

Environmental Initiatives at NTN Sites

Kuwana Works

2454 Tsuchijima, Higashikata, Kuwana, Mie
 Operation started : 1918
 Site area : 177,900m²
 Main products :
 Ball bearings, cylindrical roller bearings, constant velocity joints, steel balls

In an effort to reduce CO₂ 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 CO₂ 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 : 226,900m²
 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 : 175,300m²
 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 : 88,300m²
 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 : 86,700m²
 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



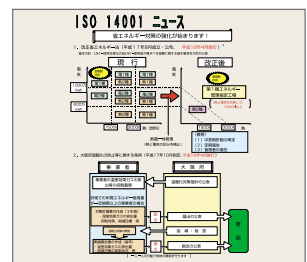
Tenryu River picnic (Riverside cleanup)

NTN Kongo Corporation

1-3-13 Kido Nishimachi, Kawachi
 Nagano, Osaka
 Operation started : 1925
 Site area : 38,700m²
 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 : 20,500m²
 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 : 21,000m²
 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 : 33,000m²
 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 : 27,200m²
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 : 9,100m²
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 : 13,400m²
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 : 69,600m²

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 : 970m²

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 : 137,000m²

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 : 9,700m²
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 : 406,700m²
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 : 205,600m²
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 375ft³/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 : 480,000m²
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 : 102,000m²
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 : 61,500m²
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 : 62,300m²
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 : 456,000m²
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 : 114,800m²
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 : 43,000m²

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 : 52,800m²

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 : 264,500m²

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

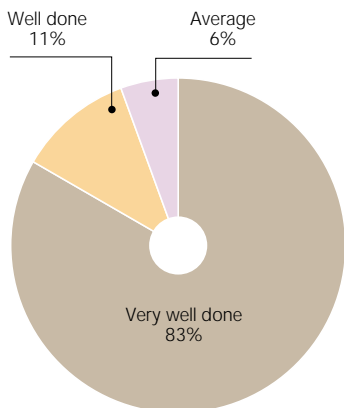


Waste sorting and storage area

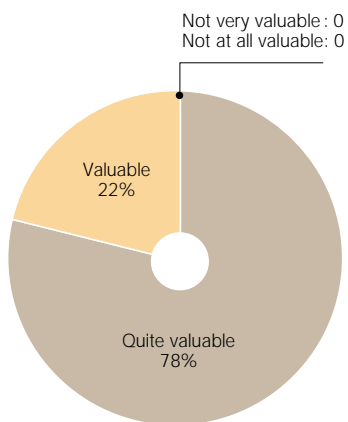
Results of the NTN Environmental Action Report 2005 Questionnaire

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.

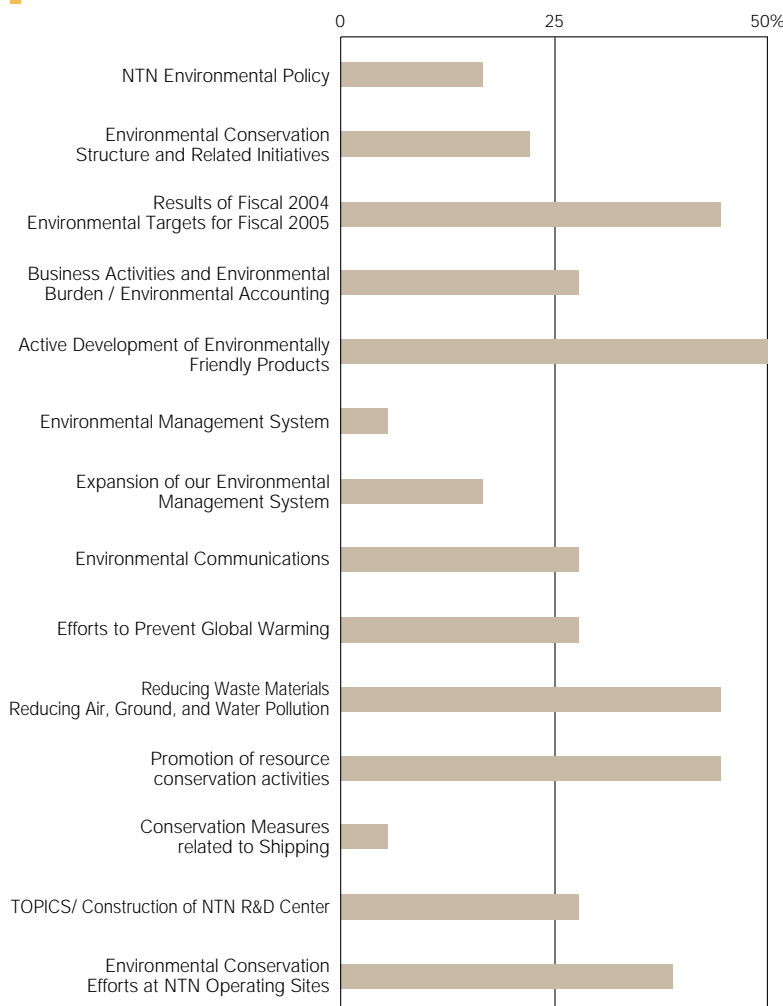
1. The report



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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