

Addressing Environmental Preservation through Our Business Activities

Prevention of Global Warming

Greenhouse gases such as carbon dioxide that are emitted during production activities can have an important effect on everyday life, as they may contribute to global warming that leads to climate change and rising sea levels. For its part, Murata is instituting energy saving measures intended to prevent global warming.

Energy Conservation Activities to Date

At Murata, we have been aggressively promoting energy saving in plant management through the two perspectives of utility facilities and production facilities. In spite of these efforts, however, domestic carbon dioxide emissions per unit of net sales (carbon dioxide emissions per basic unit of net sales) for fiscal 2001 worsened by 32% compared to the level for fiscal 1990. We believe that the main reasons for this increase are a drastic reduction in the unit price of products as well as a drop in production which led to shortfall in energy saving targets focused on carbon dioxide emissions.

Nonetheless, specific facilities have achieved good results, especially following the introduction of co-generation*¹ (thermoelectric power supply) systems. As well, improvements to production facilities posted very good results.

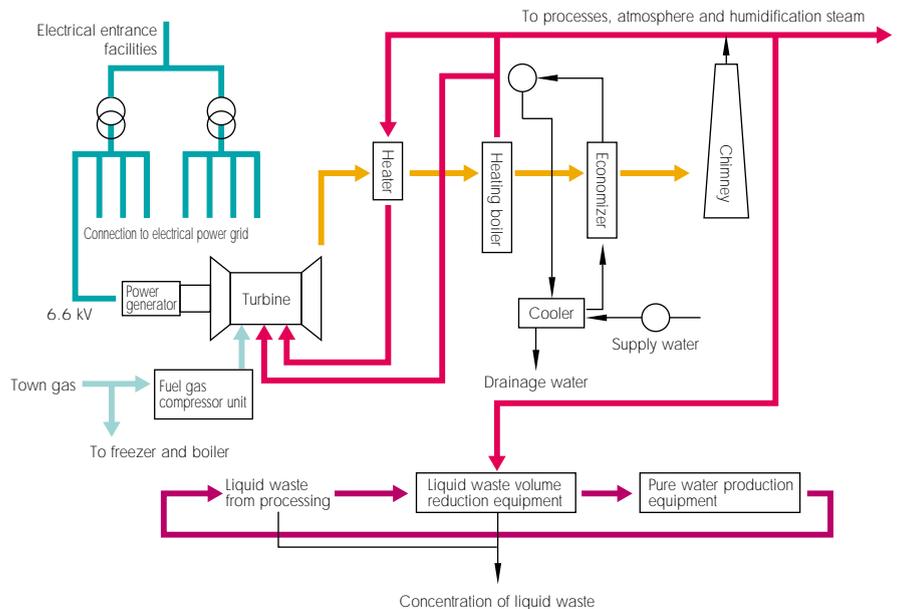
*¹ A system that provides air conditioning by utilizing waste heat from power generators. By obtaining two or more energy forms from one fuel source, this system raises the efficiency of energy generation and reduces carbon dioxide emissions.

Introduction of a Co-generation System

We introduced a co-generation system in our Yasu Plant in 1999. While a 6,000 kW class power generator provides about 80 percent of the power consumed by the plant, the waste steam is also effectively used for air conditioning in production activities. We also took the opportunity presented by the introduction of this system to undertake a shift in fuel source for power generation. While we had previously been using electricity and liquefied petroleum gas (LPG), we undertook a major shift to liquefied natural gas (LNG), which is known for its low carbon dioxide emissions, as a fuel source for our co-generation system. As a result, we have reduced our carbon dioxide emissions by about 22% (crude oil equivalent 706 kL). Moreover, we have been able to use the steam heat source, which had become redundant, to effect a drastic reduction in the volume of the industrial liquid waste. As a result, we were able to reduce the amount of waste generated by about 85% (23,600 cubic meters).

We are also proud that, following the introduction of the system, Murata was recognized in 1998 by the New Energy and Industrial Technology Development Organization (NEDO) as a leading enterprise introducing model rationalized energy facilities.

Schematic of co-generation system and waste liquid volume reduction facilities



Co-generation system (Yasu Plant, Murata Manufacturing Co., Ltd.)



Liquid waste volume reduction equipment (Yasu Plant, Murata Manufacturing Co., Ltd.)

Improvement of Heat Treatment Equipment

Heat treatment equipment consumes much of the energy required for production. Murata long ago developed a proprietary technology for heat treatment equipment and has even incorporated energy conservation innovations in various devices and applications. As a result, we have made progress in the supply of highly energy-efficient equipment. Specifically, by decreasing the amount of heat conduction loss through the wall of a heat treatment equipment (firing furnace), we have succeeded in improving energy efficiency. This following is an example of an innovation that has dramatically decreased our energy consumption.

Improvement in the Furnace Wall Insulation of the Heat Treatment Equipment (Firing Furnace)

By specifying a material with low thermal conductivity for the wall of the heat treatment furnace, we were able to decrease the amount of heat conduction loss through the furnace wall by more than 50%. We will continue to apply this technique. By aggressively adopting new types of equipment and thermal insulation and devising combinations of thermal insulation with varied properties, we are making progress in decreasing the heat transfer loss while improving energy efficiency.

Enhancing Energy Saving

With the aim of achieving further energy savings, we plan to reduce the carbon dioxide emissions per basic unit of net sales by 30% compared with fiscal 1990 levels by the end of fiscal 2010. As a specific initiative, we are advancing the following policies company-wide with a focus on specialist technicians and energy managers.

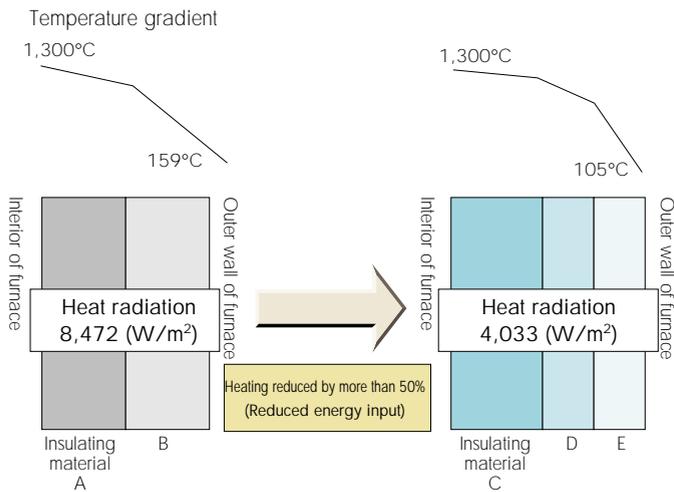
- Innovations in utility equipment
- Energy saving innovations for heat treatment equipment and effective use of waste heat
- Improvements in facility productivity and innovations in heat treatment technology
- Development of more compact products

In addition, we will continue to seek reductions in the use of chemical substances imparting an environmental impact in the manufacturing process. This will apply even to countermeasures for the non-energy group of greenhouse gases - such as PFCs, HFCs, SF₆ and the like - which have been listed as subject to regulation at the COP3 (the Third Conference of Parties to the United Nations Framework Convention on Climate Change)

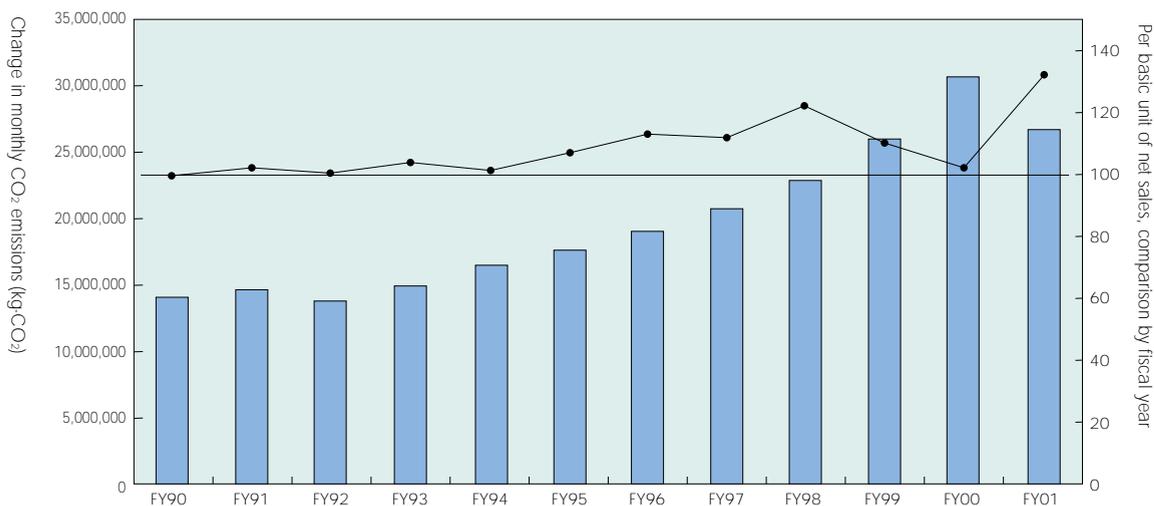
See page 26.

【Before Improvement】

【After Improvement】



Transition in carbon dioxide emissions and basic unit of net sales in fiscal 1990 (Totals in Japan)



Note: The conversion of energy consumption to carbon dioxide emissions is calculated according to Murata's own standards.