

Minebea Group plants are engaged in a wide range of environmental preservation activities. This section introduces some of these activities.

Reduction of Energy Consumption/Contribution to Prevention of Global Warming

Introduction of high-efficiency refrigeration unit (Karuizawa Plant, Japan)

With the aim of reducing energy consumption and contributing to the prevention of global warming, the Karuizawa Plant introduced a new, high-efficiency refrigeration unit. The new unit delivers sufficient refrigeration without the simultaneous operation of an absorption refrigerator, which was necessary with its predecessor. This has not only decreased electric power consumption, but also enabled the plant to achieve a 44% year-on-year decrease in its monthly consumption of heavy fuel oil. A total of nine such units were introduced at other plants in the Minebea Group, replacing existing units, contributing to a significant reduction in energy use and CO₂ emissions.



Newly introduced high-efficient refrigeration unit

Reduction in electrical power used by compressors (Karuizawa Plant, Japan)

The compression level of air used in Minebea's production facilities varies depending on the type of facility. To date, it has been common practice to flow air in at the highest possible pressure setting. With equipment not requiring such high pressure, this approach resulted in considerable waste. With the aim of reducing waste, the Karuizawa Plant reduced pressure settings on all equipment and installed pressure valves in equipment requiring higher pressure levels. As a result, the plant succeeded in reducing the amount of electric power used by the compressor by 18% from the 2004 level, as well as achieving a 114-ton reduction in annual CO₂ emissions.



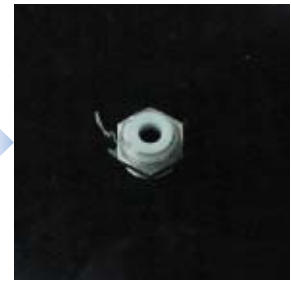
Compressed air flow meter and pressure-reduction valve

● **Reduction in amount of compressed air used (Bang Pa-in Plant, Thailand)**

Certain cutting and cleaning equipment at the Bang Pa-in Plant uses compressed air generated by air compressors to cut and clean parts. Air is pumped in by air guns and ventilation units. The apertures in the air guns and ventilation units are larger than necessary, meaning they use a significant volume of air each time they are used. To remedy this situation, the Plant manufactured and installed special parts to reduce the size of the apertures. This made it possible to reduce the flow of air to the minimum volume necessary, thereby reducing electrical power required by the compressors by a volume comparable to the volume of compressed air previously wasted.



Aperture before modification



Spacer attached to air gun

Examples of Uses



Aperture after modification



Spacer attached to cutting machine

● **Switch to natural gas (Rojana Plant, Thailand)**

For 11 years the Rojana Plant in Thailand has used liquified petroleum gas (LPG) butane for diecast manufacturing processes. In May 2006, however, the plant switched to natural gas. This move enabled the Rojana Plant to lower CO₂ emissions into the atmosphere by approximately 17% compared with fiscal 2006.



Natural gas supply line

● **Switch to energy-saving light fixtures (Fujisawa Plant, Japan)**

The Fujisawa Plant replaced existing fluorescent lighting in its staff canteen with new energy-saving fluorescent fixtures. This enabled the plant to reduce the number of fixtures by 30% to 70, from 100, while increasing average luminous intensity by 12.5%, as well as to lower energy consumption by 43%.

The plant also installed new lighting in its tool plant, replacing existing mercury lights with energy-saving fluorescent lights. This move resulted in a 25% increase in average luminous intensity, while reducing energy consumption by 33%.

The new fixtures enabled the plant to lower energy consumption, resulting in a 40% reduction in annual CO₂ emissions.



Canteen before change in lighting



Canteen after change in lighting

● **Cool Biz introduced (Hamamatsu Plant, Japan)**

With the aim of contributing to the reduction of global warming, from mid-June through late September, the Hamamatsu Plant introduced “Cool Biz” in line with a campaign launched by the Japanese Ministry of the Environment to encourage workers to dress down during summer months.

Under this campaign, the default temperature for air conditioning equipment was raised and office employees and guests were urged to shed their jackets and ties.



Poster for employees of the Hamamatsu Plant

● **Management of Environmental Burden**

● **New wastewater treatment facility installed (Rojana Plant, Thailand)**

The Rojana Plant installed a wastewater treatment facility with the aim of improving the efficiency of oil and grease separation, a process in the production of diecast parts. The new facility also conducts secondary processing of wastewater from the plant's metallizing line. These measures have reduced the environmental impact of wastewater treatment at the plant.



The Rojana Plant's new wastewater treatment facility

● **Management of hazardous substances—
installation of new XRF spectrometers
(Japan, Thailand, China)**

As part of its effort to regulate key hazardous substances covered by the European Union's RoHS directive, the Minebea Group has implemented Green Procurement in an effort to ensure the raw materials and parts it purchases contain no hazardous chemical substances. To date, the Group has used X-ray fluorescence (XRF) spectrometers to facilitate prompt testing for hazardous chemical substances upon receipt. In 2006, seven additional units were installed in plants in Japan, China and Thailand, thereby enhancing the effectiveness of testing procedures.



XRF spectrometer installed at the Omori Plant (Japan)

● **Site Greening Program**

● **Site greening program (Yonago Plant, Minebea Motor Manufacturing Corporation)**

The entire staff of Minebea Motor Manufacturing's Yonago Plant took part in a plant greening

program conducted as part of the plant's Environment Month.



Poster announcing Environment Month at Minebea Motor Manufacturing's Yonago Plant



Employees participating in the plant greening program

● **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 voluntary inspections of its plants in Japan. These inspections confirmed the presence of contamination at the Karuizawa, Fujisawa and Omori plants, as well as at the site of the former Ichinoseki Plant. Minebea promptly informed local authorities and, in line with directives issued thereof, is implementing cleanup measures.

In January 2007, a voluntary inspection of groundwater on the edge of the Karuizawa Plant discovered trichloroethylene in a concentration 1.7 times the maximum allowable level in one location. Minebea reported its findings to local authorities and commenced remediation using a vacuum well installed on site.