

# Environmental Conservation Activities

## Basic Environmental Policy

We have publicly announced the following Basic Environmental Policy:

### Environmental Philosophy

Takuma is committed to preserving the environment and realizing an affluent society through business activities under the company motto, "Value technology, people, and the earth".

### Operational Guidelines

1. All Takuma Group companies will recognize the importance of maintaining a balance between preservation of the environment and business activities.
2. Continuously develop activities to preserve the environment that comply with applicable environmental laws and ordinances, and ensure environmental control and assessment systems conform to international environmental standards.
3. Promote development of improved technologies and products for society that preserve the environment.
4. Address resource conservation, energy efficiency, recycling, and minimization of waste generated by all business activities.
5. Improve employee awareness and understanding about the importance of preserving the environment through environmental education and internal promotional activities.
6. Provide the community with information on the activities of Takuma to preserve the environment.

Both of our factories have acquired the ISO14001 certification and have been conducting environmental management activities, based on the environmental management system established to comply with international standards.

### ● Harima Factory

- Shinhamma, Arai-cho, Takasago, Hyogo
- Certification No.: JQA-EM0313 (ISO14001: 2004/ JISQ14001: 2004)  
Certification Date: January 8, 1999  
Renewal Date: January 8, 2005  
Expiry Date: January 7, 2008
  - Certified Business Units: Harima Factory, Research Center Energy & Environmental Technology Division and Experiment Center
  - Certified Activities: Design, development and manufacture of boilers and products for environmental plants and issuing of certificates of analyses and measurements
  - Group Company: Kankyo Sol-Tech (issuing of certificates of analyses and measurements)

### ● Kyoto Factory

- Kuze Tonoshiro-cho, Minami-ku, Kyoto
- Certification No.: JQA-EM0253 (ISO14001:2004/ JISQ14001:2004)  
Certification Date: November 20, 1998  
Renewal Date: November 20, 2004  
Expiry Date: November 19, 2007
  - Certified Business Unit: Kyoto Factory
  - Certified Activities: Design, development and manufacture of small-scale through-flow boilers, vacuum-type water heaters, oil heating-medium boilers, absorption water-cooler/heaters and the accessories
  - Group Company: Nippon Thermoener (ISO14001 certification of Kyoto Factory has been relegated to Nippon Thermoener Co., Ltd.)

### ● Other Group Companies acquired ISO14001 certification

- Takuma Technos Co., Ltd.
- Dan • Takuma Technologies Inc.



## Our Approaches toward the Reduction of the Environmental Load

### ■ Environmental Objectives

We have established the following environmental objectives:

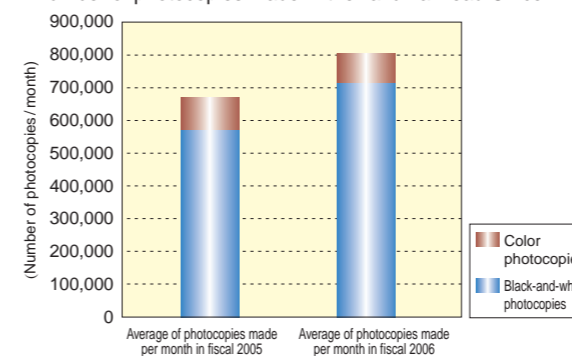
1. Takuma will reduce the amount of overall energy consumption by 30% compared to its level of fiscal 2001 by fiscal 2012.
2. Takuma will reduce the amount of CO<sub>2</sub> emissions by 30% compared to its level of fiscal 2001 by fiscal 2012.
3. Takuma will reduce the amount of waste generation by 30% compared to its level of fiscal 2001 by fiscal 2012.
4. Takuma will reduce the amount of final disposal of waste by 30% compared to its level of fiscal 2001 by fiscal 2012.
5. Takuma will achieve a rate of green purchase, such as office supplies, by more than 60% by fiscal 2012.
6. Takuma will take all effective and possible environmental measures by controlling expenditure on the same.

In addition, the Company will newly institute the "Environmental Objectives" as the Takuma Group this fiscal year with the aim of further expanding and developing such activities in relation to the aforementioned "Environmental Objectives", which we have been working on.

### ■ Resource Saving & Energy Conservation Campaign

- Followed by the previous fiscal year, the Company implemented the "Cool Biz" campaign as part of the energy conservation measures for summer.  
Period: June 16, 2006 - September 30, 2006  
Preset Temperature: 28°C
- The Company implemented the "Warm Biz" campaign promoted by the Ministry of the Environment  
Period: December 11, 2006 - March 30, 2007  
Stoppage of Heater Operation: Heater operation is shut off when the room temperature significantly exceeds 20°C.
- A campaign to reduce photocopying  
By using email and other measures, it was possible to reduce photocopying; however, as a result, the number of photocopies made in fiscal 2006 increased by 17% compared to that of fiscal 2005. Consequently, we have started a campaign to reduce photocopying since this fiscal year.

Number of photocopies made in the Takuma Head Office



### <Concrete Objectives>

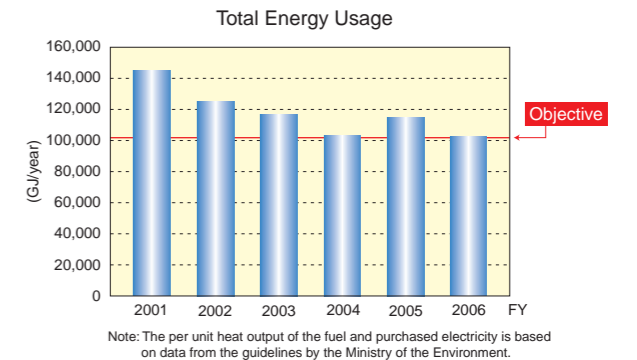
Although a substantial increase in photocopies is forecast, based on the need to prepare for the Japanese SOX act, we target maintaining the level of fiscal 2006.

### <Concrete Measures>

- Reduction in photocopies by using email
- Promoting the use of double-sided photocopies
- Reduction of making color copies
- Using backing papers

### ■ Total Energy Usage

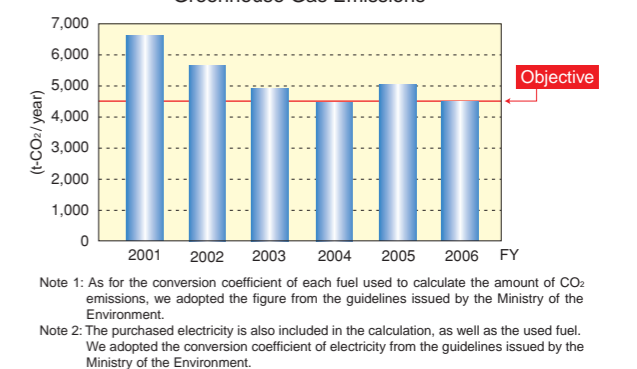
We have compiled the status of total energy usage of the electricity and fuel used at the Harima Factory (including Kankyo Sol-Tech Co., Ltd.), Kyoto Factory and the Head Office. The scope of collected data is the same as that shown in the "Environmental Report 2006" issued the previous fiscal year. In fiscal 2005, the total energy usage was slightly increased; however, in fiscal 2006, we achieved a reduction in the usage level to a level lower than that of fiscal 2004.



### ■ Amount of CO<sub>2</sub> Emissions

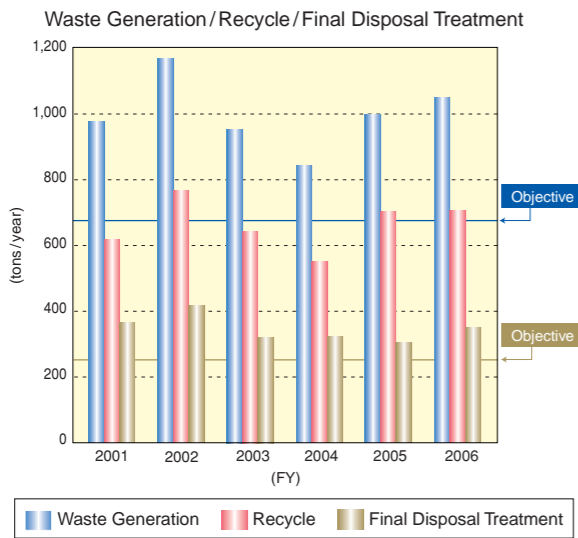
The greenhouse gas emissions created by the Company are only carbon dioxide (CO<sub>2</sub>). Since the activities in our factories mainly focus on machine assembly, the environmental load generated by the factories is relatively lower than those of other manufacturing industries. The annual amount of CO<sub>2</sub> emissions from each site are shown in the bar chart below for the past five years. The scope of collected data is the same as the total energy usage. We have achieved a reduction in the amount of CO<sub>2</sub> emissions to a figure lower than that of the fiscal 2004 level in fiscal 2006, along with the total energy usage.

Greenhouse Gas Emissions



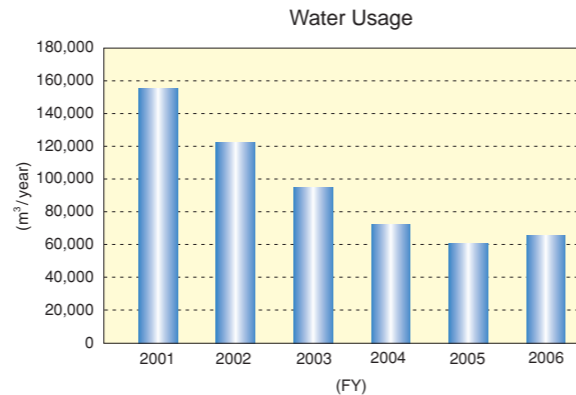
## Waste Generation

The Company sells recyclables and reusables from the waste generated through its business activities to scrap dealers, while outsourcing the treatment of the remainder of the waste — non-recyclables and non-reusables — to haulers, processors and final disposal dealers, in accordance with the Industrial Waste Control Manifest system. The amount of waste generation as well as final disposal was found to have increased slightly. We also adopt the same procedure to control waste in construction sites as that used in the factory. Each of these processes is managed in accordance with the Construction Debris Manifest. The main waste items include non-combustibles and combustibles and we strive to reduce waste generation as well as recycling. In addition, we also have introduced a system to report the record of management activities for individual worksites by checking the electricity consumption.



## Water Usage

The applications of water are cooling and rinsing factory equipment, while being used for daily life, cooling water for air-conditioners, watering plants and makeup water for ponds at the Head Office. The water used for these applications is all tap water. At the Harima Factory, its water area is covered by the special measures law for the Seto Inland Sea environmental conservation, whereby stringent emission concentration regulations as well as total volume control are applied. The water quality is regularly checked at each registered drain outlet and the result is reported to Hyogo Prefecture and Takasago City. Thanks to our efforts to reduce water usage, the level was found to have decreased by 40% compared with that of fiscal 2001.



## PRTR Emission

Although our business activities do not involve a wide variety of chemical substances on a massive scale, we use a few designated chemical substances. Consequently, we

### ● Dichloromethane (CAS No. 75-09-2)

Usage: Rustproofing paint on structural steel for boilers

FY	2003	2004	2005	2006
Emissions(tons)	1.1	0.2	0.2	0

Countermeasures: Since June, 2002, we have been adopting a rustproofing paint without dichloromethane for boilers in series and in fiscal 2006, we have accomplish to reach the amount to zero.

### ● Xylene (CAS No. 1330-20-7)

Usage: Rustproofing paint on structural steel for boilers

FY	2003	2004	2005	2006
Emissions(tons)	0.9	1.3	1.3	1.5

The usage of xylene was increased due to the increase of operational load at the Harima factory.

report and register such chemical substances designated as PRTR, in accordance with relevant laws and ordinances, with the local government.

### ● Toluene (CAS No. 108-88-3)

Usage: Used for chemical analyses inside the analytical laboratory

FY	2003	2004	2005	2006
Transfers(tons)	1.7	1.4	1.6	3.4

After use, all materials are taken away by waste-solvent dealers for disposal. The usage of toluene in fiscal 2006 was increased due to the increased analyses of the Kankyo Sol-Tech Co., Ltd.

### ● Benzene (CAS No. 71-43-2)

Usage: Used for painting products at the painting booth within the factory

FY	2003	2004	2005	2006
Emissions(tons)	0.2	0	0	0.1

The coating materials have been changed to the ones with less benzene content since 2004 and we have accomplished to reach the amount of benzene emissions into the environment nearly zero.

The Company is striving to realize a sustainable society through our business activities; namely technical development, corresponding to contemporary needs. "From the 20<sup>th</sup> century of prosperity to the 21<sup>st</sup> century of harmonious coexistence; we wish to pursue technology capable of harmonizing well with nature and coexisting for the true affluence of people and the planet". This is the aspiration of our Takuma Group. In line with this aspiration, we have been promoting technical development, focusing on the environment and energy.

## Environmental Purification Technologies

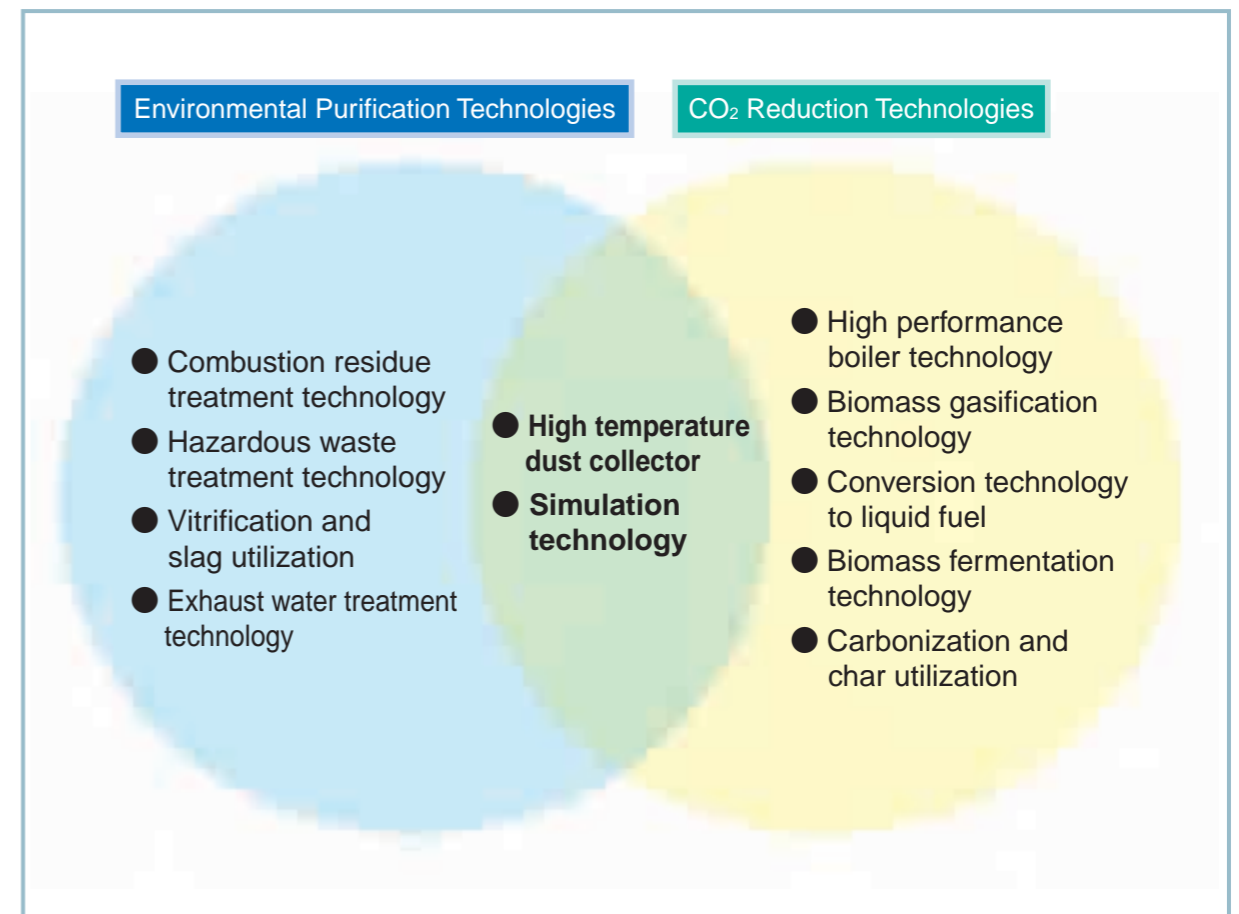
- Combustion residue treatment technology: a technical development whereby incineration ash becomes usable as a civil engineering material by stabilization
- Hazardous waste treatment technology: a technical development used to treat hazardous waste such as asbestos
- Vitrification and slag utilization: a stabilization technical development in order to use liquid slag as a civil engineering material
- Exhaust water treatment technology: a technical development for nitrogen removal in new exhaust water
- High temperature dust collector: a technical development

for a high temperature dust collector for exhaust gas at temperatures of between 600 - 900°C.

- Simulation technology: the development of an operational monitoring and control system of waste incineration plants through simulation technology

## CO<sub>2</sub> Reduction Technology

- High performance boiler technology: the development of a multitubular small-scale through-flow boiler with high efficiency, low environmental load and low cost
- Biomass gasification technology: the development of high efficiency energy changing technology through a high efficiency biomass gasification process, using wood waste and other materials
- Conversion technology to liquid fuel: the development of methanol synthesis technology from biomass gasification
- Biomass fermentation technology (hydrogen/methane fermentation): the development of hydrogen and methane technology from unused biomass via fermentation
- Carbonization and char utilization technology: the development of carbonization technology of unused biomass as well as that of carbides with commercialization in mind



# Environmental Accounting

## ■ Introduction

As our business activities mainly involve the environment and energy, all Takuma group employees have significant awareness of the need for environmental conservation and we have been implementing active and continuous measures with this in mind, ranging from small attention paid by individual employees to significant improvement conducted on a group-wide basis.

Since fiscal 2006, we have introduced Takuma's company-specific environmental accounting system, based on the Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment and striving to quantitatively monitor each numerical figure.

We have been promoting the enhanced understanding of the principles and stance of the Takuma Group, by broadly disclosing our environmental energy-related product information via our website and other means.

## ■ Scope of Data Collection

Period: April 1, 2006 - March 31, 2007

Sites : Takuma Head Office, other offices (including overseas offices), Harima Factory, Kyoto Factory, Nippon Thermoener Co., Ltd., Takuma Technos Co., Ltd., Sun Plant Co., Ltd., Takuma Plant Co., Ltd., Takuma Engineering Co., Ltd., Takuma System Control Co., Ltd., Central Conveyor Co., Ltd., Dan • Takuma Technologies Inc., Kankyo Sol-Tech Co., Ltd., KAB Takuma GmbH (Germany), Bioener ApS (Denmark)

## ■ Data Collection Method

The data collected on cost is classified by category, as shown below.

Although the business of the Takuma Group itself is related to the environment and energy, the social contribution cost does not include the cost incurred through business activities.

## Result Table of the Environmental Accounting

### ■ Environmental Conservation Cost

Item	Investment (thousand yen)	Cost (thousand yen)
① Pollution prevention costs	2,028	10,284
② Global environmental conservation costs	82,256	8,663
③ Management activity costs	1,035	36,040
④ Research and development costs	69,083	1,096,708
⑤ Social contribution costs	—	26,878

### ■ Environmental Conservation Effect

