

# Global warming prevention measures

The EBARA Group has been striving to reduce CO<sub>2</sub> by replacing facilities and taking various other measures to prevent global warming.

## Reduction of CO<sub>2</sub> by heat insulating paint

At Fujisawa District, the roof of a plant building has been coated with heat insulation paint in phases since summer 2008. The purpose of the heat insulating paint is to stop heat from entering from outside by reflection and to block sunlight and thus prevent the temperature rise in the plant.

Up to now, particularly in summer, the roof has been absorbing heat from sunlight, and this heat was transmitted into the air in the plant making the room temperature 1 m below the roof higher than the outside air temperature by more than 10°C. This caused an increased load on cooling systems and led to larger electricity consumption. After the application of heat insulating paint, the room temperature 1 m below the roof was controlled to approximately 5°C higher than the outside air temperature, which resulted in a decrease in air-conditioning energy consumption, or a reduction of 20 percent in terms of CO<sub>2</sub> emissions.



Application of heat insulating paint on the roof

By fine-tuning temperature and humidity control on a daily basis, the reduction in CO<sub>2</sub> thanks to heat insulating paint can be even more effective. At Fujisawa District Precision Machinery Company, the temperature and humidity in the plant is measured twice a day in the morning and afternoon at 20 locations. Because of the large area of the plant, a combination of overall air conditioning and spot air conditioning is used. Fine-tuning is provided in accordance with the personnel distribution of the day including the adjustment of temperature nonuniformity and stopping of air conditioning in unmanned areas while ensuring the comfort of workers, maintaining accuracy of precision products, preventing dew condensation and ensuring other atmospheric conditions required to maintain quality.

Application of heat insulation paint at Fujisawa District was completed in May 2009. From now on, we will carry out activities to adequately control the temperature and humidity for further reduction of CO<sub>2</sub>.

## CO<sub>2</sub> reduction by replacement of lighting facilities

At Fujisawa, Suzuka and Sodegaura Districts, the plant lighting facilities were replaced with energy-saving types in 2008.

Energy-saving plant lighting facilities, which use reflectors and high-efficiency lamps, are capable of ensuring luminous intensity equivalent to that of the conventional facilities with only 40 percent of electric power consumption.



Plant in Fujisawa District with energy-saving lighting facilities installed

At Fujisawa District, 542 lamps of the plant lighting facilities of the Precision Machinery Company were replaced with high-efficiency lamps. This has reduced the CO<sub>2</sub> emissions for the lighting power consumption of the entire plant including fluorescent lamps by 35 percent from the same period of 2007.

At Suzuka District, where 90 percent of the CO<sub>2</sub> emissions are accounted for by electric power, 162 of the 285 lamps of the plant lighting facilities were replaced with energy-saving lamps, which resulted in an annual CO<sub>2</sub> reduction of approximately 23 t in the entire district.



Plant in Suzuka District with energy-saving lighting facilities installed



Pham Trung Kien (age: 9)

In 2009, we will continue to replace the remaining lighting facilities with energy-saving types. In Sodegaura District, 324 lamps in the plant were replaced with energy-saving lamps, which led to an annual reduction of 130 t in terms of CO<sub>2</sub> emissions.

### CO<sub>2</sub> reduction by replacement of transformers

In Sodegaura District, large quantities of electric power are used for testing large compressors, which are one of the major product lines. The conventional transformers used in electrical systems showed significant power losses and extra power was consumed. To reduce the power losses and cut down on CO<sub>2</sub> emissions, systematic replacement of transformers with the latest products has been taking place and 8 of the 82 transformers were replaced in 2008. The replacements have achieved a power loss reduction of 60 percent as compared with the conventional transformers, or a CO<sub>2</sub> reduction of 40 t.

### CO<sub>2</sub> reduction by power saving setting of PCs

Since February 2009, EBARA has been a member of the Climate Savers Computing Initiative (CSCI) to further reduce CO<sub>2</sub> emissions through information devices. The CSCI is a non-profit organization founded in 2007 with the participation of general consumers, corporations and environmental groups with high ecological awareness, and is aimed at promoting the development, introduction and use of advanced technologies capable of realizing reduced power consumption of computers. We intend to make thorough efforts to reduce the power consumption of personal computers by taking part in the CSCI and are trying to achieve reduction of 120,000 kWh/year, or 43 t as CO<sub>2</sub> emissions conversion, with the 2,500 personal computers we own.

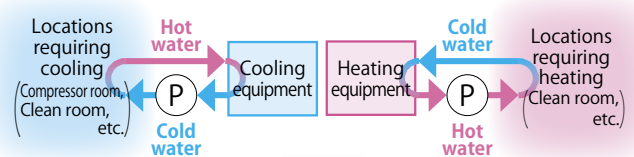


CSCI logo

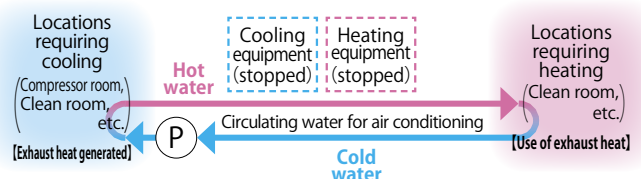
### CO<sub>2</sub> reduction by improvement of air conditioning facilities

Ebara Kyushu Co., Ltd. manufactures equipment for the semiconductor industry in a large clean room. To maintain a comfortable work environment, a combination of cooling and heating facilities must be used 24 hours a day even during winter, and the energy required accounted for over 50 percent of the energy consumption of the entire plant. To reduce this energy consumption in winter, we have worked on various improvement activities and the exhaust heat absorption and conversion system, which applies circulating water for air conditioning that is circulated in the plant, had a particularly significant effect. In the past, independent pieces of heating equipment were used for the clean room, which requires heating, and cooling equipment was used for a compressor room or clean room for assembly, which generate exhaust heat, for cooling the exhaust heat. With the present method, the exhaust heat in the compressor room or clean room for assembly was transferred to another place by using the circulating water for air conditioning, which was directly used for heating. This has eliminated the need for running both cooling and heating equipment in winter and the power consumption for cooling and heating between November 2008 and March 2009 showed a reduction of 50 percent from the same period in 2007, or 49 t as CO<sub>2</sub> emissions conversion. This improvement has led to a maintained heat balance in the clean room during winter and a favorable work environment is ensured.

#### ■ Concept of cooling and heating in winter in the past



#### ■ Concept of cooling and heating after improvement



(P):Pump