

"Minebea's manufacturing activities depend on the communities in which its plants are located. Accordingly, we must strive to contribute to the communities without being a burden on them", said then-president Ogino at a meeting of the Corporate Environmental Protection Committee in June, 1993.

Today, this conviction is shared by all Minebea Group companies and serves as a guideline for environmental protection. The spirit of "contributing to the communities without being a burden on them" lead to the contribution to the global environment.

■ Reduction of Energy Consumption/Contribution to Prevention of Global Warming

◎ Reduction of Energy Consumption (Karuizawa Plant)

The Karuizawa Plant is undertaking various efforts to reduce energy consumption. Refrigeration units have been replaced with high-efficiency ones as was the case last year to decrease electric power consumption for air conditioning. Other examples are, installation of inverters to power machinery, human detection sensor for automatically turning off unnecessary lighting, installation of LED lighting, adjustment of light output to decrease fluorescent lamps, optimizing the preset temperature of air conditioners to eliminate waste of energy, reviewing pressure setting of air compressors, and posters for increasing awareness about energy saving.

In addition to our energy-saving efforts to lower CO₂ emissions described above, fuel for air conditioners such as water cooling/heating equipment and boilers is switched from heavy oil A to natural gas to lower CO₂ emissions further.



Poster for energy-saving campaign introducing various energy-saving effects

◎ Reduction of Energy Consumption (Thai Operations)

Various energy-saving activities are developed for Thai Operations. Minebea took part in Total Energy Management: TEM4, a project sponsored by the Ministry of Energy, attended seminars given by professionals of the energy-saving project and won highest award for Energy Conservation Plant Manager in Thailand Energy Award 2007 sponsored by the Ministry. We also invite government-affiliated specialists in energy-saving to have in-house seminars for improving the level of employees. As such steady efforts take effect, about 40 measures for energy-saving have been taken voluntarily in four plants in Thailand. The Minebea Group will not only continue to participate in energy-saving programs and cooperate with Thailand but also take an active role in energy-saving programs.



Vutichai Udomkarnjananan, director, receiving a trophy from Dr. Piyasawat Ammaranan, minister of the Energy-saving Ministry (right)

◎ Participation in CO₂ reduction/light down campaign (Hamamatsu Plant)

The Ministry of the Environment sponsors "CO₂ reduction/light down campaign" around summer solstice every year, suggesting to people at home as well as private facilities and public facilities across the country that they should turn out light to prevent global warming. In 2008, they asked facilities with lighting equipment nationwide to turn out light from 8 pm to 10 pm on June 21st (summer solstice) and July 7th (first day of Toyako summit) and Hamamatsu Plant took part in the campaign. Important objective of the campaign is not only amount of reduced power but also experience of darkness during the campaign so that people will review life in a earth-friendly way.

Only 15 kW was saved during the two days (four hours) in Hamamatsu Plant, but the nationwide result is as mentioned below.

Nationwide result of the campaign in 2008

Participant: 149,937 facilities

Amount of power consumption reduced: 2,370,807 kWh

Reduced amount of CO₂ emission: 925 tons of CO₂

(Equivalent to emission of about 64,000 households per day)

◎ Review of lighting intensity and reduction of fluorescent lamps in offices (Yonago Office, Minebea Motor Manufacturing Corporation)

We reviewed intensity of light and reduced the number of fluorescent lamps of the roof illuminations in Yonago Office, Minebea Motor Manufacturing Corporation, where all the roof illuminations had been turned on before, yielding 1,000 lux.

Reviewed light intensity

Before reviewing: 1,000 lux

After reviewing: 600 lux

Number of fluorescent lamps

Before reviewing: 120

After reviewing: 100



Hamamatsu Plant with lights turned on
The lights and some other light in the plant were turned off from 8 pm to 10 pm on June 21st and July 7th



Yonago office after reducing fluorescent lamps

◎ Energy-saving and greening activities in offices (Fujisawa Plant)

We rearranged layout of management center offices to make working environment more friendly.

In addition, human detection sensors and high-efficient lighting fixtures are installed to hot-water service rooms and toilettes and air conditioners were replaced with ones with individual control so that every room can be adjusted to optimum setting to save energy further.

Following rebuilding of aerospace components plant, we switched a part of old outdoor workplace to green space of 630 m² and planted over one hundred trees and flowers. Sitting area is installed in the green space to make it a place for employees to relax.



Energy-saving office with new layout



New green area and sitting area

◎ Installation of low-emission vehicle (Thai Operations)

We introduced low-emission vehicles which run on natural gas to decrease emission of air pollutants and environmental burden.

The low-emission vehicles are generally known by the name of CNG (Compressed Natural Gas) vehicle or NGV (Natural Gas for Vehicle). We are planning to introduce the NGV system to three microbusses.



Gas tank installed on NGV

◎ Ecological Commuting (Karuizawa Plant)

Ecological commuting refers to environment-friendly commuting by public transportation, bicycle or on foot without using private cars. Ecological commuting is not only earth-friendly but also help improve employee's health and ease traffic jams.

We have promoted ecological commuting by means of posters, etc. for prolonged periods.

Even though the Karuizawa Plant is not well located in terms of public transportation and most people use cars for transportation, not a few employees switched from commuting by car to commuting by bicycle or on foot, implying high interest in ecology.



Employees commuting by bicycle

■ Promotion of 3R (Reduce, Reuse, Recycle)

© New Hampshire Ball Bearings (US) was presented the 2007 Governor's Award for Pollution Prevention

The Astro Division of New Hampshire Ball Bearings (hereinafter called NHBB), US subsidiary of Minebea, was honored by the US State of New Hampshire for its pollution prevention practices and was presented the 2007 Governor's Award for Pollution Prevention in September, 2007.

This award was presented due to the outstanding pollution prevention practices based on the program promoted by the New Hampshire Department of Environmental Service.

The Astro Division of NHBB, manufacturing spherical bearings and rod-end bearings for Aerospace use, has dedicated itself to establishing and maintaining a world-class environmental management system (EMS) that includes internal and external commitments to reduce their environmental footprint.

Between 2003 and 2006, the Astro Division reduced 4 tons of hazardous waste and 191.4 tons of non-hazardous waste. Additionally, their emissions reductions were 174 tons of carbon dioxide, energy reduction was 4,251,650 kWh and they had net water savings of 718 kiloliters.

© Activity of 3R committee (Shanghai operations)

The 3R committee of Shanghai operations was established with the aim of reducing, reusing and recycling waste from plants and of controlling and disposing waste in compliance with relevant regulations. The 3R committee has about 40 people selected from respective departments consisting of five sections organized according to waste type (scrap iron, waste plastic, waste oil, general waste and business management) as well as chairperson and secretariat conducting daily operation and holding regular meeting to which all the members attend.

In addition to work of reducing and controlling in-house waste, the 3R committee also checks if the waste emitted or sold externally is disposed in accordance with regulations including checking qualification of waste collectors and checking with visiting audit.

We take into account market price and sales price of other plants in determining sales price of waste to make it appropriate. Part of the proceeds was spent in manufacturing and distributing eco bags to all the employees to correspond to the Charging on Plastic Bags System which came into effect in June, 2008 to reduce amount of waste plastic bags by stopping free distribution, as enlightenment activities.



Shield given for 2007 Governor's Award for Pollution Prevention



Manager Herb Parkhurst (third right), receiving the shield from John Lynch (second right), governor of the State of New Hampshire.



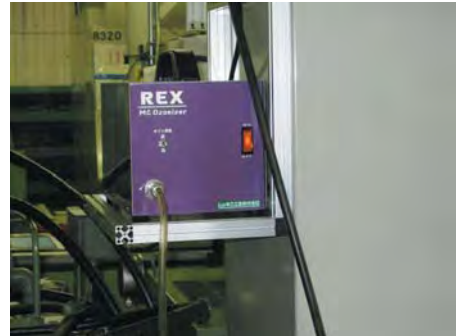
Audits of waste disposers conducted by the 3R committee

◎ Decrease of water-soluble waste oil (Karuizawa Plant)

Soluble cutting oil is inevitable for precision-machining metal components such as ball bearings, rod-end and spherical bearings.

Soluble cutting oil rot should be replaced approximately every three to six months because bacteria grow to give off evil smell.

As we have reduced amount of waste year by year, soluble waste oil has the highest percentage among waste in the Karuizawa Plant. We introduced ozone generators as an attempt to decrease soluble waste oil. Ozone is said to be effective in preventing and removing putrid smell of soluble cutting oil and we can expect to reduce the amount of waste by extending useful life span of soluble cutting oil.



Ozone generator installed to a cutting machine.

◎ Making biodiesel¹ from waste oil (Thai Operations)

Minebea financially assisted "R & D center for utilization of biodiesel" established in Bangkok immigration office in cooperation with Takahashi Foundation to contribute biodiesel production facility. The facility enables to make biodiesel from used cooking oils.

The center not only aims for reduction of environment problem by reducing use of fossil fuel and waste of cooking oils but also aim to provide the knowledge of manufacturing biodiesel to schools, government organizations and private organizations in neighboring community interested in biodiesel.



Biodiesel made from cooking oils



Biodiesel manufacturing machine

◎ Reduce of waste (Thai Operations)

The Ayutthaya Plant in Thailand made chairs, desks and sunshade for sitting area for relaxation using wood boxes in packaging materials to reduce waste and use resources effectively.



Desks, chairs and sunshade made from packaging materials

Glossary

- Biodiesel:** Biodiesel stands for biodiesel fuel, a generic term used to refer to fuel for diesel engine made from biologic-origin oil and is a kind of biomass energy.

Management of Environmental Burden

Acquisition of ISO/IEC 17025:2005 international laboratory accreditation for all six RoHS substances (Karuzawa Plant)

The Material and Process Laboratory of Minebea Co., Ltd. acquired accreditation for the ISO/IEC 17025:2005 standard in the field of analysis with respect to the six hazardous substances of the EU RoHS directive, namely lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers on March 14, 2008. Certificates of analysis issued by the laboratory with the accreditation is regarded effective in international trading according to the global Mutual Recognition Arrangement (commonly called MRA), meaning that the certificates are effective all over the world.

The Karuzawa Plant is the third laboratory to obtain the accreditation after Minebea R&D center in Thailand and Shanghai Plant in China and the first laboratory in Japan to obtain the accreditation for all the six hazardous substances described above. In order to ensure RoHS compliance, Minebea installed X-ray fluorescence (XRF) spectrometers to all the plants and divisions handling materials that may contain hazardous chemical substances in order to check all materials for hazardous chemical substances during receiving inspection. If excessive levels of hazardous chemical substances are contained, we conduct more accurate analysis in the laboratory described above.

Rehabilitation of Contaminated Soil and Groundwater

Cleanup of contamination from organic chlorinated solvents

Since it previously used organic chlorinated solvents in its manufacturing processes, Minebea has conducted voluntarily inspections of its plants in Japan. These inspections confirmed the presence of contamination at the Karuzawa, Fujisawa and Omori plants, as well as the site of the former Ichinoseki Plant. Minebea promptly informed local authorities and, in line with directives issued thereof, is implementing cleanup measures.



Certificate issued by The Japan Accreditation Board for Conformity Assessment



Appendix issued by The Japan Accreditation Board for Conformity Assessment (Excerpt)