

Initiatives to Prevent Global Warming

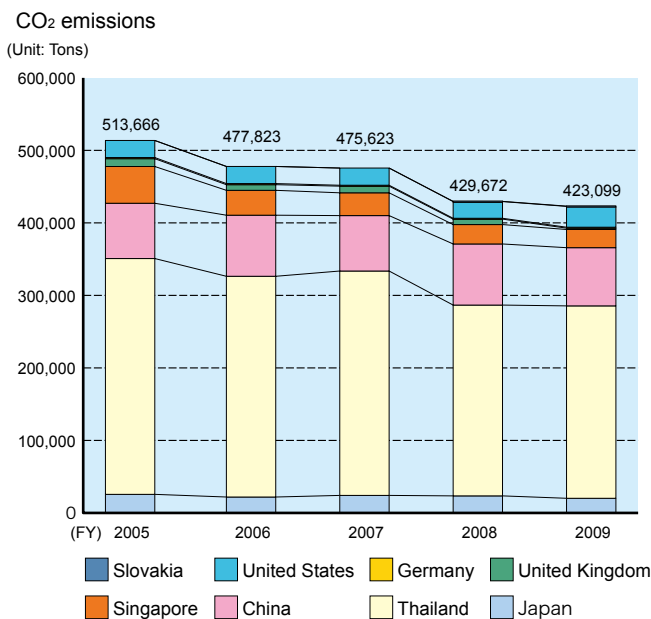
Minebea Group management emphasizes initiatives to reduce CO₂, as a measure against global warming.

Basic Approach

Most of the greenhouse gas emitted through the business activities of the Minebea Group is CO₂, created through our use of energy. Of this, more than 95% is due to electricity consumption, which is why we see initiatives related to electricity use as important, and have instituted individual energy conservation efforts at each plant. In January 2010 we took energy conservation even further, establishing the "Energy Conservation Promotion Committee," which promotes the sharing of knowledge between all plants and offices, and facilitates the pursuit of energy conservation activities with a shared viewpoint and goals.

Recap of FY2009

The CO₂ emissions for the entire Minebea Group in FY2009 totaled 423,099 tons. This represents a reduction of 23% in comparison to the 549,460 tons of CO₂ emitted in FY2003, when the Group began collecting data on CO₂ emissions. Although this reflects the effects of a worsening business environment, it is also due to changes in the heavy oil used at the Karuizawa Plant, and to energy conservation at plants in Thailand, the largest production facilities in the Minebea Group.



Initiatives at Offices

Reduction of heavy oil fuel use (Karuizawa Plant)

Traditionally, boilers and cold/hot water supply machines using fuel oil "A" as heat source for air conditioning have been used in various plants. However, burning of fuel oil "A" will cause carbon dioxide blamed for global warming as well as dust and nitrogen oxide that are harmful to humans to be released into the atmosphere. The boiler and cold/hot water supply machines using fuel oil "A" were changed into equipments using city gas in Karuizawa Plant as city gas pipes were laid around the plant and carbon dioxide emissions were reduced about 24% compared with old equipments.



City gas boiler in the Karuizawa Plant

Construction of energy-saving plants (Thai Operations)

New plant for cutting and pressing process of bearings in Bang Pa-in Plant, Thailand, which started operation in June 2008, was built with the concept of "the most energy-saving plant in the Minebea Group"

Cutting and pressing are a difficult machining process as that consumes large amount of energy. Previously, every overseas manufacturing plant performed the processes from manufacturing parts to assembly. The cutting and pressing processes are consolidated in the new plant where skilled workers trained in Thailand manufacture parts, which are supplied to plants in Thailand and Singapore to increase production efficiency and to contribute to energy saving.

Various measures to conserve energy were adopted to build the new plant and energy cost such as for electricity and water was reduced by approximately 45% than conventional Minebea plants. These measures saw the Bang Pa-In plant in Thailand won the "Highest Award for Energy-saving Controlled Plant" in the "Energy Award in Thailand, 2008" held by the Thai Department of Energy.

【Measures to conserve energy adopted in the new plant】

1. Thermal barrier coating on the outer wall and roof of the building
 2. Adoption of high-efficiency water-cooled turbo freezing machine
 3. Adoption of high-efficiency air blower
 4. Adoption of electronic ballast for fluorescent lamps
 5. Adoption of downlight LED for outdoor lights and interior lights
 6. Recovery of waste heat and adoption of controlling fresh air intake using CO₂ sensor
 7. Adoption of high-efficiency transformer
- Particularly effective energy consumption measures are also being implemented at existing plants



Energy-saving plant built in Bang Pa-in Plant, Thailand

Initiatives at Offices

Lighting reduction initiatives (Tokyo Headquarters)

Air conditioning and lighting consumes a large amount of the energy used at Minebea Group offices. All offices and sales offices work to conserve energy through measures such as making sure not to use excess heating and cooling, and cutting down on lighting by a degree that does not affect work.

Tokyo Headquarters reviewed lighting for all floors in FY2009, removing 139 of 1,492 fluorescent lamps installed. This resulted in a drop in electricity consumption of 11,693kWh per year, which equates to a reduction of 4 tons in CO₂ emissions per year.

Participation in CO₂ reduction/light down campaign (Each office and sales facility in Japan)

The Japanese Ministry of the Environment conducts "CO₂ reduction/light down campaign" on the summer solstice and on the day of the star festival (July, 7) every year, suggesting that lights in light-up facilities and in offices be turned off to prevent global warming. The objective of this campaign is to experience darkness and realize how much light we use so that people accustomed to illumination will think about global warming.

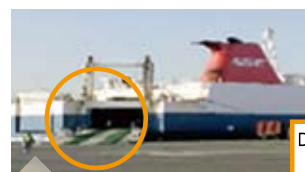
Every plant and sales offices of the Minebea Group in Japan took part in the campaign in 2009. We designated the July 7th as simultaneous going home day throughout Japan to turn off not only outdoor lamps but also lights in offices.

Initiatives Related to Logistics and Transport

Modal shift initiatives

Minebea uses high-speed ferries between Shanghai and Hakata for exporting or importing products, machinery and equipment, materials or the like between China and Japan, and uses JR freight trains or domestic vessel between Hakata and Tokyo. This transportation route shortens lead time greatly compared with transportation using only common freight ships between Shanghai and Tokyo and reduces energy consumption (CO₂ emission) substantially compared with air transportation.

High-speed ferries (RORO ships⁽¹⁾) allow loading and unloading containers using trailers without using large-sized harbor cranes to contribute substantially to reduction of lead time while saving energy.



Direct marine container loading/unloading



Future Issues and Goals

While continuing with the implementation of the environmental protection plan, the Minebea Group will work to achieve "the vision for an 80% reduction in greenhouse gasses by 2050" put forward by Japan and the governments of other nations.

Glossary

- (1) RORO ship (Roll On & Roll off ship) : High-speed ferry that allows loading and unloading truck containers without using large-sized harbor cranes to save time.