

Environmental Conservation in Manufacturing Operations

Komatsu is undertaking efforts for energy conservation to mitigate global warming as well as pursuing zero emissions by utilizing waste as resources.



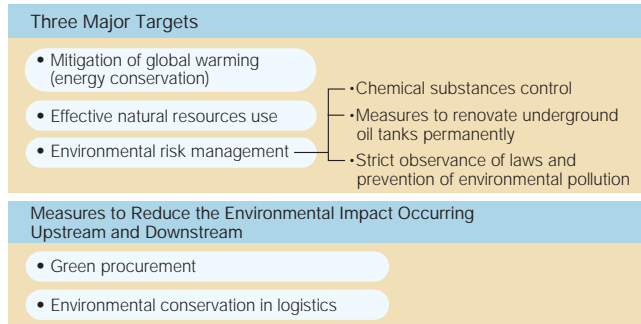
Susumu Isoda
Senior Executive Officer
President, Production Division

Through a series of activities from manufacturing to logistics, Komatsu has been promoting measures designed to be industry-leading in the areas of climate change mitigation measures, activities for the efficient use of resources, and reductions of substances of environmental concern, in keeping with its mid- to long-term environmental planning. In particular, in FY2006, Komatsu identified its Ibaraki Plant, currently under construction, as a model plant incorporating the consideration of environmental issues, with the installation of energy conservation equipment and the reduction of CO₂ emissions through the substantial shortening of the distances involved in logistics as examples of how Komatsu is promoting environmental conservation even further.

In the future, Komatsu will continue to carry out its responsibilities to society as it promotes the Spirit of Manufacturers revolution, with safety, environment, and a firm commitment to compliance as major premises for the continuation of its operations.

Environmental Conservation in Manufacturing Operations

Komatsu's manufacturing operations generate environmental impact through "input" to manufacturing, including the use of electricity and other forms of energy as well as various forms of natural resources, such as water and raw materials, and also through "output" from manufacturing, including air emissions, waste materials, and effluent. Based on this understanding, Komatsu plants are aiming to minimize environmental impacts from both input and output and Komatsu is actively committed to implementing environmental conservation activities at its manufacturing facilities. In addition, Komatsu is expanding this way of thinking into Komatsu manufacturing activities around the globe, thus resulting in global and Group-wide environmental conservation activities.



Mitigation of Global Warming (Energy conservation)

Basic Elements of Komatsu's Efforts

In order to mitigate global warming, Komatsu has since FY2005 amended its indicators to be the amount of CO₂ emissions per unit of manufacturing value with regard to electricity, fuel gas, fuel oil and any other type of energy consumed in its manufacturing operations. The company carries on its activities to save energy with a target of reducing energy consumption by 25% of the FY1990 figure by FY2010.

State of Affairs in FY2005

In FY2005, Komatsu succeeded in reducing the amount of CO₂ emissions per unit by 17.7% compared with the FY1990 base year figure. Furthermore, the company achieved a 4.8% reduction in the total amount of emissions compared with the FY1990 base year. Komatsu intends to conduct lateral extension of these activities towards the entire Group.

Means for Further Improvement

As for energy conservation on the demand side, the manufacturing divisions are at the core of efforts undertaken for reductions in amounts of energy consumed and other areas, as depicted in the chart on the right. With Working Group activities, lateral development among all business units is taking place. As for conservation on the supply side, the utility administrative divisions are the main focus of implementation, and significant effects have already been achieved, in particular by means of the efforts for improvements in energy conservation planned since FY2001 through ESCO*¹ (Energy Service Company) operations. In February 2006, Komatsu won the Gold Prize in the First Awards of Excellent Successful ESCO Business.

Efforts Undertaken by the Manufacturing Division

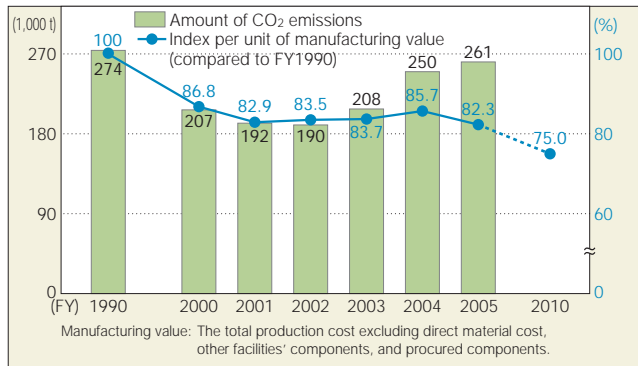
• Cutting stand-by electricity of manufacturing equipment
• Drying washed items using air blowing (reduction of pressurization)
• Introducing inverter-controlled pumps and motors
• Painting plant roofs with heat-insulating paint
• Introduction of high-efficiency lighting
• Distributing compressors

Efforts which Incorporated ESCO Operations as the Main Activity

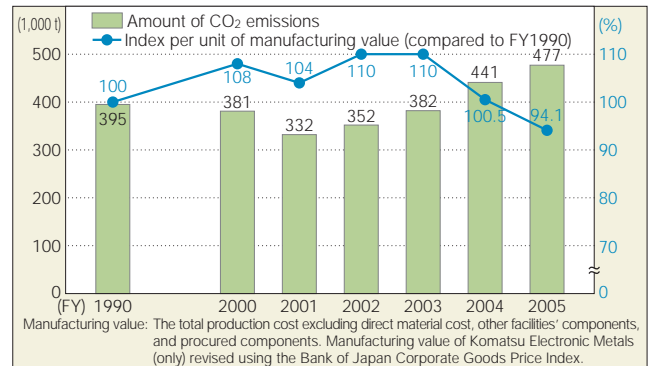
	Effort
FY2001	•Oyama Plant: Displacement air-conditioning equipment: gas turbine cogeneration
FY2002	•Awazu Plant: Absorption chiller cascade cooling, thermal recycling of cutting oil •Komatsu Zenoah Kawagoe Plant: Cogeneration •Komatsu Electronic Metals Nagasaki Plant: High-efficiency turbo freezer
FY2003	•Oyama Plant: Displacement air-conditioning equipment, high-efficiency lighting •Osaka Plant: Displacement air-conditioning equipment, high-efficiency lighting •Komatsu Zenoah Koriyama Plant: Cogeneration, displacement air-conditioning equipment
FY2004	•Awazu Plant: Cogeneration, displacement air-conditioning equipment
FY2005	•Oyama Plant: Displacement air-conditioning equipment, high-efficiency lighting in new plant
FY2006 (intended)	•Oyama Plant: Change of the energy source to natural gas for gas turbine cogeneration

*ESCOs (Energy Service Companies) provide comprehensive services with regard to energy conservation in factories or buildings, enabling a realization of energy conservation while maintaining the same performance as before, and they guarantee that energy conservation effects will result from the measures they recommend.

■ Amount of CO₂ Emissions by Komatsu Manufacturing Facilities and Komatsu Castex Himi Plant



■ Amount of CO₂ Emissions by Komatsu and the Komatsu Group's Domestic Manufacturing Facilities



Activities for the Effective Use of Resources

► Waste

Zero emissions

In tandem with reducing the volume of waste materials at manufacturing operations, Komatsu concentrates on zero emissions* activities to recycle waste materials. As a result of Komatsu extending these activities to the Group's domestic manufacturing facilities, the Group as a whole attained a recycling ratio of 99.6% in FY2005. In addition, with the Shinshiro Plant of Komatsu House Ltd. attaining zero emissions, all domestic manufacturing facilities have now achieved zero emissions.

Reduction of Volume of Waste Generated

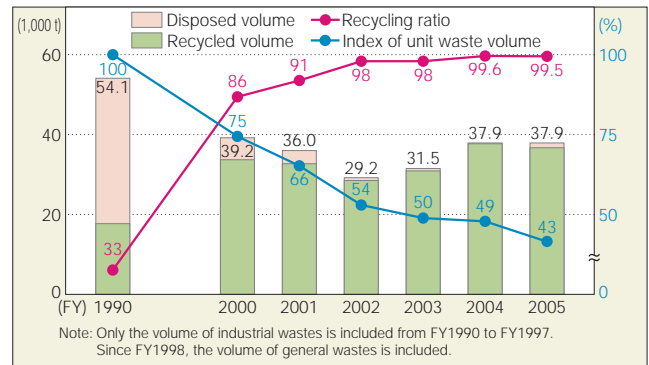
Concerning unit waste volume, the Komatsu Group has carried on activities to reduce waste volume to 50% of the FY1998 figure by FY2005. The promotion of strict waste separation as well as the use of waste materials as resources with value has brought about a ten-point improvement compared to the previous fiscal year. However, despite this, the target was unable to be attained. In addition, with regard to reducing waste processing costs, the Komatsu Group's domestic manufacturing facilities have established a target of reducing costs by 30% or more of the FY2000 figure by FY2005, and the company has already attained 67% reductions. This resulted from the increase in income from sales of materials of value made possible as a result of rapidly escalating resource prices. In the future Komatsu will reformulate its medium-term plans and make efforts to reduce the volume of waste generated.

*Komatsu defines "zero emissions" as a waste material recycling ratio of 99% or more.

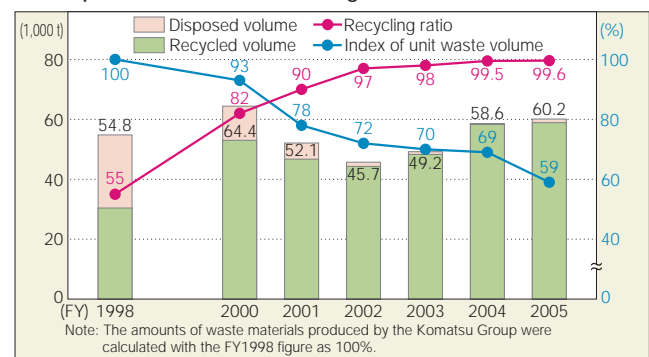
► Conserving Water Resources

Since FY2003, Komatsu Group manufacturing facilities have been working towards a target of achieving by FY2005 a reduction of greater than 5% in the volume of water consumed per unit of manufacturing value from the level of achievement in FY2002. By practicing reuse during processing and by eliminating wasteful practices on a day-to-day basis, Komatsu was able to achieve 28.1% reductions compared with FY2002 and thereby attain its target. Most notably, through the reuse of wastewater from carburizing furnaces, the Awazu Plant has achieved 13.5% reductions compared with the previous fiscal year on a per unit basis. In the future Komatsu will reformulate its medium-term plans and make efforts to reduce the volume of water resources consumed.

■ Volume of Waste Generated by Komatsu Manufacturing Facilities and Komatsu Castex Himi Plant



■ Volume of Waste Generated by Komatsu and the Komatsu Group's Domestic Manufacturing Facilities



■ Volume of Water Resources Used by Komatsu and the Komatsu Group's Domestic Manufacturing Facilities

