high-speed railways has become increasingly important. NTN’s bearing technology excels in railcar bearings, too. These include the “Megaohm” primary motor bearings used in the ‘Nozomi’ bullet trains, “drive unit bearings” used to properly transmit drive power to the rail car axles, “axle bearings” that promise a comfortable trip, and “RCT bearings” used by railways all over the world. This diverse product lineup continues to ensure the safety of railcars in Japan and worldwide.

### We first tackled extreme environments in the 1970s

It was in the 1970s that we first started on the development of a bearing for rocket engine turbo pumps. A bearing that can rotate at an ultra-high speed of 50,000 revolutions per minute in a  $-253^{\circ}\text{C}$  liquid hydrogen environment without using oil or grease was the ultimate challenge for extreme environments. Since then, NTN-brand bearings have contributed to Japan’s space development and support the success of domestic rocket launches.

### We support the reliability of jumbo jet engines

In the engines of jumbo jets that carry over 500 people, you can find NTN-brand bearings. “Three-point contact ball bearings” and “cylindrical roller bearings” provide travelers with a safe and steady trip,

while rotating at 10,000 revolutions per minute in a  $200^{\circ}\text{C}$  environment. Both products are produced at specialized plants, and each and every bearing receives non-destructive testing so that high quality and reliability are achieved. This technical excellence has been recognized, and NTN is Japan’s only certified supplier for General Electric Aircraft Engines (GEAE).



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# For Customers

## New Products that Support the Environment and Safety

### "30° PTJ" with World's Largest Operating Angle for Crossover SUVs

High functionality

Largest angle ever for a tripod-type plunging constant velocity joint

In response to the diversifying needs for crossover SUVs and other vehicles, NTN has realized the world's largest operating angle of 30° for a tripod-type plunging constant velocity joint while maintaining the low-vibration characteristics of our PTJ without increasing outer diameter.



### "High-Load Capacity Tapered Roller Hub Bearings" for SUVs

Long life

High rigidity

Maximizing the number of rollers to attain long service life and high rigidity

NTN has developed a "high-load capacity tapered roller hub bearing" that provides longer service life and higher rigidity for pickup trucks and SUVs, where conditions are severe.

By increasing the number of rollers to the physical limit while keeping the same outer diameter dimension has resulted in 20% longer service life and 7% higher rigidity over conventional models.



### High-Speed, High-Quality "Color Filter Repair Device"

Increased productivity

Making quick, high-quality repairs

NTN has developed a color filter repair device that repairs faulty sections of liquid crystal display (LCD) color filters with improved quality and speed. This device is ideal for larger, higher-precision flat panel displays.

By using our own high-speed repair device and by specially processing the repair coating needle, repair times have been reduced by 70%, and repair quality has been improved.



## Cutting-Edge New Product Development

### "Monoring™ CVT"

High efficiency

Automotive CVT with a unique, simple, and efficient construction

NTN has developed the Monoring™ CVT, a unique continuously variable transmission (CVT) for automobiles with a unique construction.

The Monoring™ CVT has a unique structure that previous types never had: the gear mechanism consists of a small number of parts, and it does not require an external hydraulic control apparatus for shifting. It is able to achieve high transmission efficiency.



### "Magnetic Array-Type Rotation Sensor"

High functionality

Compact size

World's first compact high-precision rotation angle detection sensor

NTN, in cooperation with Shizuoka University, has jointly developed a "magnetic array-type rotation sensor" that is compact yet can measure detect rotation angles with a precision of 0.36° (1/1000<sup>th</sup> of a rotation).

The newly-developed sensor has magnetic sensor elements, an AD conversion circuit, and an angle calculation circuit integrated on a 4.2mm square sensor chip to simultaneously reduce size and improve functionality.



Magnetic array-type rotation sensor (left) Ball bearing with magnetic array-type rotation sensor (right)

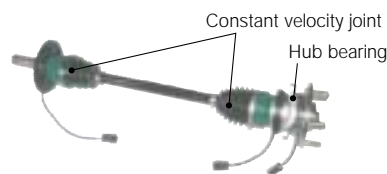
### "Intelligent Axle Unit"

Safety

Accurate and detailed vehicle stability control

NTN is currently carrying out the practical application and development of an "intelligent axle unit" made up of sensors used in vehicle safety control systems, a hub bearing, and a constant velocity joint.

By incorporating force detection sensors into the hub bearing and constant velocity joint, the sensor information related to cornering force and drive force can be used to attain more detailed and accurate vehicle stability control.



## Research and Development

The center of NTN's global research and development is in Japan, and takes place in the New Product Development R&D Center (Iwata City, Shizuoka Pref.) and the Elemental Technological R&D Center (Kuwana City, Mie Pref.). At the New Product Development R&D Center, the development of next-generation products takes place, while at the Elemental Technological R&D Cen-

ter, fundamental technical development in the fields of tribology and materials science allows NTN's new products and technologies to be transmitted to the world.

Both locations are engaged in developing environmentally focused products and technology; below, NTN's R&D structure and approach are introduced through an interview with Minoru Suzuki, an engineer in-



involved with the "in-wheel motor type axle unit" at the New Product Development R&D Center.

### Development of the in-wheel motor type axle unit



**Minoru Suzuki**

New Product Development Dept.,  
New Product Development R&D  
Center



### Working toward a society of electric and fuel cell vehicles

**There seems to be a great deal of interest in fuel cell vehicles and electric vehicles for the next generation of vehicles, doesn't there?**

Because of their high environmental performance in terms of "no exhaust" and "energy savings from high energy efficiency", much is expected of electric vehicles and fuel cell vehicles as next-generation vehicles. Part of the drive mechanism that goes into the wheel is a motor called an "in-wheel motor" integrated into each wheel.

**What kind of advantages does this have?**

The in-wheel motor method has no motor inside the vehicle, resulting in a great deal of interior space. This makes it possible, for example, for someone in a wheelchair to go right into the vehicle. Also, as each wheel can be driven independently, fine driving control will be realized. The result will be increased vehicle safety, so you can say that a high level of safety will be attained.



**Are there any drawbacks?**

The mass below the springs will increase, so there is a risk that driving comfort will decrease. For in-wheel motors to take off, there is a need to first resolve this problem.

**How is development progressing?**

We are currently developing an in-wheel motor type axle unit that is made up of a high-speed high-efficiency reduction mechanism and a motor. Our company is proficient in the fields of automotive hub bearings and in bearing technology; these are key technologies for miniaturizing the unit. We want to fully maximize basic technology to develop the products needed for next-generation vehicles.

**Please tell us what your ultimate goals are.**

They are to increase and develop the performance of vehicles as personal transportation methods and to conserve the global environment. I'd like to see NTN's unique technical strengths contribute to achieving both of these themes.

# For Suppliers

We are working to strengthen our partnerships with suppliers in order to carry out the “Monozukuri” through which we can provide reliability and safety. The “Monozukuri” of each product is directly connected to the reliability and safety required by each of our customer manufacturers. To ensure this reliability and safety, we have to establish a good business relationship and close communication with our suppliers. We are cooperating with our suppliers regarding the procurement of parts and materials necessary for production, ensuring quality, cost, and delivery, as well as environmental conservation, which are all important themes to us.

## Promoting good partnerships

### Procurement Policy

The procurement of parts and materials is a critical issue for our expanding global production activities. Thus, strengthening our partnerships with suppliers and comprehensively increasing workplace vitality is important for our manufacturing activities.

1. To procure and supply better products more cheaply from and to the world
2. To increase corporate value side-by-side with our suppliers

### 2006 Procurement Policy

During fiscal 2006, with “securing stable quality of procured components and materials” and “reducing procurement costs” as our themes, we will engage in continuous improvement with our suppliers to “build in” quality from the “Monozukuri” point of view and through VA<sup>\*1</sup> and VE<sup>\*2</sup> activities. In addition, we will promote strategic alliances for mutual development.

**\*1 VA: Value Analysis**

This is a methodical process in which cost, design, and specifications are changed and alternative products are contemplated based on a consideration of the balance between cost and function.

**\*2 VE: Value Engineering**

This is a sequence of methods used to realize the required functions of a product with the minimum amount of resources, and in which product value and cost factors are analyzed and product value is increased.

### VA/VE activities

#### Measures

#### Activities centered on VA/VE

- Increasing forging yields, which also contributes to turning efficiency
- Establishing an optimized processing sequence (from raw material to turning)
- Waste elimination activities done together with suppliers.



#### Promotion Structure

Primary department: Cost Planning Dept.  
Members: Design Dept. and each Plant

### Supplier Meetings

To obtain understanding and cooperation from our primary suppliers regarding our procurement policies, we hold a supplier meeting twice a year (in March and September). Suppliers are evaluated in various aspects of procurement, such as quality evaluation, cooperation with production (production increases), cooperation with cost, cooperation with VA, ISO9001 certification, and ISO14001 certification. In fiscal 2005, we presented awards of excellence and awards for contributing to VA.

Through these meetings, we are working to create good linkages with our suppliers and to strengthen our partnerships.



### Green Procurement

The cooperation of the suppliers who supply components and materials is critical to provide the market with safe products that are not a burden on the environment.

All raw materials used in the parts and materials used by our company are subject to our green procurement policies. To respond to the European Union’s End-of-Life Vehicle (ELV<sup>\*1</sup>) directive, the RoHS<sup>\*2</sup> directive (for electric and electronic products), and the green procurement standards of our customers, we hold supplier meetings to reduce the environmental burden of our procured parts at the parts manufacturing and raw material procurement stages.

<sup>\*1</sup> Substances targeted by the ELV directive (End-of-Life Vehicles): lead, mercury, cadmium, hexavalent chromium

<sup>\*2</sup> Substances targeted by the RoHS directive (Restriction on the use of certain Hazardous Substances in electrical and electronic equipment): In addition to those targeted by the ELV directive, 2 types of brominated flame retardants are included.

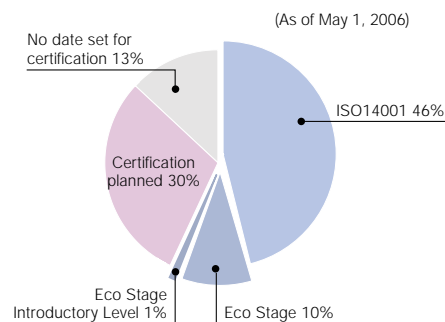
## Inclusion of Suppliers in Environmental Management

In an effort to include our suppliers in environmental management, we preferentially procure parts and material from suppliers who are proactively working to improve the environmental aspects of their operations and we request that our primary suppliers obtain ISO14001 certification or the Eco Stage certification, which is meant for small- to medium-sized firms. For those suppliers that request it, our subsidiary NTN Technical Service Corp. carries out certification support for the Eco Stage and the Eco Stage Introductory Level certifications.

### Promoting an Introductory Eco Stage

Eco Stage is an environmental management evaluation and support system originally conceived for small- to medium-sized firms. Our company proposed an "abridged version" with an even lighter certification workload and this has been realized as the "Eco Stage Introductory Level" for small-scale businesses, which has been adopted as a trial certification level. Our company promotes this Introductory Level for suppliers with 10 employees or less, and 2 companies have obtained this certification so far.

### Environmental Certification Status of our Primary Suppliers (332 companies in total)



### Promoting the Introduction of Eco Stage



**Mr. Sokoku Nakamura**  
From Nakamura Seisakusho

#### "Taking on the challenge of obtaining the 'Eco Stage Introductory Level' certification"

Our company and Nakamura Seisakusho (Nishinari Ward, Osaka City) have had a business relationship for over 20 years. Nakamura primarily machines bearing materials.

"We've always had this preconceived notion that environmental management and ISO certification is something difficult, but the "Eco Stage Introductory Level" has a format that even a small number of people can do. It's also easy to understand and it's easy to get into. From here on, we will be making an effort to improve our management by setting targets to reduce waste products, defect rates, etc., and we want to link this effort to results."





# For Employees

It is "People" who support NTN's daily business activities through their efforts to produce a wide variety of products through their individual efforts. It is also our employees, each and every one of them, who will share and increase NTN's technology and skills and who will shoulder the task of carving out a new age for our company. To make our structure a robust one, we are establishing a system where individual ability can be increased and maximized, creating a workplace environment where all employees can work with a sense of pride and satisfaction.

## The Human Resource Training and Employment Situation

Our company started promoting the globalization of our business early on, and our corporate activities have an eye on the world market. These activities and efforts will be further intensified.

Based on this situation, we are making an effort to develop individuals who embody and who are able to put into practice our philosophy "For New Technology Network" (connecting the world with new technology).

Meanwhile, in Japan, we are actively making an effort to do mid-career hiring and to promote women. We are encouraging our female employees to maximize and more fully demonstrate their abilities. For all employees, we are matching training to the competence of each individual so these employees can work in a variety of workplaces.

### Fiscal 2006 Human Resource Training Policy

1. Imparting skills and increasing workplace vitality especially in the manufacturing workplace
2. Human resource training as professionals
3. Strengthening communications and linkage among research, engineering, sales, and production department
4. Improving business skills
5. Expanding hands-on educational/training programs
6. Increasing appropriate education
7. Promoting a safe and healthy workplace

## Establishing a Human Resource System in which Ability can be Maximized

Correctly evaluating the abilities and performance of employees and rewarding them fairly not only stimulates our human resources, but also strengthens the organization as a whole. Creating this motivation is one of our most critical management issues for our growth.

NTN's Human Resource system is based on a philosophy of objectively developing ability in employees.

### Internal systems that take advantage of individuality

Our self-declaration system in which employees can state their preferred occupations and employment locations once a year to their superiors or to the Human Resources Department, and our in-house staff recruitment system that is used to recruit individuals when a new project is started up are both systems that draw out new skills in our employees based on their motivation and individuality.

### Setting career targets

Job training is based on the ability level required by each qualification and class. The job training for 2nd-year employees and the job training done after an employee is promoted to a chief position both have curriculums in which career targets can be set.

### CD45 seminar

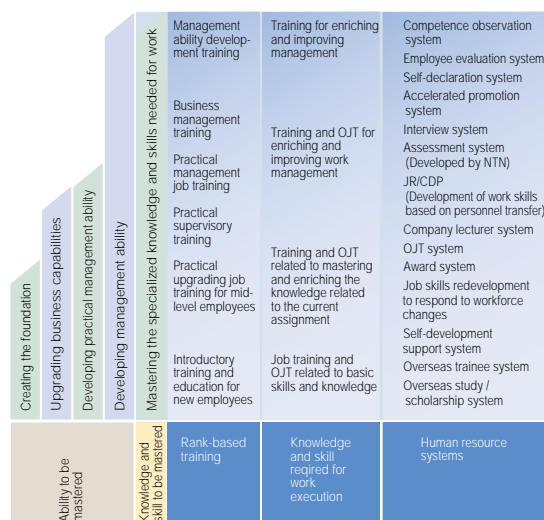
We carry out Career Development 45 seminars where employees examine their work and individual skills to set targets for their working life. An action plan is established and the employee's prospects are clarified as well.

In this way, we are also responding to post-retirement employment needs in Japan.

### Career support

We methodically work to help our employees form career choices based on their training and experience. Based on these factors, various systems such as collective job training opportunities are executed, and through this, we support our employees in reshaping their careers.

Human Resources Development Map





By “developing the individual” through “Monozukuri”, NTN is promoting a framework in which each individual can maximize and demonstrate their abilities. As part of creating a work environment in which employees can maximize and demonstrate their abilities, we are acting to connect “developing the individual” to “Monozukuri”. Focusing on imparting the practical and technical skills that our company has cultivated up until now, we are responding to expected changes to the corporate operating environment and we are creating a stable but flexible organization ready for a new future thereby creating a strong foundation for the corporation.

## “Monozukuri means Developing the Individual” is where it starts...

NTN is striving to realize “the world’s best quality”, “low cost”, “and shorter production lead times” (the time from when a product is ordered to when it’s delivered) and to increase corporate value. What these efforts is focused on is “people”. At NTN, we are training

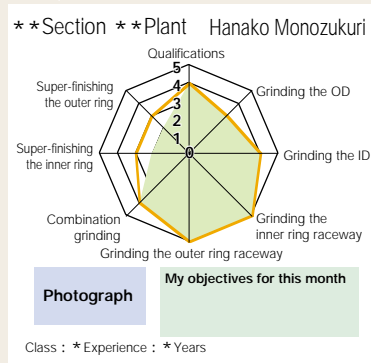
our personnel and vitalizing our workplaces based on the thinking that “Monozukuri means developing the individual”

### Our efforts to “develop the individual”

#### Promoting increased skill and multi-skilling

We are working to achieve an even higher level of technical mastery than before (increased skill) and to make each engineer be able to carry out more than one type of work (multi-skilling).

#### Skill management radar chart



#### Promoting skill qualifications



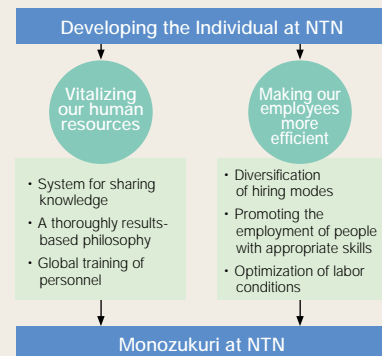
#### Sharing practical and technical skills

We have introduced a “Meister” system, which provides an organized way for experienced engineers to transfer their technology and skills to their colleagues.

#### Meister system



#### Skill training area



#### Improving workplace vitality

With the slogan “Let’s increase workplace vitality and show our workplace creativity” at our manufacturing sites, we are promoting “profitability circle activities”. Currently there are over 470 circles active in the NTN Group, which are vigorously working to raise quality and productivity by improving the workplace.

#### Company-wide circle conference



#### Number of circles by site (October 2005)

Site	No. of circles
Kuwana Works	95
Iwata Works	182
Okayama Works	76
Takarazuka Works	40
Nagano Works	19
NTN Kongo	20
NTN Engineering Plastics	10
NTN Powder Metal	10
NTN Mikumo	12
<b>Total</b>	<b>464</b>

## For Employees

### Creating a pleasant workplace

To provide an opportunity for our diverse workforce to maximize and demonstrate each person's ability, our company is proceeding to create a comfortable workplace to work in.

#### Employing former workers at affiliates

In 1982 we started to employ former and current workers at our affiliates. We did this because we believed it was meaningful from the standpoint of both the corporation and society to utilize their rich experience, practical skills, technical skills, and knowledge. Afterward, NTN Technical Service Corp. (NTS)\* undertook the same policy. The core of NTS is made up of people who gained work experience and specialized knowledge at NTN, and they support the work of both NTN and the NTN Group. Our company will continue to promote the continuous employment and reemployment of employees.

\*Focusing on NTN production sites, NTN Technical Service Corp. is a 100% owned subsidiary established in August 1987. It carries out technical support including contract work, temporary staffing, procurement of mechanical parts, fabrication and improvement of mechanical devices, and equipment maintenance.

#### Beyond Compliance with Japan's "Next Generation" Law

In Japan, in response to the Law for Measures to Support the Development of the Next Generation which came into effect in July 2003, we are implementing a review of our entire benefits package with an emphasis on children.

Since December 2005, the number of half-day vacations has been increased to up to 10 days (20 times) from 6 days (12 times). Our aim in increasing the number of vacation days is to facilitate the balance between home life and work.

Starting in fiscal 2006, NTN will introduce in Japan the "Mom Back System" in which people who left their jobs for family reasons, are actively encouraged to return to employment with the company. Under this system, women can be rehired when they determine that their family (or other) situation allows outside employment. Both of these systems are aimed to respond to the trend toward fewer children in Japan and to sustain the continued social progress of women.

#### Volunteer sabbaticals

To encourage our employees to actively participate in public service activities, we introduced a volunteer

sabbatical system in fiscal 2001. With the volunteer sabbatical system, employees participating in the Japan Overseas Cooperative Association can take a maximum of 28 months of paid leave.

We also have a program where employees are given 5 days of paid leave to donate bone marrow.

#### Measures to prevent sexual harassment

Sexual harassment violates the human rights of the individual, interferes with the maximization of ability, and disrupts the order of the workplace. To prevent this, in Japan we have distributed an enlightenment pamphlet to all employees, and we have had external advisors come in and hold training sessions for management, thus promoting better understanding of sexual harassment and strengthening NTN's ability to respond.

Moreover, we have created a special help desk and help line for those permanent and temporary employees who have been sexually harassed and we carry out support to resolve issues in the way that one's privacy is fully protected.

#### Encouraging workers with disabilities through "Ideal Workshops"

With the belief that helping all people become economically independent is one of the roles of the corporation, we continually employ persons with disabilities. NTN set up "Ideal Workshops" at our Iwata, Kuwana, and Okayama Works with the aim of creating a vital and vigorous workplace by accommodating employee needs. We will not only establish more "Ideal Workshops", but we will enrich the work for persons with disabilities and expand employment opportunities at NTN.



Iwata Works: Packaging ball bearings



Okayama Works:  
Packaging a shipment for export

Kuwana Works:  
Entering production progress data

## Safety, Hygiene and Health

Securing the safety of employees and giving them guidance with respect to managing workplace hygiene and maintaining and improving health can be considered fundamental for the existence of a company. Promoting these benefits is a social responsibility of a corporation.

Based on a "safety comes before all else" spirit that places an emphasis on human dignity, we are working to "ensure workplace safety" and "create a healthy and comfortable workplace environment" to achieve even safer and even better production activities.

### OSHMS certification obtained

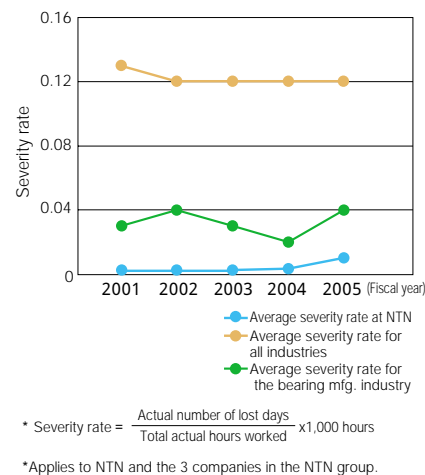
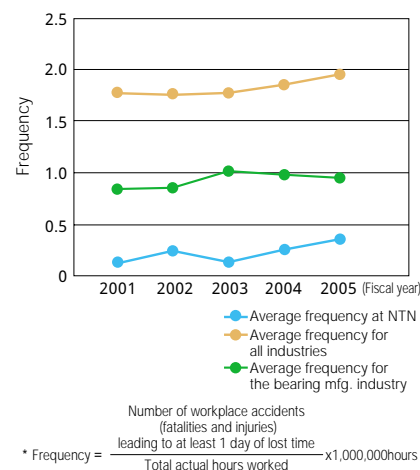
In recent years, the decrease in the number of occupational accidents has slowed, and there is a concern that fewer personnel and personnel changes have led to weakening health and hygiene management. This is why our company is working to become certified in the Occupational Safety and Health and Management System (OSHMS)\*. In January 2006, Iwata Works and Kuwana Works obtained this certification. We are working to have 5 more sites certified by March 2007.



\*OSHMS is an abbreviation of Occupational Safety and Health Management System, which is the name of a management system that ensures that workers can work in a safe and hygienic environment, and is a national standard set out by the Ministry of Health, Labor and Welfare.



### Number of workplace accidents



### Mental health measures

In recent years, mental disorders and stress have come to be problems recognized by society, and it has become an important issue for corporations to address the mental health of employees.

Based on the Ministry of Health, Labor and Welfare's "Guidelines for maintaining and increasing the mental health of workers", and as a specific way to enrich our care structure, our company has created a counseling room where employees can talk to counselors on an ongoing basis. We also conduct "MINI interviews" to respond to the self-care needs of our employees; our management and

supervisors attend mental health seminars to care for our employees.

\* MINI is an abbreviation for the Mini-international Neuropsychiatric Interview, which is a simplified interview that can diagnose depression, panic disorders, and obsessive-compulsive disorders.

### Raising health awareness

Recently we have been working with health insurance associations to provide various cancer diagnoses to promote early detection and early treatment so that our employees can pay attention to managing their own health and even increasing their

health. To prevent lifestyle-related diseases, we have a "High blood sugar improvement program" and walking activities. NTN also implemented back pain classes to prevent back pain.

In addition, we have a "vacation and leave system for care and recovery" in place so that our employees can work with peace of mind. It is difficult to see from the outside what kind of health condition each individual is in, but we are working to create a workplace where free and positive communication can take place so that everyone can look out for one another.

## For Community

In our corporate philosophy, we have a pledge to “contribute to society”, and we are working to carry out public service activities that are done together with local society or integrated with the daily lives of people. The wide scope of these activities includes local “greening” activities, public service activities, coexistence with local society, support of local education, and the advancement and support of academics, sports, and culture. By introducing a volunteer sabbatical system, we have put in place a structure in which employees can actively participate in social contribution activities.

### Local greening activities

#### “Green Fundraising” activities to promote forestation – Iwata City, Shizuoka Prefecture

At Iwata Works, employees have unified to participate in “all-employee activities for taking care of the regional greenery”, to plant 1,500 azalea seedlings on the local “satoyama” (semi-natural areas located adjacent to populated areas that were traditionally cared for and utilized by local residents) over 4 years and to periodically cut the grass there, working with local residents on a volunteer basis for the beautification and maintenance of Satoyama.

Iwata Works has participated for over 5 years in “Green Fundraising”

activities done through Iwata City for the “Forestation event” in which donations are collected for planting seedlings. In February of this year, which marks the 10th anniversary of the enactment of the “Green Fundraising Law”, Iwata Works was awarded a certificate of appreciation by the Shizuoka Prefectural Society for the Advancement of Greening.



#### “Adopt a Forest” agreement signed to stop the deterioration of the forest –Komagane City, Nagano Prefecture

With fewer successors for forest caretakers, forest deterioration has become a problem. Nagano Works recently signed an “Adopt a Forest” agreement with Komagane City, and by thinning in place of the existing caretakers, Nagano Works is working together with the local government to maintain the forest.

This system is one that was established by Nagano Prefecture. Nagano Works will provide 5 years of financial support to Komagane City and will cooperate with the city to maintain the forests along the foothills of the Central Japanese Alps. This will be used as a recreation area for employees as well.



#### Tree-planting at “Bell Farm” agricultural park – Matsusaka City, Mie Prefecture

NTN Mikumo Co.,Ltd. as part of its local green activities, set out in its company-wide 2005 environmental targets, planted five Michelia figo trees at “Bell Farm” agricultural park in Matsusaka City, Mie Prefecture.

The Michelia figo tree is not very common, but is an evergreen shrub of the Magnolia family and is originally from China. It has light yellow flowers at the beginning of summer and gives off a sweet banana-like smell, and for this reason, it is also called “banana tree”. Twenty-seven people, including employees and family, participated in the tree-planting. NTN Mikumo Co., Ltd. received a certificate of appreciation for this tree-planting from Matsusaka City.



#### 4,500 phlox plants planted in park – Kuwana City, Mie Prefecture

Kuwana Works planted 4,500 phlox plants at the nearby Harima Central Park, a place where the people of Kuwana City can relax. A sloped area measuring 150m<sup>2</sup> was planted. Phlox plants have flowers similar to cherry blossoms, and cover the ground like grass as they bloom. City officials including Kuwana City’s mayor, as well as 65 people from NTN attended the planting ceremony. It is our hope that the phlox plants will soothe the eyes of many of the city’s residents and that the area will become a place where they can relax.





## Local contribution activities (Japan)

### Fostering the future engineers of the next-generation automobile industry – Fuji Speedway

Our company provides constant velocity joints and bearings free of charge to motor sports clubs at universities participating in the "Student Formula SAE Competition of Japan", and also provides technical guidance. This competition is an opportunity for students to engage in Monozukuri that stimulates engineering education, and is supported by government, academia, and industry to nurture the development and promotion of automobile engineering and the automobile industry. "From these young people we want to turn out the engineers that will play a critical role in the automobile industry in the future" – This is the vision that we give them.



The Kanazawa University team, supported by NTN, won first place.

### Actively interacting with local society by opening our facilities and holding sports competitions – Kuwana City, Mie Prefecture

Kuwana Works interacts with local society through sports by opening the on-site gymnasium and athletic fields to local residents, schools, and government agencies as well as by holding youth baseball tournaments.



Returning of the championship flag (At youth baseball tournaments held by NTN)

### Promoting interaction with local society through our summer festival –Bizen City, Okayama Prefecture

At the "NTN Okayama Summer Festival", a summer tradition, 3,500 people including local residents, employees, and their families enjoyed the festivities. Its popularity comes from the various events and snack booths.

### Traffic safety activities commended by Nagano Prefecture –Minowa Town, Kamiina-gun, Nagano Prefecture

Nagano Works received the 2005 Nagano Prefecture Traffic Safety Promotion Headquarters Award for its involvement in preventing traffic accidents and promoting traffic safety inside and outside of the Works. Activities included encouraging seatbelt use on company grounds, installing traffic safety signs, and sending employees to help in awareness activities carried out by the local traffic safety society.



Award

### Promoting joint industrial-academic development – Head Office

To tackle future environmental problems, encourage industrial development, and improve the standard of life, our company is promoting research activities in fields such as the environment and energy, medicine and social welfare, and next-generation vehicles. This includes actively supporting joint industrial-academic development.

In fiscal 2005, we carried out joint development on seven themes with four universities. We plan to continue this type of joint research.

### Demonstrating what environmental conservation is - Iwata City, Shizuoka Prefecture

At Iwata Works, we welcome middle school students, who will be taking on the task of conserving the global environment in the future, and we participate in their environmental education.

Recently, 19 junior high school students and their teacher from Fukuroi

City, Shizuoka Prefecture, visited us. After taking a tour of our manufacturing process, environmental facilities, and on-site greening, they participated in a brainstorming and idea exchanging session. The essays that they sent to us later were clear and well thought out, and showed the positive results of this environmental education.



Fukuroi middle school students on a tour

## Emergency Humanitarian Support

### Reconstruction support for the Pakistan earthquake

After the Pakistan earthquake in October 2005, NTN group employees donated 3,144,370 yen and the company donated 3 million yen for a total of 6,144,370 yen to the disaster area through the Japanese Red Cross.

### Reconstruction support for areas flooded by Hurricane Katrina

After Hurricane Katrina hit the southern United States in August of 2005, the employees of our American affiliates gave \$10,679US and the company donated \$14,809US, \$25,488US in total to the disaster area through the American Red Cross.

# For Community

## Local contribution activities (Overseas)

### Americas

#### Supporting a drug elimination education program – USA

Victims of the serious drug problem in the US include children. With the hope of having some effect in preventing this, NTN-BCA's Lititz Plant supports the "Friends of Narcanon" anti-drug education program that saves students from the drug trap.

#### Donations to the largest charitable organization in the USA – USA, Canada

NTN-Bower Corp. and NTN Bearing Corp. of Canada Ltd. both donate to people in need through the "United Way", North America's largest charitable organization that collects funds for a variety of social welfare programs. A "matching gift" program is used where funds donated by employees are matched by the company.

#### Introducing Japanese life and culture to Americans – USA

"Kidscommons" - Columbus Community Children's Museum, was opened in 1998 as a place for children to play and learn together. NTN Driveshaft, Inc. employees introduced Japanese culture there. In the display space on the first floor, a traditional Japanese living room was recreated and became popular with visitors. We will continue to work toward mutual understanding between

different cultures through cultural interaction.



Children delighted by origami hats

### Europe

#### Engaging in sports and interacting with local residents – France

NTN Transmissions Europe supports the "Allonnes Cross-Country Competition" and the "Western France Cross-Country Competition". These competitions are not only places to promote sport, but are also events where employees and their families can interact with local residents to get a better understanding of each other, and are highly effective in this regard. Employees wear T-shirts with NTN logos and participate on company teams and deepen their camaraderie.



The NTN team participated in the race

#### Providing a work experience opportunity – England

NTN Bearings (UK) Ltd. accepts children from local middle schools and provides a work study opportunity to them. We hope that the work experience will make students gain a better understanding of society.

### Asia

#### Promoting higher education through scholarships – Thailand

There are many people in the world who have a desire to obtain an education but are unable to do so because of various circumstances. NTN Bearing-Thailand Co., Ltd. gives scholarships to students who are unable to receive an education because of economic reasons, and provides material support in the form of art-related tools, paper, and brushes to students who are majoring in fine arts.



Presenting scholarship money to the Rajamangala University of Technology

#### Supporting the futsal team of a local elementary school – Thailand

Every year from May to June, there is a futsal competition for elementary school students in the Khonkaen region of Thailand. NTN Bearing-Thailand Co., Ltd. supports this competition by sponsoring a local futsal team.



The "Non Nong Wat" elementary school student futsal team sponsored by NTN





Working for the global environment

# Environmental Conservation Activities



Starting with simple things, we're doing ever more to protect our beautiful planet and ensure the continuation of nature's bounty.



# NTN Environmental Policy

Product development, production activities, sales, logistics, and even service – we look at how each area of business affects the world and the environment that surrounds our daily lives, and we judge how we can be involved. There has never been a time when a corporation has had to think more about the global environment and assertively act on its behalf. The NTN Group is working to protect the global environment both from the standpoint of corporate management and from the standpoint of the regular consumer.

## Basic Concept

Advocating harmony with the global environment is our most important issue and we will make constant efforts to contribute to the harmonious development of society, while aiming to reduce environmental impacts and contribute to a recycling society.

## Action Guideline

In connection with its manufacture and sales of bearings, constant-velocity joints, and precision equipment, the NTN Group will comply with the following guidelines, which state our commitment to continuously reduce harm to the environment from our business activities, products and services and to maintain a safe environment for the future.

- 1 NTN will contribute to world-wide energy conservation by developing and providing eco-conscious products using state-of-the-art high precision techniques and friction-reducing technology.
- 2 NTN not only will comply with the standards and requirements set forth in applicable governmental laws and regulations but also with customers' requirements and internal standards, which NTN will establish as it deems necessary.
- 3 Beginning at the research, development, and design stage, NTN will endeavor to reduce harm to the environment.
- 4 In its purchases of raw materials, parts, and equipment, NTN will take into account protection of the environment, preservation of resources, and more efficient use of energy. In its production and sales activities, NTN will endeavor to reduce energy consumption and waste generation and promote recycling.
- 5 NTN will endeavor to implement production methods and distribution systems that have less environmental effect in terms of use of resources, energy, pollution, and waste.
- 6 NTN will conduct environmental audits and will endeavor to maintain and improve corporate environmental management systems.
- 7 NTN will cooperate in programs for environmental protection conducted by national and local governmental entities and will participate actively in regional environmental activities.
- 8 NTN will conduct environmental education and company-wide promotion activities. NTN will promote improved awareness of this Environmental Policy and environmental protection to all persons working for and on behalf of NTN Group.

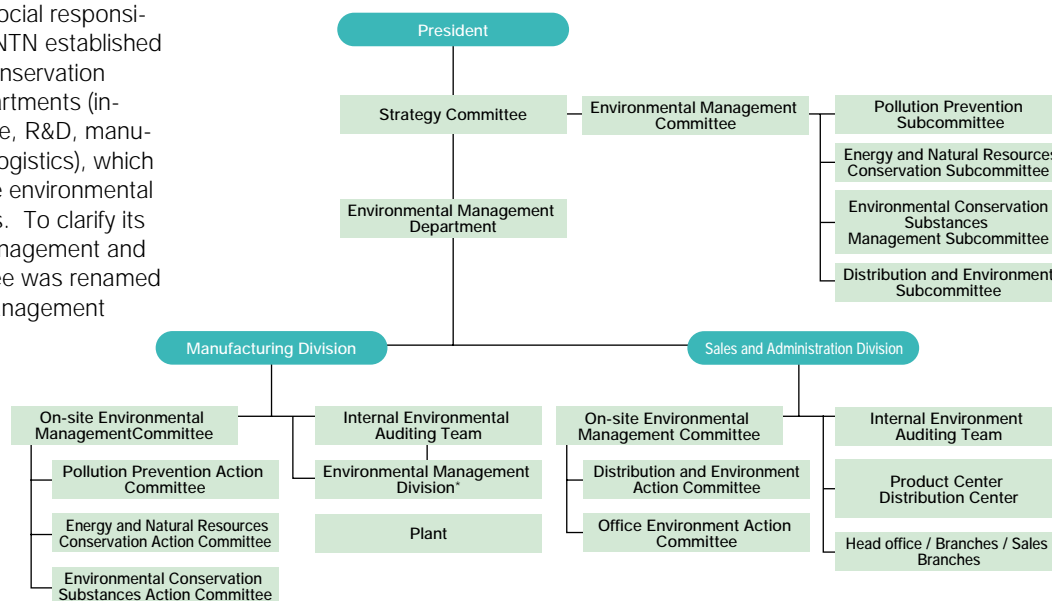
**Kenji Okada**

Managing Director  
Chief Environmental Management Officer  
NTN Corporation  
April 1, 2006

# Organizational Structure of Environmental Conservation and Initiatives

## NTN's Environmental Conservation Structure

Providing a corporate structure to ensure environmental conservation is an especially vital social responsibility. Based on this, NTN established the Environmental Conservation Committee in all departments (including the head office, R&D, manufacturing, sales, and logistics), which began company-wide environmental conservation activities. To clarify its ongoing scope of management and targets, this committee was renamed the Environmental Management Committee.



\*At some sites, the Management Section or the General Administration Office is in charge of this operation.

### Chronology of the NTN Group's Environmental Conservation Initiatives

New laws, international treaties established	Fiscal Year	Details of Efforts
The Basic Environment Law is established.	1993	Environmental Conservation Committee established.
The Basic Environment Plan is settled.	1994	1,1,1-Trichloroethane phased out.
Containers and Packaging Recycling Law is established.	1995	CFC113 phased out.
ISO 14001, JISQ14001 established.	1996	Iwata Works begins preparations to acquire ISO 14001 certification.
The Kyoto Protocol is adopted.	1997	Environmental Management Guide established.
Legislation established for the promotion of global warming countermeasures.	1998	Changed the Environmental Conservation Committee to the Environmental Management Committee. Iwata Works acquires ISO 14001 certification.
Law Concerning Special Measure against Dioxins established. PRTR Law established.	1999	A total of 12 operating sites acquired ISO certification (multi-site). Issued first edition of NTN Environmental Action Report. Development of ECO series product
The Basic Law to promote the creation of a recycling society. Law on promoting green purchasing established.	2000	Trichloroethylene phased out. Disclosed Environmental Accounting. Iwata Works transferred to ISO 14001 (multi-site).
Law Concerning Special Measures against PCB Waste issued. Law for Promotion of Effective Utilization of Resources established.	2001	Dichloromethane phased out. PRTR Law Countermeasures (database)
Soil Contamination Countermeasures Law established. Automobile Recycling Law established.	2002	Zero emission targets established. Respond to EU's End-of-Life Vehicles Directive. Start manufacture and distribution of grinding swarf briquetting machine.
European Union's ELV directive comes into effect. Implementation of Soil Contamination Countermeasures Law	2003	Achieved zero emissions for all domestic operating sites. Incorporated NTN Casting into ISO 14001 (multi-site).
Kyoto Protocol was put into effect. ISO 14001 revised. Implementation of Automobile Recycling Law	2004	Incorporated NTN Omaezaki Corporation into ISO 14001 (multi-site). Completed cleanup of polluted ground at old operating sites (Kishiwada and Kawachi Nagano, Osaka).
Industry standard environmentally hazardous substances set out for the auto industry (GADSL: Global Automotive Declarable Substance List) and the electrical and electronic industry (JIG: Joint Industry Guideline). Amendment to Law Regarding the Rationalization of Energy Use announced. Amendment to the Law Concerning the Promotion of the Measures to Cope with Global Warming announced.	2005	NTN Mie Corporation incorporated into ISO 14001 certification (multi-site). Introduction of "Cool Biz" practices Greening activities adopted company-wide.

# Environmental Targets and Results

## Results for Fiscal 2005

For fiscal 2005, we continued from the previous year by setting 13 items (11 domestically and 2 overseas) in the following three areas:

"Conservation of global environment", "Contribution to a recycling society", and "Maintenance and improvement of environmental management systems". We set concrete numerical targets, etc., and worked toward achieving them.

### Reducing CO<sub>2</sub> emissions and achieving zero emissions

Despite a variety of energy savings measures to reduce our domestic CO<sub>2</sub> emission rate (CO<sub>2</sub> emission divided by value added), we remain at the same level as that of the previ-

ous fiscal year. NTN is committed to greater improvement going forward. Meanwhile, 4 out of 10 sites overseas achieved their targets, and we will promote further energy conservation initiatives at other sites to achieve targets for all of our sites.

Regarding the progress toward zero emissions (activities to achieve zero landfilled waste and a recycling rate of 100%), we achieved a recycling rate of 99.2% domestically, the same as the previous year. The improvement in the recycling rate overseas was below the target value. We will continue to strengthen our recycling and related activities to achieve our targets.

### Conserving resources and strengthening our management structure

Regarding the conservation of resources, results for reducing paper usage were better than the previous year, but results fell just short of our target reduction for the use of Styrofoam.

Because coolants containing chlorine may generate dioxins during disposal, we are voluntarily working to phase these out and will continue efforts to achieve total elimination.

Objective	Target for Fiscal 2005		Result for Fiscal 2005	Evaluation ※1	Page	
Conservation of the global environment	Reduce CO <sub>2</sub> emissions	Domestic	CO <sub>2</sub> emission rate: 20% reduction relative to fiscal 1997	CO <sub>2</sub> emission rate: 18% reduction relative to fiscal 1997	☹️	P34
			Energy conservation diagnosis and improvements for major Works	An energy savings diagnosis was done and the results are being released.	😊️	
		Overseas	CO <sub>2</sub> emission rate: 2% reduction relative to fiscal 2004	4 out of 10 sites achieved their target.	☹️	
	Prevent air, water, and ground pollution	Domestic	Number of halon extinguishers replaced with carbon dioxide extinguishers: 115 units or more	Number of halon extinguishers replaced with carbon dioxide extinguishers: 110 units or more (592 remaining)	☹️	P35
			Elimination of coolants with chlorine: phase out (2 remaining)	Totally eliminated at NTN Omaezaki Corp.; still in progress at Iwata Works	☹️	
Promote the development of eco-friendly products	Domestic	Sales amount for eco-friendly products: +10% relative to fiscal 2004	Sales of new eco-friendly products: 71% higher than 2004	😊️	P14	
Participation in Regional Environmental Preservation Activities	Domestic	Participation in regional green activities	Kuwana Works (Planting moss phlox), Iwata Works (cutting grass on "satoyama"), NTN Mikumo Corp. (planting trees at nearby park), etc.	😊️	P22	
Create a recycling society	Reduce waste materials	Domestic	Promote zero emissions: recycle rate 98% or more*3	Promote zero emissions: recycle rate 99%**	😊️	P36,37
		Overseas	Promote zero emissions: recycle rate 94%	Promote zero emissions: recycle rate 90%	☹️	
	Protect resources	Domestic	Paper consumption: 28% reduction relative to fiscal 1998	Paper consumption: 29% reduction relative to fiscal 1998	😊️	P38
		Domestic	Styrofoam: 84% reduction relative to fiscal 1999	Styrofoam: 81% reduction relative to fiscal 1999	☹️	
Maintain and improve environmental management structure	Promote green procurement	Domestic	Establish environmental hazardous substance management structure	Database of environmentally hazardous substances being compiled	😊️	P32
			Establish green procurement policy	Being promoted		
			Respond to customer audits	Complied with customer audits (2 companies)		
			Promote elimination of phthalate esters	Completed fundamental tests for switching to alternate material		
	Promote ISO 14001 Multi-Site Certification	Domestic	Acquired certification for NTN Mie Corporation	NTN Mie Corporation certified, multi-site certification obtained	😊️	P31
Promote environmental management of the supply chain	Domestic	Support suppliers' acquisition of ISO 14001 and others	Of 332 primary suppliers, 188 have received certification. Began supporting smaller businesses in Japan in obtaining the Eco Stage Introductory Level certification	😊️	P17	
Respond to new laws	Domestic	Respond to ISO 14001 (2004 version) Respond to revised Energy Conservation Law Respond to VOC emission control	Revision of manuals and specifications (NTN Environmental Policy, Environmental Management Manual and NTN Environmentally Hazardous Substance List)	😊️	P32	

※1) Symbols for evaluation: 😊️ achieved/promotes, ☹️ not achieved \*2) CO<sub>2</sub> emission (ton / million yen) =  $\frac{\text{CO}_2 \text{ emission}}{\text{Sales added value amount (million yen)}}$  \*3) Recycling percentage (%) =  $1 - \left( \frac{\text{Final amount disposed of by landfill (tons)}}{\text{Total amount discharged (tons)}} \right) \times 100$  \*4) NTN Casting has a separate target achieving a 50% recycling rate.

## Environmental Target for Fiscal 2006

The environmental targets for fiscal 2006 were based on the efforts and results of 2005, and featured concrete numerical targets for each of the three fields.

We will work still harder to reduce our burden on the environment and achieve NTN's fiscal 2010 targets.

### “Conservation of the global environment”

With the Kyoto Protocol coming into effect, further aggressive efforts to reduce CO<sub>2</sub> emissions are required. In fiscal 2006, we will promote effective energy conservation initiatives at all sites (including those overseas).

Also, we will pursue greening activities company-wide and implement soil pollution countermeasures.

We will address the one site in Japan still using coolant containing chlorine and totally abolish this coolant. Also, we will methodically switch from halon extinguishers to an alternative.

### “Contribution to a recycling society”

Domestically (with the exception of NTN Casting Corp.), we will maintain and continue zero emissions. NTN Casting Corp. will expand its use of waste sand and waste slag. (NTN Casting Corp.'s recycling target: at least 85%.) We will work toward achieving zero emissions from all companies. In addition, we will deploy the grinding swarf briquetting machine to overseas sites in an effort to increase the recycling rate overseas, especial-

ly in North America.

We will continue our efforts to reduce the amount of paper and Styrofoam that we use.

### “Maintenance and improvement of environmental management system”

To respond to the EU's RoHS and ELV directives, we will promote total green procurement. Also, we will support our suppliers in their efforts to obtain environmental certification to improve the environmental management of our supply chain. In addition, as a way to respond to Japan's Amendment to the Law Regarding the Rationalization of Energy Use, we will be working to conserve energy, particularly with cargo shippers.

Objective		Target for Fiscal 2006		Target for Fiscal 2010
Conservation of the global environment	Reduce CO <sub>2</sub> emissions	Domestic	CO <sub>2</sub> emission rate: 20% reduction relative to fiscal 1997 Implementation of energy conservation diagnosis (Large-scale energy conservation measures promoted, horizontal deployment to other plants)	CO <sub>2</sub> emission rate: 25% reduction relative to fiscal 1997
		Overseas	CO <sub>2</sub> emission rate: 2% reduction relative to fiscal 2005	CO <sub>2</sub> emission rate: 10% reduction relative to fiscal 2002
	Prevent air, water and ground pollution	Domestic	Number of halon extinguishers replaced with carbon dioxide extinguishers: 125 units or more	Phasing out of halon extinguishers
			Elimination of coolants with chlorine: phase out (1 remaining-Iwata)	—
		Completion of ground decontamination at Kuwana Works	—	
	Participation in Regional Environmental Preservation Activities	Domestic	Participation in regional green activities	—
Create a Recycling society	Reduce waste materials	Domestic	Promote zero emissions: recycle rate 98% or more <sup>*5</sup>	Continue Zero emissions
		Overseas	Promote zero emissions: recycle rate 94%	Promote zero emissions: recycle rate 98% or more (target for fiscal 2006)
	Protect resources	Domestic	Paper consumption: 31% reduction relative to fiscal 1998	Paper consumption: 50% reduction relative to fiscal 1998
		Domestic	Styrofoam: 84% reduction relative to fiscal 1999	Complete phase out of Styrofoam
Maintain and improve environmental management structure	Promote green procurement	Domestic	Total response to EU directives (RoHS, ELV) Startup of environmentally hazardous substance database	—
			Establishment and deployment of NTN Green Procurement Standard	
			Respond to customer audits	
			Promote elimination of phthalate esters	
	Promote environmental management of the supply chain	Domestic	Promoting the introduction of the Eco Stage Introductory Level certification	—
Respond to new laws	Domestic	Expansion to cargo shipping companies	—	

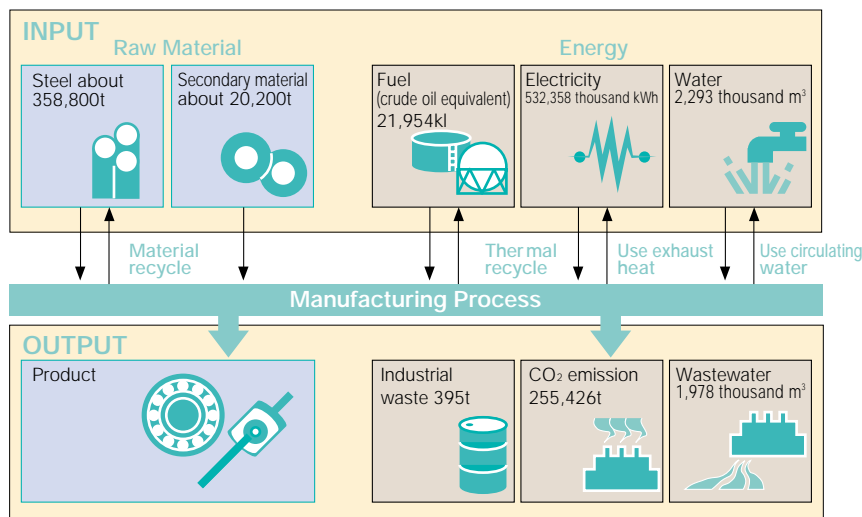
\*5 NTN Casting has a separate target: to achieve a 85% recycling rate.

# Environmental Management

For appropriate environmental management, a management system is critical. At NTN, we are striving to grasp the entire picture of environmental costs by analyzing conservation expenses. We are also working to expand ISO 14001 certifications and implement environmental audits so that we can engage in more efficient environmental management.

## Business Activities and Environmental Hazard

Production for the entire NTN Group (steel and secondary inputs) totaled 379,000 tons, 30% greater than the previous fiscal year. As a result of our energy conservation and zero emission (zero waste) efforts, however, we were able to limit CO<sub>2</sub> emissions to a mere 4% increase over the previous year.



## Environmental Accounting

In fiscal 2005, we spent 1.193 billion yen on capital investment for environmental conservation, and other environmental conservation costs were 3.433 billion yen, for a total of 4.626 billion yen. The economic benefit from these measures amounted to 376 million yen, far exceeding the figure for the previous year's benefit.

- [Accounting standard for environmental accounting]
- Applicable period: April 2005 to March 2006
- Organizational scope: the 13 manufacturing sites in Japan that have ISO 14001 certification (multi-site)
- Conforms to Japan's Ministry of the Environment "Environmental Accounting Guideline - 2005 edition"

### Environmental preservation costs

Unit: million yen / year

Classification of Environmental Preservation Costs		Environmental Equipment Investment		Environmental Preservation Investment Costs	
		Amount	Details	Amount	Details
1) Cost of in-factory facilities (Environmental preservation cost for inhibiting environmental hazards caused by business activities)	Pollution prevention costs	52	Environmental equipment (dust collectors, particulate smoke removal devices, wastewater treatment equipment)	161	Maintenance, inspection, and management of environmental equipment (dust collectors, particulate smoke removal devices, wastewater treatment equipment)
	Global environmental preservation expenses	59	Energy conservation equipment such as new inverters (motors, illumination, air conditioning), equipment to natural gas	67	Equipment costs and peripherals for changing to inverters (motors, illumination, air conditioners)
	Resource recycling expenses	22	Grinding swarf briquetting machines, recycling of waste, equipment to reduce waste	484	Equipment cost for grinding swarf briquetting machines (maintenance costs, intermediate processing costs for waste material, transportation cost, etc.)
2) Upstream/downstream expenses (Environmental preservation cost for inhibiting environmental hazard caused upstream and downstream from the business activities)		0		5	Green procurement (OA devices, paper, stationery, etc.)
3) Management activity expenses (Environmental preservation cost for management activities)		0		236	Labor costs for EMS. Disclosure of information (advertising, environmental action report) Greening and beautification of company grounds
4) R&D expenses (Environmental preservation cost for R&D)		1,060	R&D equipment related to environmental conservation	2,441	R&D costs related to environmental conservation
5) Social activity expenses (Environmental preservation cost for social activities)		0		1	Greening and beautification out of company grounds
6) Environmental remediation expenses		0		38	Soil remediation
Grand total		1,193		3,433	
(Reference) Grand total for previous year		975		3,401	



### Impact on Environmental preservation

Indicator	Result (for fiscal 2005)
CO <sub>2</sub> emission rate	18% reduction relative to fiscal 1997
Reduction of waste	Recycle rate 99%
Reduction in amount of paper purchased	29% reduction since fiscal 1998
Reduction in amount of Styrofoam purchased	81% reduction since fiscal 1999

### Financial effect of environmental preservation activities

Unit: million yen / year

Items	Amount	Details (for fiscal 2005)
Profit from sale of valuable materials such as metal sludge	117	Profit from sale of saleable recyclable materials
Results of energy conservation from air conditioning & illumination	149	Cost reductions through energy conservation
Results of introducing the grinding swarf briquetting machine, etc.	110	Waste processing cost reductions through recycling
Grand total	376	
(Reference) Grand total for previous year	356	

## Present State of ISO 14001 Certifications

At NTN, we are working to obtain ISO 14001 certification for all sites, both domestic and international. To efficiently carry out unified environmental management at all of our companies, we have obtained multi-site certification for 14 domestic sites and 12 overseas sites obtained ISO 14001 certification as well.

In fiscal 2005, Mie Corporation (Kuwana City, Mie Prefecture) obtained multi-site certification, and overseas, Shanghai NTN Corporation obtained the certification



Japan-registration certificate (multi-site)



Registration certificate of Shanghai NTN Corp.

### Certified Operating Sites

Area	Operating Site		Year/Month Obtained		Registration	
	Company Name	Plant Name	Year	Month	Registration No.	Registration Agency
Domestic	Obtained collectively through the multi-site method		1999	11	JSAE176	JSA
	(Sites included are: Kuwana Works, Iwata Works, Okayama Works, Takarazuka Works, Nagano Works, NTN Kongo Corporation, NTN Mikumo Co., Ltd., NTN Engineering Plastics Corporation, NTN Powder Metal Corporation, Hikari Seiki Industry Co., Ltd., NTN Casting Corporation, NTN Omaezaki Corporation, NTN Mie Corporation and the Head Office.)					
USA	NTN USA Corporation	Head Office	2000	4	0112005	LRQA
	American NTN Bearing Manufacturing Corporation	Elgin Plant	2000	6	111994	LRQA
		Schiller Park Plant	2000	9	112115	LRQA
	NTN-BOWER Corporation	Macomb Plant	2000	6	111998	LRQA
		Hamilton Plant	2000	6	111999	LRQA
	NTN-BCA Corporation, Litz Plant		2000	7	A8699	UL
NTN Driveshaft, Inc.		1999	12	A8478	UL	
Canada	NTN Bearing Corporation of Canada, Canada Plant		1999	7	287	KPMG
Germany	NTN Kugellagerfabrik (Deutschland) GmbH, Mettman Plant		1999	6	201167-2	LRQA
France	NTN Transmissions Europe		2003	1	19479	AFAQ
Thailand	NTN Manufacturing Thailand		2003	8	31634	TÜV
China	NTN-NIDEC (Zhejiang) Corporation		2005	1	02005E10013ROL	CNAB
	GUANGZHOU NTN-YULON DRIVETRAIN CO., LTD.		2005	4	104 043247	TÜV
	Shanghai NTN Corporation		2005	7	CHO5/0489	SGS

### Operating Sites expected to be Certified.

Area	Operating Site	Year/Month Obtained	
		Year	Month
China	Changzhou NTN-Guangyang Corporation	2007	5

# Environmental Management

## Environmental Auditing

### Internal auditing and cross-auditing

In addition to ISO 14001 assessments by external organizations, we have introduced "internal audits" done internally by the operation site, as well as "cross-auditing" done by a separate NTN entity. Cross-auditing is an opportunity for both the target site and the personnel performing the audit to learn useful things and identify potential improvements. This provides excellent opportunities to



Cross-auditing

improve the environmental management system at many sites.

### Customer audits

In fiscal 2005, we received two customer audits, in addition to those performed in 2004. These audits focused on the management of environmentally hazardous substances and NTN was commended for our management structure and processes.



Environmental audit by customer

### ISO 14001 renewal assessments

In October of 2005, we received a "migration" assessment because of an update to the "ISO 14001: 2004 standard". This was carried out at the same time as a renewal assessment for the NTN Group's domestic multi-site certifications and NTN successfully passed both the renewal and the migration audits. Also, NTN Mie Corp.'s certification was incorporated into the NTN Japan Group's multi-site certification.



ISO 14001 renewal audit

## Responding to legal requirements

Movements to restrict toxic substances inside products started in Europe in recent years and have spread worldwide. Our company regards the protection of the global environment as a priority management issue and we are proactively working to eliminate the use of toxic substances from our primary products, bearings and constant velocity joints.

### Responding to restrictions on the use of toxic substances

We have implemented the ELV directive (which targets the use of toxic substances in automobiles) and the RoHS directive (which targets the use of these substances in electrical and electronic equipment). Since



Training for new employees

October 2003, we have procured parts for our bearings that contain absolutely no toxic substances. Moreover since March 2003, we have offered alternative materials in our automotive constant velocity joints and we have accomplished the complete elimination of toxic substances.

### Data analysis and maintenance

To prove that products do not contain environmentally hazardous substances, NTN and its suppliers have collected information and analysis results on the chemical composition of NTN products. We maintain databases with the quantity of each chemical present.



Worker education

### Supplier meetings and education related to managing environmentally hazardous substances

Laws, regulations, and customer management standards for the management of environmentally hazardous substances are revised quite frequently.

To ensure adequate compliance with local legal requirements within NTN and in NTN's supply chain, our company holds supplier meetings, department-specific worker education, and training for new employees to share knowledge and information.



Supplier meeting

## NTN employees with qualifications

The more legal requirements become diverse and complex, the more swiftly and accurately we must respond. NTN encourages employees to obtain various qualifications to improve NTN's capabilities.



(As of March 31, 2006)

Major Qualifications		Number of Employees with Qualification
Energy Management Qualifications	Qualified electrical energy manager	18
	Qualified thermal energy manager	20
Pollution Prevention Manager	Air (categories 1-4)	29
	Water (categories 1-4)	48
	Noise	22
	Vibration	17
High-pressure Gas Manufacturing and Security Manager	Refrigerating equipment categories 2, 3	11
	Categories A and B Chemical	12
	Category C Chemical/Liquefied petroleum gas	75
	Category C Chemical/special test items	49
	Category B Machinery	2
Chief Electrical Engineer	Categories 1, 2	5
	Category 3	41
Environmental Measurement Analyst		5
Working Environment Measurement Expert (Type 1, Type 2)		2
Manager of Specially Controlled Industrial Waste		25
Manager of intermediate treatment facility for industrial waste		5
Manager of poisonous and harmful substances		16
Assistant Auditor for ISO 14001 Specification		3
Total		405

## Environmental communication

The NTN Group actively issues information about our environmental activities and we are working to enrich our communication.

### To the general public

In order to disseminate the results of NTN's environmental activities, we issue a "CSR Report" (previously, the "Environmental Action Report"). We also inform the public through our home page as well as through newspapers and magazines.

### To people inside the company

We offer environmentally related information that each employee should know as a matter of course in "TALK21", the NTN Group Bulletin. This includes our environmental policy, activity targets, and recent overseas developments (particularly those in the EU). We expect employees to increase their level of environmental awareness through this bulletin.

### Responding to inquiries

In fiscal 2005, there were over 1,000 inquiries about the content of environmentally hazardous substances from our customers, a sign of the strong interest in the RoHS directive (which came into effect in July of this year). Despite several thousand substances to be investigated, we were able to respond to every inquiry through the total support of our suppliers.

We expect there will be even more inquiries this year, but because of the creation of our database of environmentally hazardous substances, we will be able to answer our customers quickly and accurately.



NTN Group Bulletin



Environmentally hazardous substance database system

# Conserving the Global Environment

## Efforts to Prevent Global Warming

### Toward the reduction of CO<sub>2</sub> output

A significant portion of CO<sub>2</sub> emissions, which is the greatest factor in global warming, stems from production activities. Production sites can have the most effect in reducing the amount of CO<sub>2</sub> by devising energy conservation measures and implementing them.

Through the "Monozukuri reforms" occurring at NTN's various operating sites both inside and outside of Japan, we promote efficient production and various energy conservation measures are encouraged to further reduce CO<sub>2</sub> emissions.

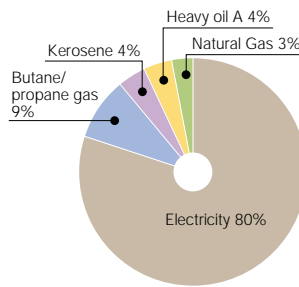
Our efforts to date include: changing the fuel for heat treatment furnaces, collecting waste heat, maintaining centralized control of compressors and air conditioners, and utilizing illumination equipment

with inverters. Each workplace is steadily producing results.

In addition to these efforts, we are making simple changes. For example, turning off unneeded illumination during lunch helps raise the energy conservation awareness of employees.

Recently we have been actively working to use renewable energy sources such as wind and solar energy.

NTN's CO<sub>2</sub> emission by Energy Source



### Implementing diverse energy conservation measures

#### Reducing CO<sub>2</sub> emissions through the "Cool Biz" program

NTN has been at the forefront of the industry and has adopted the "Cool Biz" approach (no-necktie, no-jacket) at our head office and all company offices in Japan. Spearheaded by the Ministry of the Environment, office air-conditioner temperatures will be set at 28°C during the summer months and cool clothing worn to reduce CO<sub>2</sub> emissions.

It is difficult to calculate the exact effect of Cool Biz, but based on a 16% reduction in electrical consumption in June at NTN's head office compared to the previous June (during peak demand), the company-wide electrical power savings is estimated at approximately 52,000 kWh/month and a reduction of 31 tons/month of CO<sub>2</sub>.

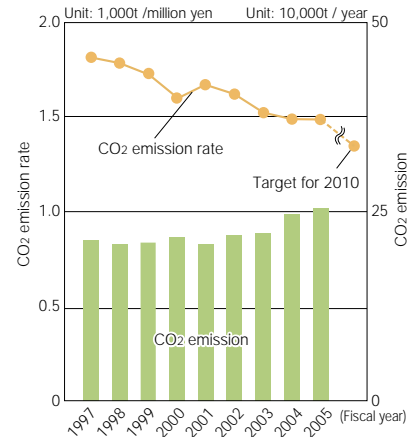


#### Promoting radical energy conservation measures with the aid of NEDO

Since the last fiscal year, we have received assistance from The New Energy and Industrial Technology Development Organization (NEDO), an independent administrative agency. Using NEDO's "Guidance for introducing energy conservation measures (energy conservation diagnosis)" as a stepping-stone, we are moving ahead with dramatic energy conservation measures. Last year, the operating sites with the greatest energy consumption – including Kuwana Works, Iwata Works, and Okayama Works - received energy conservation diagnoses. These sites received suggestions for effective improvements such as using waste heat with cogeneration, energy conservation in heat treatment furnaces, and the appropriate operation of compressors. Each site is going forward with energy conservation modifications.



Annual trends in CO<sub>2</sub> emission rate



Energy Consumption (Yearly)

Electricity	532,358,000 kWh
Petroleum	Heavy oil A 4.055 kl
	Kerosene 4.134 kl
Gas	Butane/propane 7.224 t
	Natural gas 4.032 km <sup>3</sup>

#### Energy conservation at NTN Driveshaft (USA)

NTN Driveshaft, which manufactures constant velocity joints in Indiana, USA, recently changed the covering on their plant roof from a black material that traps solar heat to a white material that reflects it, reducing the 80°C surface temperature of the roof by more than 20°C. The lower roof temperature prevented the air conditioners from over-cycling, saving approximately 90,000kWh/month of power and eliminating 34 tons/month of CO<sub>2</sub>.



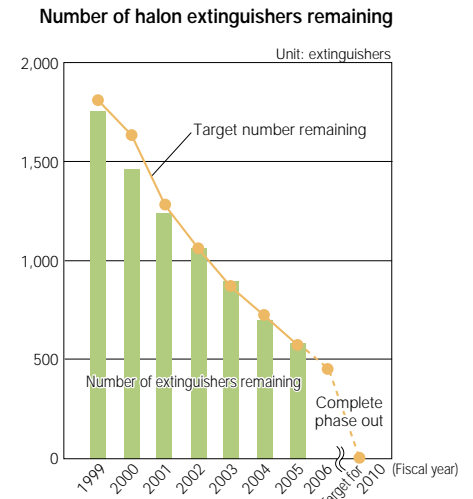


## Efforts to Prevent Air Pollution

### Eliminating halon extinguishers and coolants containing chlorine

Halon compounds used to be common in fire extinguishing agents. Because it became clear that the brominated fluourocarbons in these compounds are harmful, NTN established a plan for the total elimination of halon extinguishers and is working to replace them with alternative extinguishers. In fiscal 2005, we replaced 110 units. There are 570 halon units left in the entire company but replacement at a steady pace will eliminate them by 2010.

On the other hand, there are no legal restrictions on coolants containing chlorine which can generate harmful dioxins during disposal. In 2000, however, we voluntarily decided to eliminate these coolants by 2006 and expect to meet this target.



## Preventing ground and water pollution

### Remediating minor VOC pollution at Kuwana Works

Soil contamination can cause serious health and environmental problems if left unaddressed. NTN regards preventing such ground and groundwater pollution as a vital responsibility and is engaged in forward-facing efforts in this regard.

In November 2002, during a periodic inspection of the groundwater at Kuwana Works, slight volatile organic compound contamination was discovered in one of the wells. This finding did not violate the Soil Contamination Countermeasures Law, but we are voluntarily working to decontaminate this site. At the Works,

the well water in question is extracted and decontaminated. Since 2004, a ground investigation method called the "Kimitsu method" has been used to carry out a detailed investigation of Kuwana Works.

The results show that in the area around the well there was minor VOC contamination at three locations. We began decontamination work at the points with the highest concentration (the hot spots), utilizing ground air suction and groundwater pumping. We expect to complete decontamination during fiscal 2006.

The contaminated locations all exist under existing buildings, but by sending air and ground water through pipes set underneath the floors to the remediation equipment located outside, we have been able to get results without interrupting normal operations.

Since the start of this investigation, we have been reporting our voluntary remediation to Mie Prefecture and have had them monitor things. We plan to continue to periodically report our progress.



Taking ground samples



Piping for decontamination



Remediation equipment

#### What is the "Kimitsu method"?

This is a ground contamination investigation and decontamination method developed in Kimitsu City, Chiba Prefecture. Through this unique investigation method, contaminated areas are determined with pinpoint precision, allowing total decontamination to take place efficiently. It allows investigation and decontamination to take place without interrupting operations. NTN previously used this method with two shuttered sites.



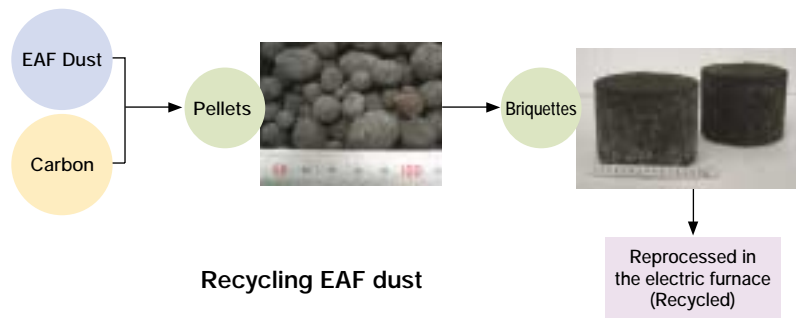
# Creating a Recycling Society

## Development of eco-conscious products

### Seeking new possibilities from the reuse of Electric Arc Furnace (EAF) dust

During the steelmaking process, a metal dust called "EAF dust" is generated. Every year, 500,000 tons of EAF dust is created as a byproduct from electric furnaces in Japan. Until now, methods for dealing with EAF dust have included disposal in landfills as industrial waste or reprocessing along with carbon powder in an

EAF. Recycling this material, however, led to generation of a great deal of dust which had a significant negative effect on the working environment. To prevent this dust from being generated, a solidifying material (binder) can be added, but there are cost issues in adding this binder. Thus, there is high demand for a method to recycle EAF dust that is both friendly to the work environment and inexpensive.



Recycling EAF dust

### Solidification technology meets pelletization technology

NTN has a history of reducing and recycling waste products. In particular, NTN pioneered the "grinding swarf briquetting machine" in 2001, which takes grinding sludge (metal waste) that is generated in the bearing manufacturing process and solidifies it for reprocessing in the steel-making process. It has received accolades from the market and is being used at many manufacturing sites.

NTN decided to take on the challenge of recycling EAF dust by leveraging the technology that was developed for this swarf briquetting machine. By mixing EAF and carbon powder, pellets can be solidified into cylindrical briquettes and reprocessed in electric furnaces, resolving the dust problem in the work environment. This process does not use binder, but requires only an appro-

prate amount of moisture, resulting in cost savings. Completing the picture was combining a pelletizing technology, one in which stable pellet strength can be obtained after solidification, with NTN's briquetting technology. Daiwa Steel Corp. was chosen as our partner and after joint development, the "EAF dust briquetter" was completed.



EAF dust briquetter

## What our R&D Partners have to Say



Engineering Dept. Manager and QA Dept. Manager, Mizushima Works, Daiwa Steel Corp.

Norio Misaki

The problem of recycling EAF dust, which is generated in great quantities, is a problem that any engineer would want to tackle. What we've completed here is something that combines NTN's briquetting technology with our pelletizing technology, and is something that the world has never seen before. We expect it to be an ace in the hole for effectively using resources and reducing waste at the same time. We will continue testing with the aim of increasing its eventual popularity.

### Contributing to "zero emissions"

The "EAF dust briquetter" is the world's first solidification method that does not require any binder. Because no binder is used, the advantages are not limited to cost, the additional burden on the environment from the use of the binder is also prevented - this is an extremely important point.

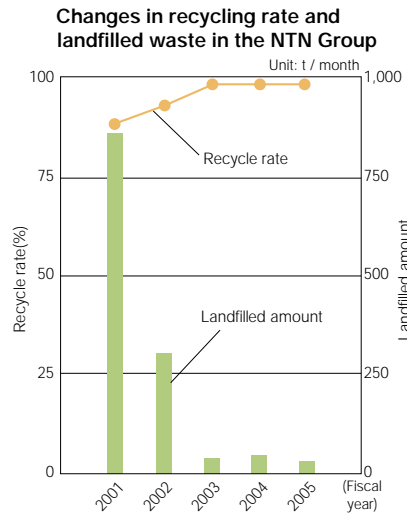
Developing this new way to recycle EAF dust in a low-cost, environmentally friendly way is another chapter in the history of NTN's recycling technology.

## Reducing waste products

### Promoting the effective use of waste sand and waste slag

The NTN Group has a target to achieve "a recycle rate of 98% or more" across the entire company, and we are working toward zero emissions (zero landfilled waste). The recycle rate during fiscal 2005 across the entire company was 99.2%. A challenge remains in raising the recycle rate for the waste sand and waste slag generated by the manufacturing process at NTN Casting Corp. (Izumo City, Shimane Prefecture). (The recycle rate for fiscal 2005 was 68%, and the target for fiscal 2006 is 85%).

This company is cooperating with a local construction association, Tatenui Construction Cooperative to recycle the sand and slag as construction material and to promote the effective reuse of waste sand and waste slag. (Tatenui is the old name for Izumo)



### What our R&D Partners have to Say



Director, Tatenui Construction Cooperative  
President, Yamaguchi Kensetsu  
**Wataru Yamaguchi**

Izumo City is one of leading areas for the domestic casting industry, but the amount of waste products (waste sand and waste slag) generated by local casting processes is ranked 7th in Japan. Activities promoting the "3Rs" (Reduce, Reuse, Recycle) are being promoted in Shimane Prefecture according to a basic environmental plan. In cooperation with local casting plants including NTN Casting, our cooperative is working to effectively reuse casting waste with original technology. Including our "Super Eco Patch", a product that includes waste sand and is certified as a "Shimane Green Product", we have a record of bringing unique new products to market. We will work together with the casting industry to use original technology to effectively reuse waste products.

### Recycling process for casting slag



### An original local product

Asphalt containing waste sand is currently being sold under the name "Super Eco Patch" as a pavement repair material. It is receiving attention as a unique product that uses waste products from the casting industry, the local industry in Shimane Prefecture.

The day that NTN Casting will achieve zero emissions may not be that far off.



# Creating a Recycling Society

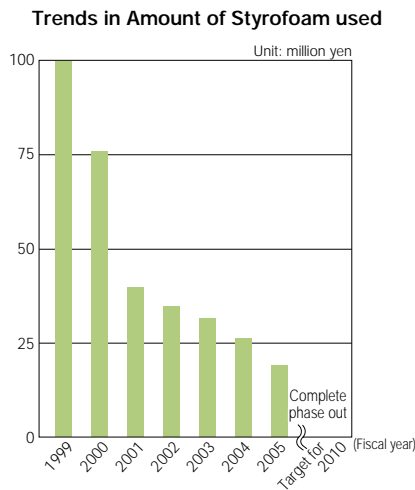
## Promoting Activities to Protect Resources

### Reduction of the use of Styrofoam

At NTN Engineering Plastics (Inabe-gun, Mie Prefecture), we have switched the material used in our trays for shipping molded plastic products for office machines from Styrofoam (which carries a large environmental burden), to PET (polyethylene terephthalate), which has excellent recyclability. These PET trays are molded at the company according to the shape of the product. Lighter and more compact than the previous material, they save transportation fuel costs.



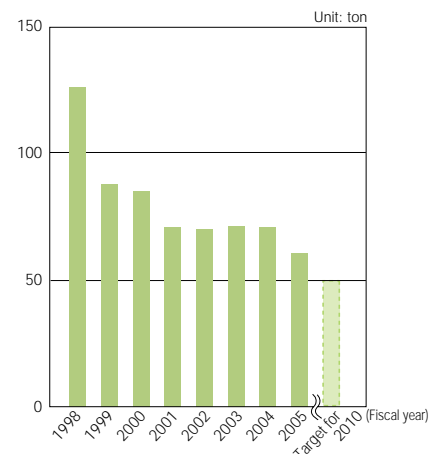
PET tray



### Reduced paper consumption

To reduce the amount of paper we consume, we regularly make double-sided photocopies, and use the backs of used copy paper. We are promoting a paperless office through the use of e-mail inside the company to disseminate information. The result has been a 29% reduction in paper use compared to 1998 levels (beating our target of 28%).

### Annual trends in paper consumption



## Activities to Reduce Environmental Impact of Transportation

### Responding to the amended Energy Conservation Law

In April 2006, the "Law Regarding the Rationalization of Energy Use" (called the Energy Conservation Law below) was amended, and shippers became required to work toward energy conservation. Japan's energy consumption continues to grow, particularly in the shipping field.

In this amendment, companies with more than 30 million ton-km in annual shipments are "Designated Shippers". Starting in April 2007, the logistics departments of these companies are required to report annually to the government about energy conservation plans and equipment investment, and their expected results. Because of this, in fiscal 2006,

our company started investigating the amount we ship, and we are investigating whether or not we fall under the category of "Designated Shippers".

In the past, NTN has actively promoted energy conservation during shipping, bolstering the Ministry of the Environment's conservation initiatives by, for instance, acting to eliminate vehicle idling during stops. To fulfill our responsibilities as a shipper under this latest amendment, we will have a complete structure in place by holding meetings on the amended Energy Conservation Law with shipping companies to gain their understanding and cooperation.

\*Shipped load (ton-km) = Transported weight (ton) X transported distance (km)



Meeting with shipping company



Manual for shippers on how to comply with the revised Energy Conservation Law

# What Our Environmental Managers Have To Say

As NTN spreads globally, how do environmental managers get a grasp of environmental conservation issues and what kind of initiatives are they taking on? We asked some environmental managers from around the world directly so that readers can get an understanding of these issues.

## Japan



**Shinichi Hashimoto**  
Administration Dept. Supervisor,  
Kuwana Works

**“How do we pass on a better environment to the next generation and how do we leave behind a healthful world?”**

*What were the primary environmental conservation measures that you focused on during fiscal 2005?*

In terms of our relationship with the local community, we planted moss phlox in a park close to Kuwana Works in 2006 as part of “participation in local greening activities”, which is a primary part of NTN’s Environmental Activity Policy. Also, we have always pushed our environmental conservation activities, but we were starting to get stuck in a rut. By accepting the opinions of those outside the company, we were

able to promote energy conservation measures from a new point of view. We accepted NEDO’s assistance to have an energy conservation diagnosis done, and we are currently carrying out energy conservation modifications.

*What kind of efforts do you have related to industrial waste?*

Illegal dumping by wicked businesses has become a problem in society. For more than 10 years, Kuwana Works has periodically gone to waste processing facilities to do on-site checks. This is to make certain that NTN’s waste is being disposed of properly, and that there is nothing illegal going on.

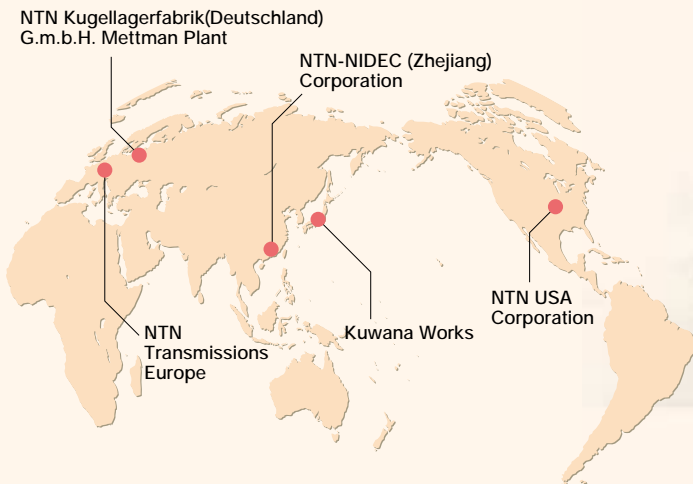
*As an environmental supervisor, what do you think are the issues that should be tackled from here on?*

Although I mentioned a bit about this earlier, the mass media was very interested in the Kyoto Protocol coming into effect, and I believe that preventing global warming is the largest issue from now on. An active stance on the part of the corporation is regarded to be a matter of course, but it is more important for each person to carry out energy conservation as a consumer because the CO<sub>2</sub> emitted by the aver-

age family has been increasing as a result of the convenient life we live. People all over the world must increase their awareness with respect to the environment and put serious effort into this issue so that we can pass on a better environment to the next generation and leave behind a healthful world. I believe these are key points.

*What kind of initiatives will Kuwana Works be carrying out in the future?*

This fiscal year we will be implementing the results of last year’s energy conservation diagnosis and we will be accomplishing some large-scale energy conservation measures that have been proposed. Also, in the past we have actively been using natural energy such as using a small hybrid generator (wind and solar power) to power outside lights to illuminate our parking lot and we will continue to implement global warming prevention measures that use clean renewable energy such as solar power. Also, we will be putting an emphasis on environmental conservation activities that depend on individual participation such as volunteer greening activities.





# What Our Environmental Managers Have To Say

## United States



**Kevin Bulatek**  
Corporate Environmental, Health and Safety Manager, NTN USA Corporation

**“We’re improving our environmental, health, and safety performance through teamwork”**

Tell me about environmental activities of NTN USA.

NTN USA Corporation began actively managing environmental issues in 1997 with the formation of the NTN USA Environmental Committee consisting of environmental staff from NTN’s North American companies. Its purpose was to share information and expertise and work together to improve environmental compliance at US sites.

What kinds of things did the Committee focus on?

Initially, the Committee concentrated on environmental legal compliance and pol-

lution prevention activities, but later expanded to employee health and safety issues and became the Environmental, Health and Safety (EHS) Committee.

There seems to be a great emphasis on teamwork.

By leveraging the experience and expertise of Committee members with diverse EHS backgrounds, sites are able to receive ideas and information on programs, plans, projects, and training to help better manage issues, and, in turn, Committee members learn of new and better ways from the plants they audit.

Since its inception, the Committee has expanded to include health and safety in its mandate. Looking back, how do you feel about the work that’s been done in all areas?

Since 1997, per employee hour worked, the aggregate number of work-related injuries and illnesses (I & I) at the plants has been reduced by 47% (as of 2005), the number of I & Is resulting in days away from work, work restrictions, and job transfers has been reduced by 61%, and the total number of lost work days from I & Is has dropped by 34%. Environmentally, the plants together have, on an annual basis, reduced or prevented well over 100 tons of volatile organic compound air emissions, several million gal-

lons of waste water and oil, and several thousands of pounds of hazardous waste from being generated, as well as recycled several hundreds of tons of recyclable materials and saved hundreds of thousands of dollars. Two plants have also been awarded a total of five state government Pollution Prevention or Environmental Excellence Awards. These results are due to the teamwork of management and employees at each site as well as improvements related to Committee activities.

The 10th anniversary of the EHS Committee is approaching, what are your future goals?

We look forward to working more closely with NTN Japan to develop and achieve meaningful environmental targets and incorporate safety and health activities into our EMSs to further improve performance so that we can help make NTN the safest bearing company in the world with the least impact on the environment.



## France



**Estelle Guillaume**  
Environment and Labor Relations Sect. Manager  
Human Resources Dept.  
NTN Transmissions Europe (NTE)

**“The environment is a problem that everyone should simultaneously consider and act on as their own individual problem...”**

How are you grappling with environmental problems at NTE?

Each employee should be a primary participant in environmental issues, but it is not something easily dealt with as an

individual. The role of the environmental department is to propose basic policies and plans of action to improve the environment, but the success of such plans depends on the participation of employees. In other words, the environment is a problem that everyone should simultaneously consider and act on as their own individual problem.

You mean total participation, right? Can you give us an example?

I think separating waste streams is a good example. By separating waste streams, it is possible to reduce the amount of regular waste (mixed waste). In the past 3 years, employees have promoted the separation of waste streams in the workplace, resulting in a drastic decrease in industrial waste.

Other than separating waste streams, what kind of other efforts are you engaged in?

After employees carefully sort the

waste, recyclable waste is carried to the special recycling center and we request that they be recycled into a useful resource.

Also, by collecting and washing gloves used in the workplace, they can be used over and over again. By making the gloves that we use here last longer, we are controlling this type of waste from being generated.

What are your new environmental targets for fiscal 2006?

Our targets are to reduce the wastewater and waste oil per constant velocity joint produced by 5%, to reduce our water consumption by 5%, to maintain our electrical consumption at the current level, and to reduce NTE’s overall gas consumption levels to 3% of the current level. These environmental targets have been put on beautiful posters that are displayed throughout the plant.



## Germany



**Helga Petrasincu**  
NTN Manufacturing Germany, Germany Plant(DMF)  
Human Resources Manager

### “To learn what we can to preserve the environment”

What kind of efforts are you putting in at DMF in terms of educating employees about the environment?

Employees are thoroughly educated on various environmental problems. We have adopted a comprehensive environmental education system that includes new employee job training, periodic education, and special job training done inside and outside the plant. Through these educational measures, our employees increase their environmental awareness, gain the necessary knowledge, and learn how they should work to preserve the environment.

Describe what's in the employee environmental education manual.

Every new employee receives an Environmental Training Manual on his first day at NTN. This manual contains our basic environmental philosophy, environmental policies set out by top management, and an annual environmental program to be acted upon every year. This includes declarations such as the following: “This company shall work to conserve resources, energy, and water, work to reduce the amount of waste, and work to increase the recycle rate”. These are posted on bulletin boards inside the company so that every employee can see this message on a regular basis.

What is the structure of responsibility with respect to environmental issues?

I am responsible for environmental management overall, but in addition to myself the responsible persons are Horst Gilles (Environment and waste) and Ulrich Leffrang (Operational safety). The three of us are knowledgeable about efforts related to environmental and safety issues, as well as work and education, and we respond appropriately to daily questions from employees.

There is a sense that Germany is a country with extremely strict regulations.

You are correct. Germany has an extremely high level of interest in environmental protection and there are a multitude of laws related to the environment. These laws are periodically revised according to the common policies of the German government and the EU, and every time this happens, the person responsible for environmental management must obtain the information and disseminate it throughout the company.

Your response to the EU's RoHS directive is an example of this, I suppose.

The management of hazardous substances is a particularly vital issue at DMF, one that we specially educate employees on. After the education, we confirm that each person properly understands the management of hazardous substances and is aware of the importance of their duties to make doubly sure that nothing is omitted in management and that no problems will occur.



## China



**Liqin Gu**  
Representative of the General Affairs Manager,  
General Affairs Dept.  
NTN-NIDEC (ZHEJIANG) CORP. (NNSC)

### “I want to contribute to society through environmental activities”

What kind of approach do you have in terms of your environmental efforts?

NNSC obtained ISO 14001 certification in January of last year, starting our environmental efforts. Ever since its inception, based on the NTN Environmental Policy,

we have strived to reduce our environmental load and find harmony with society.

What specific activities have been implemented?

NTN's environmental policies and different environmental posters are posted so that employees are constantly aware of them, and at the same time, we educate new employees and have job training done by outside organizations to increase the employee awareness of environmental preservation.

Also, we have correctly evaluated and identified the environmental characteristics of the plant, set appropriate targets, and manage accordingly. For example, to manage waste, we are effectively using resources by sorting the waste stream into hazardous materials, recyclables, and landfill waste.

What other efforts are you carrying out?

Eliminating the wasteful use of resources. For example, we believe that reduc-

ing water and electrical consumption through conservation is very important.

What about things that inevitably have an effect on the environment outside of the company?

We periodically carry out environmental measurements of sewage, industrial wastewater, noise, and environmental pollutants (such as exhaust from the plant), and we continue to monitor whether or not we are emitting hazardous substances. Other than that, we have always been active in holding training activities such as fire extinguisher training, which is useful in the event of a disaster.

NNSC is going into its second year of environmental activities, isn't it?

Yes. As the person responsible for environmental management, I hope to promote activities that will contribute not just to the company, but also to society as a whole.

## Environmental Initiatives at NTN Sites

### Kuwana Works

2454 Tsuchijima, Higashikata,  
Kuwana, Mie

Operation started : 1918

Site area : 177,900m<sup>2</sup>

Main products :

Ball bearings, cylindrical roller bearings,  
constant velocity joints, steel balls

In an effort to reduce CO<sub>2</sub> emissions, we are converting our heat treatment equipment to run on natural gas instead of electricity. In fiscal 2005, we converted 22 pieces of equipment, reducing the CO<sub>2</sub> emissions attributable to heat treatment equipment by 10% compared to the previous year.

Also, as part of our efforts to recycle waste, we are recycling our used grinding stones into new grinding stones.

Heat treatment furnace converted to run on natural gas



The grinding stone recycling process

### Iwata Works

1578 Higashikaizuka, Iwata,  
Shizuoka

Operation started : 1960

Site area : 226,900m<sup>2</sup>

Main products :

Constant velocity joints, needle roller bearings, ball bearings, and various precision equipment

Last year, the NTN R&D Center installed walkway paving blocks made of waste media (grinding stones) in various locations around the building, including in front of the entrance. There are a total of 10,000 blocks which blend in well with the surrounding greenery and look especially beautiful on rainy days.

Moreover, we invite students from local junior high schools to give them an early opportunity to think about the environment, and through plant tours we show them examples of Iwata Works' environmental efforts in a way that is easy to understand.

Walkway paving blocks made of waste media (grinding stones)



Receiving local junior high school students for an environmental learning session

### Okayama Works

500-1 Hatakeda, Bizen, Okayama

Operation started : 1971

Site area : 175,300m<sup>2</sup>

Main products :

Tapered roller bearings, axle unit bearings, constant velocity joints, steel balls

We check wastewater pipes from the inside and remove sludge, etc., with a pipe camera robot.

Since last year we have responded to many requests from local schools for plant tours, and we are giving these tours as requested including tours of environmental equipment.

Pipe camera robot



Giving an explanation in sign language on a tour for students from a school for the deaf

## Takarazuka Works

2-1 Toyo-cho, Takarazuka, Hyogo  
 Operation started : 1938  
 Site area : 88,300m<sup>2</sup>  
 Main products :  
 Tapered roller bearings, ball bearings,  
 inner rings and pins for needle roller  
 bearings

The Muko River, which originates in the faraway Tamba Highlands, is a clear stream that seems appropriate in Takarazuka, a famous tourist destination and a favorite place for local resident to take walks. To clean up the riverside, employees participated as volunteers in the "Mukogawa Riverside Park Beautification Committee" by picking up garbage, etc.  
 Also, because Takarazuka works is next to Takarazuka City Hall, we have established strict voluntary standards more stringent than the legal requirements to enhance this public area. We are also actively engaged in greening the grounds.

Cleaning up the Muko River riverside



Greening our grounds

## Nagano Works

14017-11 Nakaminowa,  
 Minowa-machi, Kamiina-gun, Nagano  
 Operation started : 1985  
 Site area : 86,700m<sup>2</sup>  
 Main products :  
 Miniature ball bearings, small size ball  
 bearings, cam followers, autotensioners,  
 and parts feeders

We were able to reduce roof surface temperature by using a heat shield paint that reflects sunlight. Because it reduces the load on air conditioners, we plan to apply heat shield paint on all of our roofs.  
 We have continuously participated in "Tenryu River Water Environmental Activities" which follows the motto, "Let's make Tenryu River safe for swimming and create a recycling society". Last year, employees and their families participated in cleaning the riverside and monitored water quality for 24 hours.

Measuring Tenryu River water quality



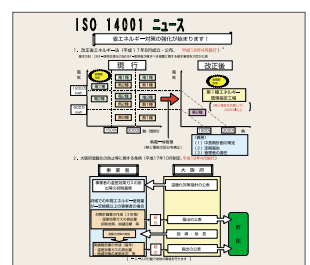
Tenryu River picnic (Riverside cleanup)

## NTN Kongo Corporation

1-3-13 Kido Nishimachi, Kawachi  
 Nagano, Osaka  
 Operation started : 1925  
 Site area : 38,700m<sup>2</sup>  
 Main products :  
 Ball bearings, bearing units, double row  
 angular contact ball bearings, clutch  
 release bearings

By treating rainwater we were able to reuse it as heat treatment cooling water and reduce tap water consumption in our heat treatment processes by 25%.  
 In addition, we publish "ISO 14001 News" quarterly to increase employee knowledge. Its slogan is "we will protect the global environment through individual action". It outlines both the amendment to the Energy Conservation Law and the Osaka prefectural global warming prevention ordinances.

Reusing rainwater as heat treatment cooling water



ISO 14001 News

## Environmental Initiatives at NTN Sites

### NTN Engineering Plastics Corporation

970 Ano, Toin-cho, Inabe-gun, Mie  
 Operation started : 1965  
 Site area : 20,500m<sup>2</sup>  
 Main products :  
 High-performance plastics products  
 made of the original compounds

We planted 60 white oaks along the perimeter of the plant grounds to carry out greening and for beautification. We continue to promote local greening activities.

As the EU RoHS directive's effective date approaches, we held a seminar with 20 cooperating companies to avert the risk of environmentally hazardous materials becoming mixed into products. Through this, we were able to gain a greater understanding from our suppliers of the importance of managing environmentally hazardous materials.

Planting white oaks



Holding the joint seminar for companies on managing environmentally hazardous materials

### NTN Powder Metal Corporation

101 Katsutaba, Kanie-cho, Ama-gun, Aichi  
 Operation started : 1966  
 Site area : 21,000m<sup>2</sup>  
 Main products :  
 Oil-impregnated sintered bearings,  
 hydrodynamic bearings, and sintered  
 mechanical components

Employees participated in a local event held by Kanie Town in Ama County where we helped plant boxwood surrounded by flowers in the shape of the letters "EXPO" on the dike on the left bank of the Nikko River, which runs through western Aichi Prefecture, for the opening of the Aichi Expo.

Also, we carried out job training within the company in preparation for the RoHS directive coming into force. This directive prohibits the use of six substances.

Planting flowers in the neighborhood



Posters showing RoHS directives posted

### NTN Mikumo Co., Ltd.

750-1 Onoe, Matsusaka Mie  
 Operation started : 1988  
 Site area : 33,000m<sup>2</sup>  
 Main products :  
 Needle roller bearings for rocker arms,  
 various clutches, torque limiter units,  
 spherical rings for constant velocity  
 joints, plastic molding

We are actively involved in contributing to the local community through employee volunteerism. In addition to planting trees at Bell Farm agricultural park in Matsusaka, numerous employees participated in a cleanup of the Gonushi Coast as a part of the "river and sea clean campaign" held by Matsusaka City.

In addition, by using distillation regeneration equipment to process used oil, we were able to recycle the oil into the one that has the same performance as new oil, resulting in cost savings.

Cleanup of the Gonushi Coast



Distillation renewal equipment



## NTN Casting Corporation

Hirata plant : 475-1 Nadabun-cho,  
Izumo, Shimane  
Kisuki plant : 231-29 Yamagata,  
Kisuki-cho, Unnan-shi,  
Shimane  
Operation started : 1967  
Site area : 27,200m<sup>2</sup>  
Main products :  
Bearing units, plummer blocks, casting  
material for general industrial machinery

Our casting process had a problem with waste sand spilling out at relay points during a conveyor belt transfer. This negatively impacted the work environment. However, by placing a pneumatic unit underneath the hopper and transferring it by pipe, we were able to eliminate the problem with spillage and improve plant cleanliness.

Also, to improve environmental communication with local residents, we invite them to the plant, introduce the past year's environmental efforts, and offer an opportunity to provide feedback.

Waste sand pneumatic transfer unit



Meeting with local residents

## Hikari Seiki Industry Co., Ltd.

8 Motohigashikata, Sanmaiden-cho,  
Tenri, Nara  
Operation started : 1945  
Site area : 9,100m<sup>2</sup>  
Main products :  
Bearing adaptors, constant velocity  
joint components, and seal wear ring  
for Shinkansen rail cars

We realized significant energy savings by installing efficient inverter-controlled compressors to provide the compressed air used in the plant.

Also, to conserve energy, during "Environmental Month" (June), we conducted a plant-wide inspection to check for and repair air leaks on hoses.

New compressor model with inverter



Inspecting for air leaks

## NTN Omaezaki Corporation

4681-3 Sakura, Omaezaki, Shizuoka  
Operation started : 1966  
Site area : 13,400m<sup>2</sup>  
Main products :  
Needle roller bearings

All employees, including management, participated in beautifying the plant -- truly a plant-wide effort.

In addition, as a measure to control the noise from the tumbler process, we built a building with greater noise insulation and achieved a reduced noise level. As well, to prevent discharge of waste oil, we constructed a state-of-the-art underground facility for waste oil tanks.

Local cleanup



Building with improved noise insulation



## Environmental Initiatives at NTN Sites

### NTN Mie Corporation

3601-25 Mizono, Tado-cho, Kuwana, Mie

Operation started : 2004

Site area : 69,600m<sup>2</sup>

Main products :

Ball bearings, needle roller bearings, tapered roller bearings

At NTN Mie Corp., which began operations 2 years ago, we kicked off efforts to gain ISO 14001 certification in April of last year and we were incorporated into the NTN Group's multi-site certification in November.

Last year, we conducted mock exercises to simulate an oil leak, an event that could have a grave impact on the environment. Also, as NTN Mie Corp. was established as a Monozukuri model plant with a reduced burden on the environment, we installed a wind generator (4kW) and a solar power generation panel (50kW) on the plant roof to utilize natural energy sources.

Oil leak training    Solar energy panel



Wind power generator

### Head Office

1-3-17 Kyomachibori, Nishi-ku, Osaka

Operation started : 1918

Site area : 970m<sup>2</sup>

We have made it a rule to use both sides of the sheet when copying or printing documents to reduce paper consumption. Likewise, we ensure that the backs of fax sheets are also used.

Osaka City has specified the first day of each month to be a "Beautification Day" in which residents and businesses are called on to participate in a wholesale cleanup of the area. Our company's volunteer employees have beautified the local environment on the sidewalk along Yotsubashi-Suji Avenue doing early morning cleanups.

Implementation of the both side printing



Cleaning activity around the NTN head office

### American NTN Bearing Manufacturing Corporation, Elgin Plant

1500 Holmes Road, Elgin, Illinois 60123-1206, U.S.A.

Operation started : 1975

Site area : 137,000m<sup>2</sup>

Main products :

Axle unit bearings, steel balls

We are working to reduce the Volatile organic compounds (VOC) found in the various oils used in the manufacturing process.

In fiscal 2005, we switched rust inhibiting oils and associated VOC emissions were halved.

Also, the Environmental Committee periodically reviews the environmental management system aspects matrix, and follows up to make sure that the plan is achieved.

New rust inhibiting oil supply unit



Review of the Environmental Management System aspects matrix.

## American NTN Bearing Manufacturing Corporation, Schiller Park Plant

9515 Winona Avenue, Schiller Park,  
Illinois 60176-1024, U.S.A.

Operation started : 1971  
Site area : 9,700m<sup>2</sup>  
Main products :  
Ball bearings

In fiscal 2005, we changed to high-efficiency fluorescent lights in our storage area and were able to reduce power consumption by 25% while increasing the brightness inside the building.

In addition, we posted environment-related information on site so that we can raise the environmental awareness of employees daily.

Adoption of high-efficiency fluorescent lights



Posting of environment related information

## NTN-Bower Corporation, Macomb Plant

711 North Bower Road, Macomb,  
Illinois 61455, U.S.A.

Operation started : 1985  
Site area : 406,700m<sup>2</sup>  
Main products :  
Cylindrical roller bearings, tapered roller bearings

We installed gas radiant heaters in the new plant expansion to improve heating efficiency. In addition, we periodically checked and repaired compressed air leaks to conserve energy.

By adding an additive to our water chillers (which cool refrigerant and are part of the air conditioning system for the office areas and assembly department), we raised efficiency by 42% and realized annual cost savings of \$6,500. As a result of these initiatives, electrical consumption was 15% less and gas consumption was 24% less in fiscal 2005 than in fiscal 2003.

Water chiller



## NTN-Bower Corporation, Hamilton Plant

2086 Military Street South, Hamilton,  
Alabama 35570, U.S.A.

Operation started : 1985  
Site area : 205,600m<sup>2</sup>  
Main products :  
Tapered roller bearings

To maintain the optimum gas-air ratio, we adjusted the furnace burners twice a month, resulting in a savings of 375ft<sup>3</sup>/hour (approx. 12%) on #1 Surface Carburizer. Additionally, dramatic gas savings were achieved by replacing the existing furnace trays with 40% lighter ones. As a result of these initiatives, electrical consumption was 21% less and gas consumption was 23% less in 2005 than in fiscal 2003.

Adjusting the furnace burner



New, lighter tray used for heat treatment (right)

## Environmental Initiatives at NTN Sites

### NTN Driveshaft, Inc.

8251 South International Drive,  
Columbus, Indiana 47201, U.S.A.  
Operation started : 1991  
Site area : 480,000m<sup>2</sup>  
Main products :  
Constant velocity joints

In the past, the spent sulfuric acid from the manufacturing process was disposed as waste. However, we negotiated with a processing company to have them use this spent sulfuric acid instead of purchasing fresh acid. This reduced waste costs to zero for this acid.

Also, by sending cardboard to a recycler, we were able to divert 700 tons of waste from landfill.

Spent sulfuric acid



Compressed cardboard.

### NTN-BCA Corporation, Lititz Plant

401 West Lincoln Avenue, Lititz,  
Pennsylvania 17543-7020, U.S.A.  
Operation started : 1997  
Site area : 102,000m<sup>2</sup>  
Main products :  
Ball bearings, needle roller bearings,  
rocker arm bearings, EM couplings

We installed a variable-speed drive scroll compressor to help increase plant capacity. By doing this we are now able to adjust the amount of compressed air according to what is needed in the plant, reducing electrical consumption by 10%.

Variable-speed drive scroll compressor



### NTN Bearing Corporation of Canada, Canada Plant

6740 Kitimat Road, Mississauga,  
Ontario, L5N 1M6, Canada  
Operation started : 1973  
Site area : 61,500m<sup>2</sup>  
Main products :  
Ball bearings, angular unit bearings

A new production line was originally started with cardboard boxes and wood pallets, but in 2005, we changed to 100% returnable packaging. By using 42,000 plastic totes instead of cardboard boxes, we reduced cardboard usage by over 1 tons.

Our building expansion was built using a state-of-the-art heat recovery system that uses waste compressor heat in the winter to pre-heat incoming air. In recognition of this, we received an award for energy efficiency from the Natural Resources Department of the federal government.

Returnable plastic tote



Award for energy efficiency from the Natural Resources Department

## NTN Kugellagerfabrik (Deutschland) GmbH, Mettmann Plant

NTN Strasse 1-3 40822 Mettmann,  
F.R. Germany

Operation started : 1972

Site area : 62,300m<sup>2</sup>

Main products :

Ball bearings, angular unit bearings,  
autotensioners

By passing used oil-water mixture through a vacuum distillation unit and separating it into oil and water, it became possible for the separated water to be treated by regular wastewater treatment and to reduce the amount of waste oil processed by 2%.

Also, by implementing checks for compressed air leaks from equipment and piping, we reduced electrical consumption.

Vacuum distillation unit



Checking for equipment air leaks

## NTN Transmissions Europe

Z.A. des Tremelieres Communaute  
Urbaine du Mans 72704 Allonnes  
Cedex, France

Operation started : 2000

Site area : 456,000m<sup>2</sup>

Main products :

Constant velocity joints

The plant improved indoor air quality by prohibiting indoor smoking and installing systems to evacuate fumes out of the building from the heat treatment furnace and the grinding machine. Thus, there is less need to replenish the air in seasons when heating is required enabling us to reduce natural gas consumption for heating.

Also, we created posters showing the new environmental targets for fiscal 2006 and posted them in the plant to increase employee knowledge and awareness.

Outside smoking space



Poster of the environmental targets

## NTN Manufacturing Thailand

111/2 Moo 4, Tambol Pluakdaeng, Amphur  
Pluakdaeng, Rayong 21140, Thailand

Operation started : 1999

Site area : 114,800m<sup>2</sup>

Main products :

Constant velocity joints, hub bearings,  
needle roller bearings, autotensioners,  
needle rollers for rocker arms,  
hydrodynamic BEARPHITE

We periodically replaced the cooling oil in the compressors and cleaned the air filters to control energy losses and increase operating efficiency. In addition, we conducted our annual check for compressed air leaks from our piping to prevent the over-cycling of our compressors.

Also, we saved energy by adopting pull string switches for our lighting and turning on the lights only when needed.

Checking for air leaks



Fluorescent light with pull switch



## Environmental Initiatives at NTN Sites

### NTN-NIDEC (Zhejiang) Corporation

Pinghu Economic-Development Zone,  
Pinghu City, Zhejiang Province, China

Operation started : 2003

Site area : 43,000m<sup>2</sup>

Main products :

Hydrodynamic bearing units

In fiscal 2004, we received ISO 14001 certification and since then we have steadily implemented various environmental activities. In fiscal 2005, we put in place a waste storage area, making it possible to sort and recycle waste and safely manage hazardous waste.

Display of plan of environmental activities



Waste storage area

### Guangzhou NTN-YULON Drivetrain CO., LTD.

No.11 Jun Da Road, East Dong-Peng  
Avenue, East District of Guangzhou  
Economic and Technological  
Development Zone, Guangzhou,  
Guangdong Province, China

Operation started : 2003

Site area : 52,800m<sup>2</sup>

Main products :

Constant velocity joints

Up until now, we had a processing company dispose of our waste oil, but recently we established a storage area for waste recycling containers to create a way to recycle waste oil.

Also, by changing the colors of the containers for each type of waste, we made it easy for employees to correctly sort their waste.

Waste oil storage area



Waste sorting and storage area

### Shanghai NTN Corporation

No.666, Nanle Road, Songjiang  
Industrial Zone, Songjiang, Shanghai,  
China

Operation started : 2003

Site area : 264,500m<sup>2</sup>

Main products :

Hub bearings, Parts for constant  
velocity joints, Ball bearings, torque  
limiter units

In fiscal 2004, we began our efforts to obtain ISO 14001 certification, and received this certification in July 2005.

Each employee, determined to do what they can, is setting attainable targets and is starting environmental activities such as sorting waste streams.

Obtained ISO 14001 certification



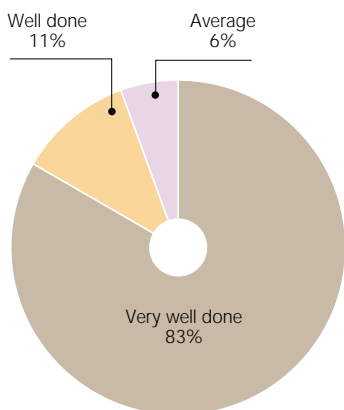
Waste sorting and storage area



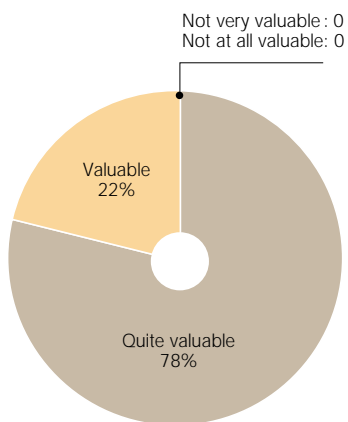
# Results of the NTN Environmental Action Report 2005 Questionnaire

NTN conducted this survey in order to hear everyone's opinions through the Report. We would like to thank everyone who cooperated in this survey and present the following results.

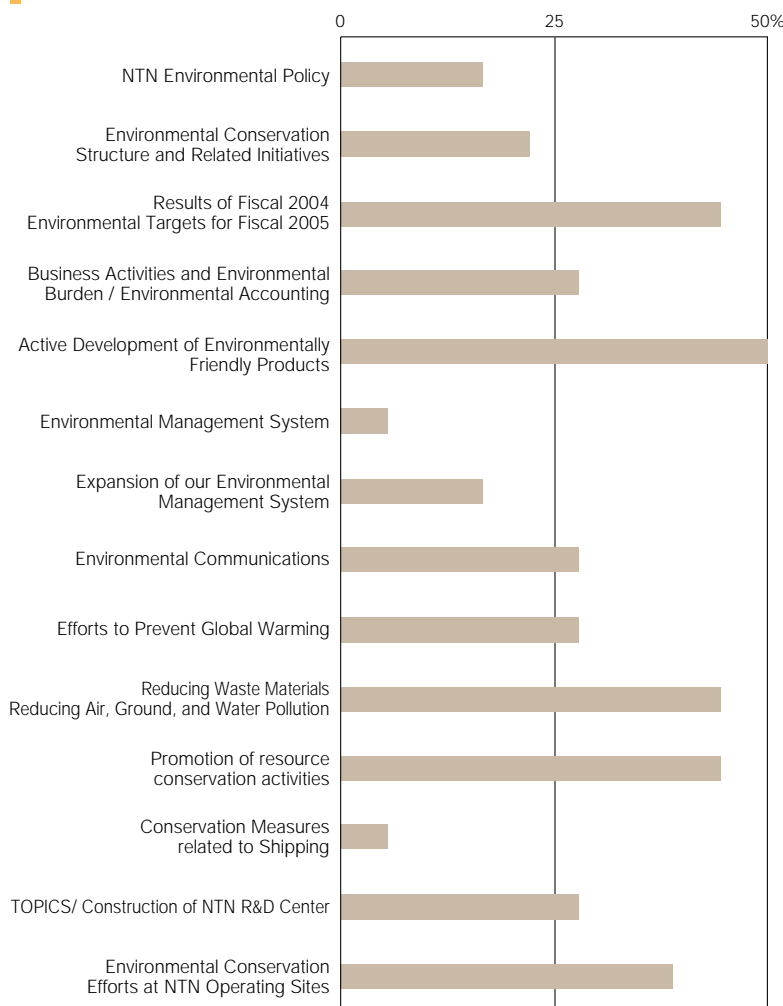
## 1. The report



## 2. NTN's environmental efforts



## 3. The most interesting sections of this report (Multiple answers possible)



## 4. Opinions and suggestions concerning this report

- It was very informative and it will assist in the creation of future environmental objectives and targets.
- I appreciate its transparency as an environmental report, as it showed negative aspects (the ground pollution problem) as well.
- It conveyed NTN's high level of environmental awareness.
- Perhaps you should have articles on environmental efforts by different operating sites regardless of whether or not they are inside or outside Japan.
- The environmental consciousness of employees is important, but I would like you to show how you educate your employees so that they have this consciousness.
- I think it would be even more convincing if you had interviews with people from different departments. I'd really like to hear about what kind of difficulties they faced.
- I think you should have more graphs (bar graphs and pie charts) so that it's easy for regular people to understand.
- It would be most helpful if you could show specific examples of what each operating site is doing in their workplace.

For New Technology Network



## NTN Corporation

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This CSR Report was printed with soy-based ink on 100% recycled paper.

Printed in Japan (2006.09.2000)