

Sumitomo Heavy Industries Group

Environmental Sustainability Report 2012



Sumitomo Heavy Industries, Ltd.

Environmental Management Division

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Printed on paper made with wood from forest thinning. "Morino Chonai-kai" (Forest Neighborhood Association)—Supporting sound forest management.



The Sumitomo Heavy Industries Group has incorporated the conceptual approach of the “Innovation 21” medium-term management plan in formulating the Sumitomo Heavy Industries Group Third Medium-Term Environmental Plan, which we launched in FY2011.

We will expand our business globally while providing “first-class products” and “first-class services” that are environmentally friendly and pursuing “first-class production processes” that reduce environmental impact in the course of producing those products and services. Our aim is to become a corporate group capable of contributing to the achievement of a sustainable society.

To that end, we must declare high goals and overcome a large number of issues. Changes are also taking place in the social responsibility demanded of corporations. As I see it, our pursuit of innovation that continues to take on the challenges of reform is going to contribute to achievement of a sustainable society.

As the globalization of SHI Group businesses advances, the values to be shared by all employees take on greater importance. The context of our emphasis on protection of the environment and our engagement in environmental activities includes the “Sumitomo Business Spirit.”

To state this differently, having all the members of the SHI Group share the “Sumitomo Business Spirit” adds further impetus to our promotion of environmental activities.

In order to determine the actual state of our environmental activities, I went to works and Group

companies and held on-site discussions. It is crucial that we make the change from formalist environmental activities to efficient environmental management systems. The point is not just to achieve numerical targets, but to confirm on-site whether everyone recognizes the importance of environmental activities and understands what should be done to achieve those targets. Verifying the processes of our activities and evaluating them enables us to understand SHI Group capabilities and contributes to improvement. The target values set in the Third Medium-Term Environmental Plan are minimum values. The SHI Group is taking on the challenge of still higher target values.

When people with a variety of different values and cultures take steps to engage in communication and accelerate the measures we take to realize yet higher objectives, this gives rise to new value. As I see it, this enables us to achieve further growth as a global company.

Going forward, the SHI Group will continue to pay serious attention to what our stakeholders tell us. We will always transform ourselves to achieve our high objectives.

We appreciate your opinions and advice, which we will draw on for future initiatives.

President and CEO

Yoshinobu Nakamura

Editorial Policy

The Sumitomo Heavy Industries Group issued its first Environmental Report in 2001. In 2005, we expanded the scope of the report to include social aspects and changed its name to Environmental Sustainability Report. Every year, we widen the scope of social contribution activities and environmental activities, which form the social responsibilities of the Group. In addition to promoting environmental management including activities to prevent global warming, the 2012 Report also introduces our engagement with biodiversity as a form of social contribution. We have also expanded the scope of data on the environmental burden overseas. To convey to a wide audience our engagement with environmental and social activities, we have sought to make the report accessible by using plain and concise language and by making frequent use of graphs, illustrations and photographs.

Further, when issuing this Report, we consulted the Environmental Reporting Guidelines (2007) and the Environmental Accounting Guidelines (2005) from the Ministry of the Environment.

Scope of the report

Sumitomo Heavy Industries, Ltd. and its group companies

Period covered by this report

April 1, 2011 – March 31, 2012

Previous issue: August 2011

Current issue: August 2012

Next issue: August 2013

Disclaimer

This report contains not only facts relating to the past and present of Sumitomo Heavy Industries Group but also plans, forecasts, and projections based on management plans and management policy at the date of publication. These plans, forecasts and projections are assumptions and judgments based on available information at the time of writing, and results or matters pertaining to future business activities could differ materially from the descriptions due to changing conditions.

CONTENTS

Message from the President 1

Outline of Sumitomo Heavy Industries Group 3

Relationship between Sumitomo Heavy Industries Group and Society 5

Special feature | Manufacturing Excellence at Sumitomo Heavy Industries

Globalization and innovation: our core strategies to enhance market competitiveness 7

Environmental Initiatives

Environmental Management System 11

Environmental Objectives (Medium-Term Plan) and Results 13

Global Warming Prevention Activities 15

Activities Directed Toward Creating a Society Based on Recycling 17

Activities for Managing Chemical Substances 19

Stronger Environmental Management at Our Overseas Factories 21

Environmental Impact Data 25

Relations with Society

Social Contribution Activities 27

The Sumitomo Heavy Industries Group contributes to building an affluent society with “manufacturing” technology

Since its foundation as a repair shop for the Besshi Copper Mine in 1888, the Sumitomo Heavy Industries Group has moved in step with social and industrial development. With a manufacturing technology nurtured by a tradition spanning more than 100 years, we make use of proven technologies that “actuate and control” devices from the world of nanotechnology to gigantic structures to realize original ideas and dreams.

Company Outline (as of March 31, 2012)

Company name	Sumitomo Heavy Industries, Ltd.	Capital	30,871,650,000 yen
Founded	November 20, 1888	Number of employees	Consolidated: 18,139
Incorporated	November 1, 1934	Net sales	Consolidated: 624,100 million yen
Head Office	1-1 Osaki 2-chome, Shinagawa-ku, Tokyo		



Machinery Components

We handle speed reducers, which are devices for lowering the number of motor revolutions and raising torque. Taking part in a broad range of markets, speed reducers are used in conveyance lines at factories, in robotic joints and in the drive systems of a range of machines.

Main Products

Power transmission equipment
Inverters



Precision Machinery

We handle the injection molding machines for making plastic products, devices for manufacturing liquid crystal and semiconductors, and devices for diagnosing and curing cancer. Among injection molding machines, products that require precision machining are one of our particular specialties.

Main Products

Plastic injection molding machines, cyclotrons for medical use, ion accelerators, plasma coating systems, laser processing systems, cryogenic equipment, precision positioning equipment, transfer molding press machines, precision forgings, defense equipment



Construction Machinery

An extremely fuel-efficient product, our hydraulic excavator was the first construction machinery to win the Energy Conservation Grand Prize. Featuring outstanding maneuverability, the Good Design Award is another stellar achievement for the excavator.

Main Products

Hydraulic excavators
Mobile cranes
Road machinery



Industrial Machinery

We handle products referred to as heavy machinery. They include forging presses for producing components for automobile engines, large cranes for shipyards and ports, steam turbines for private power generation at factories, automated warehouse systems etc.

Main Products

Forging presses
Material handling systems
Logistics & handling systems
Turbines
Pumps



Ships

We specialize in midsize tankers with a capacity in the 100,000 ton class. By narrowing down the types of ships, we have raised development efficiency and we take pride in a low fuel consumption that is in the top class for the industry.

Main Products

Ships



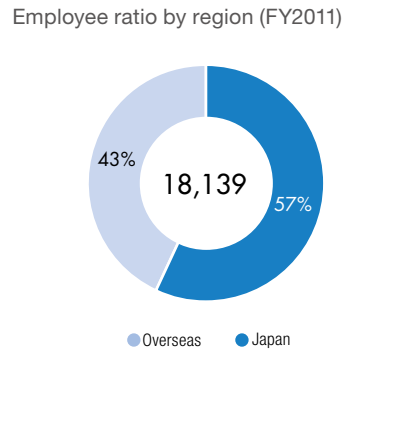
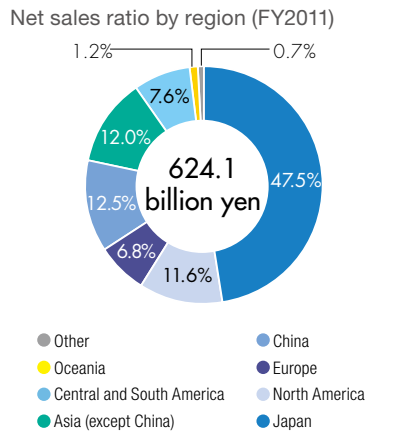
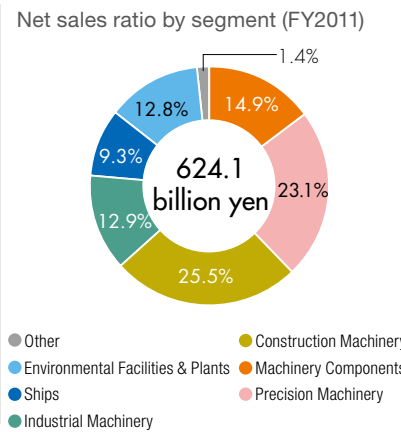
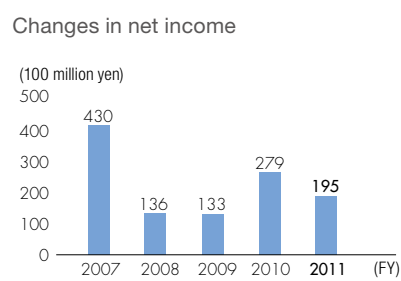
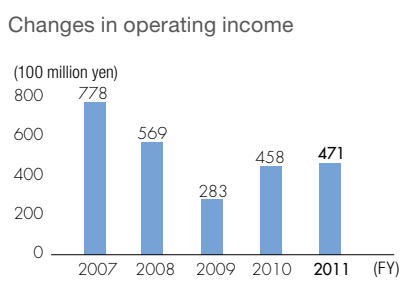
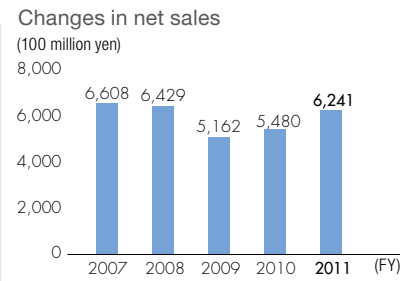
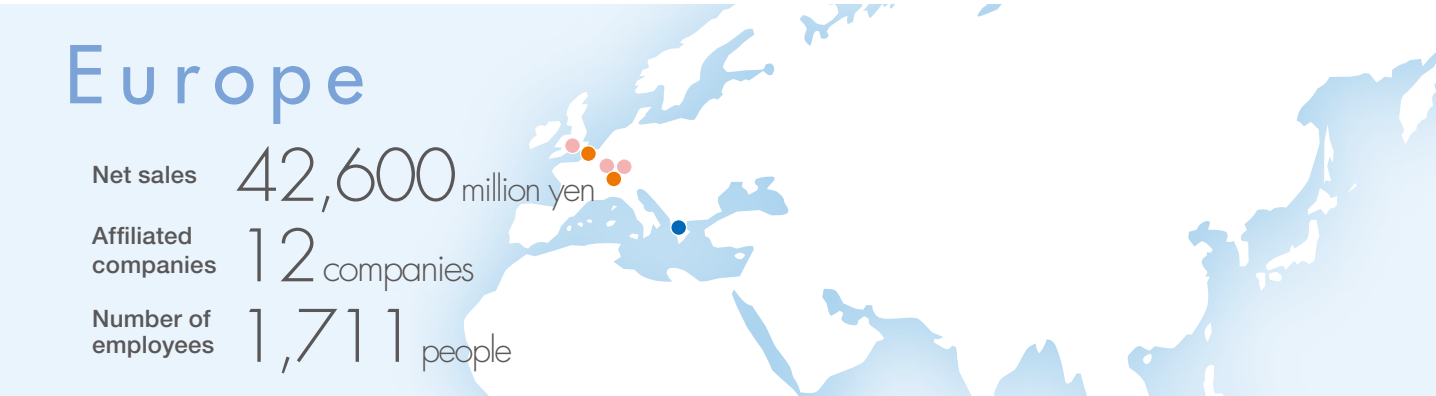
Environmental Facilities & Plants

We also handle boilers that are 100% biomass fuel compatible, and energysaving effluent treatment facilities. Our products also include exhaust gas processing facilities that do not use water, and facilities for recovering metals from waste.

Main Products

Power generation systems, industrial wastewater treatment systems, water and sewage treatment systems, landfill leachate treatment systems, air pollution control plants, process equipment for chemical plants, reactor vessels, mixing reactors, steel structures, food processing machinery

Overseas Locations



Relationship between Sumitomo Heavy Industries Group and Society

Oil refineries, shipbuilding yards, automobile factories, semiconductor industry and other industrial settings as well as the settings of daily life such as households, hospitals, elevators and escalators: the products of the Sumitomo Heavy Industries Group are involved with all these areas. Here, we introduce several products that take account of the global environment as well as the people who use them.

Cyclotron for PET

Hospitals 1



We continue to lead in tracer RI pharmaceutical systems for PET systems. Discovers cancers of less than 1 cm in the early stages.

Proton cancer therapy system

More compact than the conventional system

Capable of pinpointing and picking off cancer cells, outstanding in terms of its gentle therapy effect on the patient's body.



Cryocooler for MRI systems

The simple structure saves labor at use. Cooling to the ultralow temperature of -269°C, this is the core of MRI equipment.



Precision speed reducers



No wobbling at inversion. Widely used in fields where precise control is required such as welding robots etc.

Oil tanker

Sea 3



Implementing energy conservation on board ships. Our proprietary technologies deliver energy-conserving performance at the international top level.

Large crane

Shipbuilding Yards 4



Contributes to optimization of shipbuilding. Helps raise the efficiency of shipbuilding operation with a lifting capacity of 1,200 tons.

Forging press

Automobile Factories 2



Largest in the world at 16,000 tons. Plays a part in a range of forging scenarios from compact machinery to the world's largest machines.

Container transfer crane

Harbors 5



Resolves environmental issues caused by heavy fuel consumption, black smoke and other exhaust gases. By adopting a hybrid system, we have kept maximum engine output to about 1/3, reduced fuel consumption by approximately 60%, and reduced exhaust gas.

Forklift

Warehouse 6



Satisfies all workability, comfort, economic efficiency and safety standards. We have an abundant lineup from 0.9 to 48 tons.

Automated warehouse system

Numerous achievements in a wide-ranging industry. Streamlines tasks with completely automated management of 190,000 packing cases.



Plastic injection molding machine

Mobile Phones, DVDs and CDs 7



Approaching next to zero waste, defects or difficulty. Compatible with precision micro molding.

Mechanical parking garage

Underground Parking Lots 8



Maximum effective utilization of limited space. Facilitating faster removal times and higher storage capacity (about 170 vehicles per unit).

Speed reducers

Automobile Factories 2
Sewage Treatment Plants 9
Elevators and Escalators 10



A history of trust spanning more than half a century. The compact design trims weight by 30%.

Diffusion equipment

Sewage Treatment Plants 9



Delivering energy savings by reducing energy consumption at sewage treatment plants. Capable of reducing power usage by creating bubbles that are finer than those of conventional diffusers for efficient delivery of oxygen.

Ion implantation system

Semiconductor Factories 11



Delivering high productivity with high precision and high quality. Compatible with 20 nm ultrafine LSI. Implants ion in wafers.

Semiconductor and liquid production equipment

Televisions and PCs 12



Delivering high positioning precision on the order of nanometers. We handle the XY stages used for precision positioning of FPD and semiconductor manufacturing equipment.

Coke drums

Oil Refineries 13



Responds to wide-ranging customer needs with a sophisticated quality assurance system. At oil refineries, the coke drums are capable of processing heavy oil in the most efficient manner.

Biomass boiler

Power Generating Facilities 14



Contributes to the global environment by utilizing diverse fuels. Creates power and steam from a variety of fuels including biomass fuels where high-efficiency use has been difficult in the past.

Steam turbine



Advanced technologies with confidence and results that respond to the needs of the times. We are proud to have delivered about 6,500 turbines to approximately 80 countries worldwide.

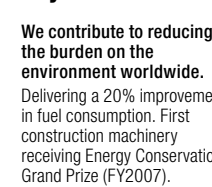
Dry-type desulphurization-denitrification system



Contributes to processing SOx, NOx and dioxins in exhaust gas. Treats exhaust gas without using water.

Hydraulic excavator

Construction Sites 15



We contribute to reducing the burden on the environment worldwide. Delivering a 20% improvement in fuel consumption. First construction machinery receiving Energy Conservation Grand Prize (FY2007).



Globalization and innovation: our core strategies to enhance market competitiveness

With “Innovation of Half and Double” as our slogan and a redesigned competitive structure, Sumitomo Heavy Industries Group is establishing a dominant position in the global market.

How “Innovation of Half and Double” works: By integrating product development with intellectual property activities and strengthening collaboration between the corporate technology operations group (which develops constituent and fundamental technologies) and our business units, we are halving costs and process times while doubling performance and efficiency.



The new SE-EV series of injection molding machines is now available

We have added this new series to our lineup of plastic injection molding machines. An injection molding machine is a machine that pours molten plastic into a mold and creates a product. The SE-EV series of small fully-electric injection molding machines is a further evolved version of the previous series which enjoyed a solid reputation, and contributes greatly to higher productivity when making molded products.



The SE-EV series of small fully-electric injection molding machines

1 Realizing a higher level of precision and stable molding

The low-inertia fast-response servo motor which was developed in-house is controlled by the latest servo controller, permitting extremely precise control. This in turn realizes a higher level of precision and stable molding. In addition, the new series comes with a new melting theory (SL screw system)* which realizes highly stable plasticization.

2 High energy conservation performance reduces power consumption by 20%

The mechanical efficiency has been thoroughly reviewed, realizing a reduction of power consumption of approximately 20% compared to previous models. The quality of the grease used and the lubricating system have been re-examined, thus enabling the grease consumption to be halved. The overall length of the new models has been reduced by up to 10% compared to the previous models, resulting in greater compactness and higher flexibility of installation at the worksite.

3 Simple operation

Operability of the new machine has been rationalized throughout, and the setting screen has been simplified. The number of setting items has been reduced by 50%, enabling settings to be made in a shorter time, and also permitting even inexperienced operators to carry out operations accurately. The machine can support a total of 15 languages including Chinese, Korean and Spanish.

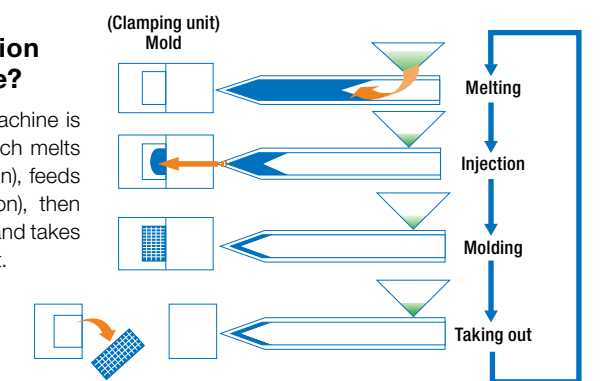
* New melting theory (SL screw system)

The plasticizing system has greatly increased thermal efficiency, thus greatly reducing shear heating which causes scorch marks and black spots on the resin.

In 2010, we received the “Aoki Katashi” award (an award that is awarded for technology that has contributed to the development of plastic molding) from the Japan Society of Polymer Processing.

What is an injection molding machine?

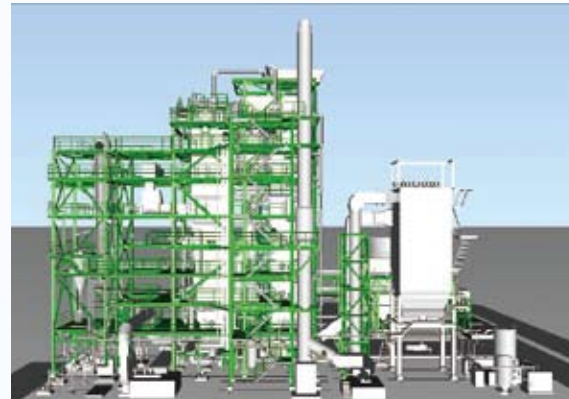
An injection molding machine is a molding machine which melts the plastic material (resin), feeds it to a mold (= injection), then solidifies it (= molding), and takes out the finished product.



Development of biomass firing small CFB boiler

We have developed a small circulating fluidized bed (CFB) boiler that generates steam at the rate of 25 t/hour (scale of power generation: 5,000 kW). The design specifications of the main parts of the boiler have been standardized, resulting in greatly reduced delivery period. This enables the boiler to be put into operation within 14 months from receipt of order.

A CFB boiler can be designed to run on wood biomass (wood chip, demolition wood, and so on), coal, or a mixture of both. It thus contributes to the effective utilization of energy sources and the reduction of CO₂ emissions.



Small circulating fluidized bed boiler

Biomass firing small CFB boiler

1 Small-scale power generation

Previously, this type of boiler was used as in-house power generating facilities installed in medium and large factories that consume a certain order of electric power (steam generation quantity: 65 to 450 t/hour, scale of power generation: 15,000 to 70,000 kW). Recently, we have developed smaller-scale power generating facilities (steam generation quantity: 25 t/hour, scale of power generation: 5,000 kW) in consideration of the demands of users for such small-scale power generating facilities. Even business operators who were unable to install biomass power generating systems because of the excessive size of equipment can now install a system that meets their requirements.

2 Short delivery period

The detailed design of the main parts of the boiler has been already completed, so that we can start manufacturing immediately after we receive the customer's order. The boiler is manufactured in-house as modular parts and installed at the construction site with minimum welding work. As a result, the design process and factory work are reduced, and the boiler can be put into operation 14 months after receipt of order. In addition, we are aiming to reduce the construction period to 12 months when the various conditions are met. The shorter construction period will result in reduction of construction costs.

Intended market and future prospects

This product consumes between 55 and 60 thousand tons of wood biomass fuel per year. The demands are expected to be found in companies that already have in-house power generating facilities and considering fuel conversion to biomass in the future; domestic power suppliers who have their sights on the "feed-in tariff scheme for renewable energy" to utilize unused forestry resource such as thinned wood, which is not being used efficiently at present; and also in the ASEAN countries. We believe that the short delivery period of this product can be utilized as an advantage and contribute to dispose the waste generated by the Great East Japan Earthquake as well.

What is a circulating fluidized bed boiler?

Mechanism of combustion

Air fed from the bottom of the boiler will float and mix the hot particles and the fuel in uniform condition, thus enabling various kinds of fuel to be burned efficiently. In addition, the fuel particles which rise together with the combustion gas are separated by a cyclone, and returned to the bottom of the boiler once again, thus increasing the combustion efficiency.

Features

1. Can utilize a variety of fuels

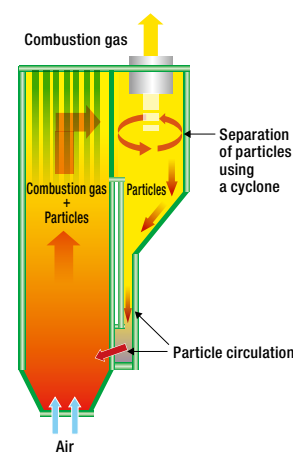
This boiler can also run on various fuels that are difficult to burn, such as low-grade coal, construction waste, scrap tires, waste plastic, coal refuse, and paper sludge.

2. Can utilize waste fuels

The fuel does not need to be pulverized. The wires and other non-rubber parts of tires can be smoothly discharged (prior separation unnecessary).

3. Reduced NO_x emissions

High combustion efficiency and low combustion temperature compared to other methods results low NO_x emissions.



Development of an industrial motor that complies with various international standards

Industrial motors with higher efficiency are being demanded in order to realize countermeasures against global warming and the promotion of energy conservation. Amid this background, the international standard IEC 60034-30 was enacted in 2008, and based on this standard, high-efficiency (IE2 class) regulations for induction motors were implemented in various countries.

Many of these regulations also cover gear motors (motors with a speed reducer). We acquired high efficiency certification in various countries based on the high-efficiency motors that we developed in 2010, and developed products that could satisfy international standards in many countries.

The motors that we developed cover the range between 0.75 and 30 kW, and are capable of meeting the South Korean regulation that was implemented in July 2010, and also the regulations in China, Australia and other countries. We have also acquired certification for meeting safety standards such as the CCC (China Compulsory Certification). You can thus use our products with peace of mind when developing overseas markets as well.



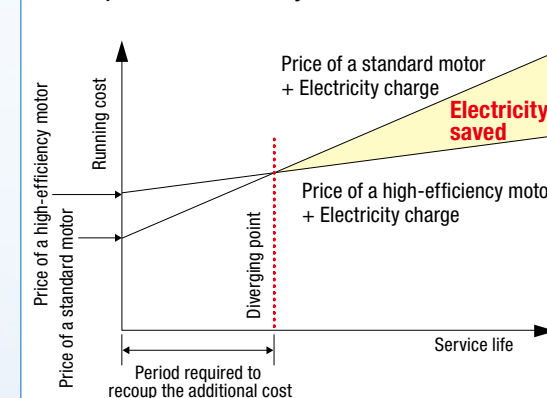
Small and medium speed reducers with high-efficiency motors which conform to IE3

Speed reducer with high-efficiency motor

Energy conservation and high economy realized by a high-efficiency motor

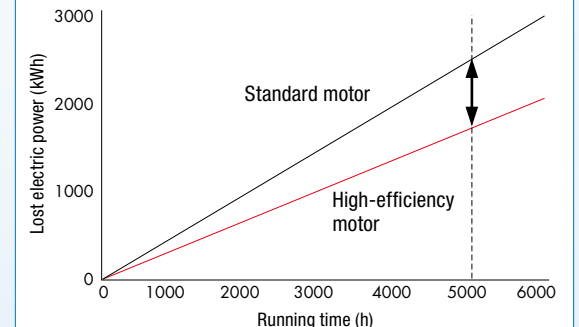
Although the purchase price of a high-efficiency motor is somewhat higher than that of a standard motor, the lower power consumption of the high-efficiency motor enables the additional cost to be recouped.

Comparison of economy of different motors



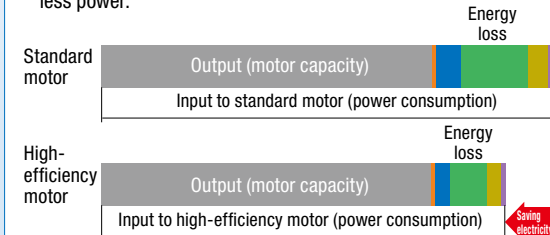
Comparison of energy loss power

The longer the running time, the greater is the energy conservation effect.



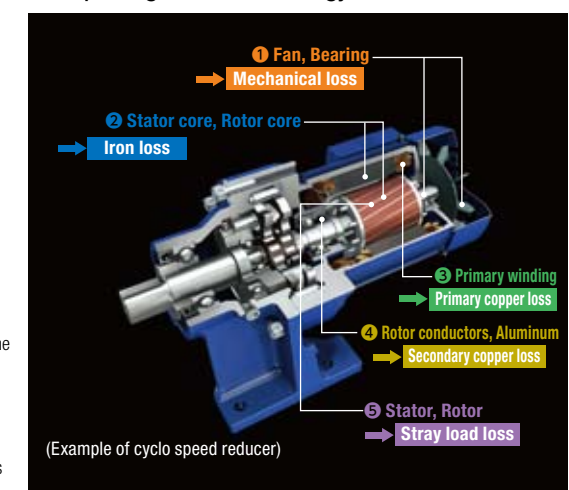
Energy loss comparison

If you attempt to obtain the same output from the motors, the high-efficiency motor, which has lower energy loss, will consume less power.



- Mechanical loss Loss due to bearing wear and wind loss due to the cooling fan
- Iron loss Loss that occurs due to magnetic alternation in the iron core
- Primary copper loss Insulation resistance loss in the stator coil
- Secondary copper loss Insulation resistance loss in the rotor conductors
- Stray load loss Other losses that occur in the stator and the rotor

Example of generation of energy loss in a motor



Environmental Management System

At Sumitomo Heavy Industries Group, we have been promoting environmental management with awareness that business corporations have social responsibilities for protecting the global environment, for preserving the local environment, and for engaging in economic activities that are oriented toward recycling.



Sumitomo Heavy Industries Group Environmental Philosophy

The Sumitomo Heavy Industries Group contributes to implementing sustainable development of society by holding fast to the “Sumitomo Business Spirit.”

The Sumitomo Heavy Industries Group is taking action across the Group to protect the global environment.

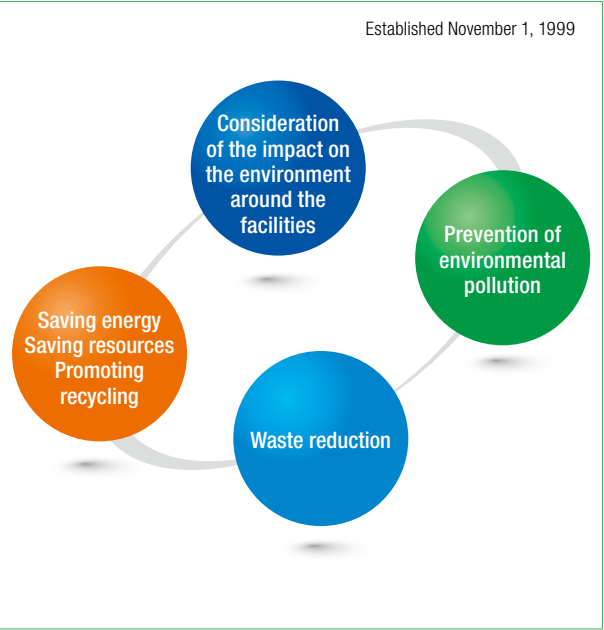
Environmental Policy

In order to implement the sustainable development of society, we must respond to global environment issues and reduce the burden on the environment posed by various aspects of corporate activity. To do so, the Group is promoting autonomous and proactive initiatives to protect the environment.

In 1992, we established the Environmental Committee to promote environmental protection and compliance in local communities. In September 1997, we established the Sumitomo Heavy Industries Environmental Policy in order to drive home the message of environmental management.

In addition, in order to clarify the basic policy of activities across the Group, we established the Sumitomo Heavy Industries Group Environmental Policy in November 1999, expanding environmental management across the Group as a whole including overseas facilities.

Sumitomo Heavy Industries Group Environmental Policy



Environmental Management

We have established an Environmental Management Division in the General Affairs Group, which draws up the medium-term environmental plan (the current third medium-term environmental plan runs from FY2011 to FY2013), environmental goals on an annual basis, and develops environmental management across the Group including personnel training.

In 2011, we assigned an environmental manager to Shanghai, China, to promote environmental activity monitoring and support throughout China.

Environmental Management Audit

Japan

Once a year, the Environmental Management Division conducts an audit of each works and Group company. The audit covers environmental management as a whole and its principal emphasis is on activities to prevent global warming. In order to improve performance and to implement continued improvements, the emphasis is placed on validating and verifying the systems. We also undertake extraordinary audits as the need arises.

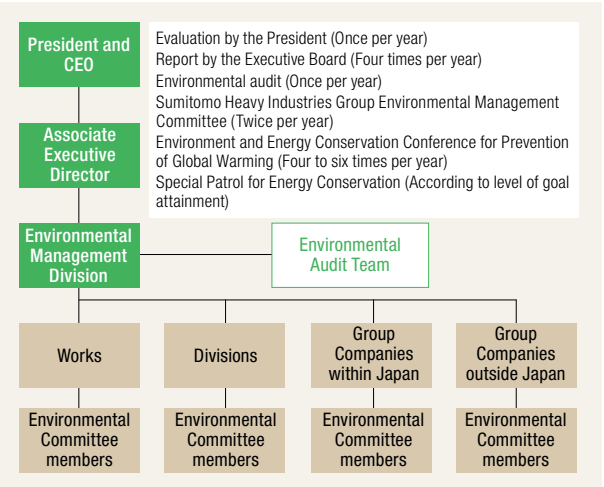
The audit results are evaluated on a five-point scale based on independent evaluation standards for each department, the aim being to raise the levels.

Overseas

The Environmental Management Division undertakes documentation checks and on-site internal audits of each overseas corporation with the principal objective being activities to prevent global warming and environmental risk reduction.

Audits of seven plants in China, two plants in Vietnam, and one plant in Brazil were conducted in FY2011.

In FY2012, audits were further expanded to include three plants in Europe.



Works and divisions that have received ISO14001 certification and group companies within the scope of certification

Works / Divisions	Group Companies within the Scope of Certification	Date of Certification
Tanashi Works	• Sumiju Plant Engineering Co., Ltd. • Sumiju Business, Ltd. • Sumiju Tokki Service Co., Ltd.	August 1998
Chiba Works	• Sumitomo (S.H.I.) Construction Machinery Co., Ltd. • Kenki Engineering Chiba Co., Ltd. • Sumitomo (S.H.I.) Construction Machinery Sales Co., Ltd.	April 1999
Yokosuka Works	• Sumitomo Heavy Industries Marine & Engineering Co., Ltd. • Sumiju Precision Forging Co., Ltd. • Sumiju Yokosuka Kogyo Co., Ltd. • Environmental Engineering Center of Sumitomo Heavy Industries Environment Co., Ltd.	February 1999
Nagoya Works	• Hitachi Sumitomo Heavy Industries Construction Crane Co., Ltd. • Sumiju Tomida Machinery Co., Ltd. • Sumiju Technos Co., Ltd.	January 1999
Okayama Works	• Sumitomo Heavy Industries Finetech, Ltd.	March 2000
Ehime Works (Niihama Factory)	• Sumitomo Heavy Industries Techno-Fort Co., Ltd. • Sumitomo Heavy Industries Engineering & Services Co., Ltd. • Sumitomo Heavy Industries Himatex Co., Ltd. • Sumiju Plant Engineering Co., Ltd. • Sumiju Techno Craft Co., Ltd.	November 1999
Ehime Works (Saijo Factory)	• Sumitomo Heavy Industries Process Equipment Co., Ltd. • SHI Examination & Inspection, Ltd.	February 1999
Energy & Environment Group	• Sumiju Environmental Technology Co., Ltd.	October 2002

ISO14001 Certification

Japan

Twenty-one of the main departments (works, divisions, Group companies) have acquired ISO14001. In Japan, all principal manufacturing divisions have completed the ISO certification.

Overseas

Five plants at five companies acquired certification in FY2011, so that a total of 11 plants at 10 companies have acquired certification. Sumitomo NACCO Materials Handling (Vietnam) Co., Ltd., which manufactures forklift parts in Vietnam, and Sumitomo (S.H.I.) Construction Machinery (Tangshan) Co., Ltd., which manufactures construction machinery in China, are slated to acquire certification in FY2012.

Group companies in Japan that have independently received the ISO14001 certification

Group Company	Date of Certification
Sumitomo NACCO Materials Handling Co., Ltd.	March 2000
Shin Nippon Machinery Co., Ltd.	February 2002
Izumi Food Machinery Co., Ltd.	June 2002
SEN Corporation	October 2002
Sumiju Environmental Engineering Inc.	October 2002
Sumitomo Heavy Industries Environment Co., Ltd.	November 2002
Lightwell Co., Ltd.	February 2005
Nihon Spindle Mfg. Co., Ltd.	March 2006
Japan Electron Beam Irradiation Service Co., Ltd.	January 2007
Sumitomo Heavy Industries PTC Sales Company	September 2007
SFK Co., Ltd.	August 2008
Seisa Gear, Ltd.	August 2009
Sumitomo Heavy Industries Modern, Ltd.	December 2009

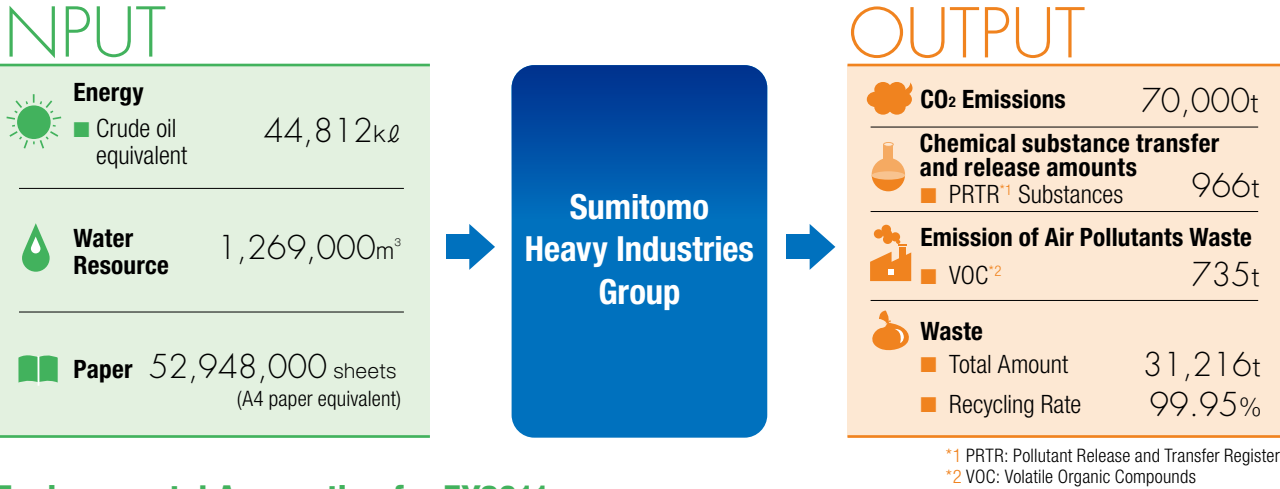
Group companies outside Japan that have independently received the ISO14001 certification

Group Company	Date of Certification
Sumitomo (SHI) Demag Plastics Machinery GmbH (Wiehe factory)	April 1998
Sumitomo (SHI) Cyclo Drive Germany GmbH	March 2006
Sumitomo (SHI) Cryogenics of Europe, Ltd.	June 2008
Ningbo Sumiju Machinery, Ltd.	September 2008
Dalian Spindle Cooling Towers Co., Ltd.	December 1999
SHI Manufacturing & Services (Philippines) Inc.	January 2011
Sumitomo (SHI) Cyclo Drive China Ltd.	May 2011
Sumitomo (SHI) Demag Plastics Machinery GmbH (Schwaig factory)	July 2011
Link-Belt Construction Equipment Company	August 2011
Suminac Philippines Inc.	September 2011
Sumitomo Heavy Industries (Tangshan), Ltd.	March 2012

Environmental Objectives (Medium-Term Plan) and Results

Sumitomo Heavy Industries Group formulated the third medium-term environmental plan, for which FY2013 is the final year, and is working to reduce environmental impact. In order to achieve a sustainable society, we have set a target of making a 30% reduction in CO₂ relative to 1990 by 2020, and we aim to have the No. 1 eco-factory in the industry through innovation.

Entire View of the Burden on the Environment (Sumitomo Heavy Industries Group)



Environmental Accounting for FY2011

As a yardstick for measuring the investment, expenditure and effect of environmental protection, we have conducted environmental accounting in accordance with the Environmental Accounting Guidelines, 2005, issued by the Ministry of the Environment.

Cost of Environmental Protection (Accounting Base: Sumitomo Heavy Industries Group)						Unit: million yen
Category	Details of the main activities and the effects	Investment amount	Costs	Economic effect	Main content	
(1) Costs within Business Areas (Sites)	Handling or processing water, air, noise, vibration, chemical substances, and waste materials; reducing energy and resource consumption; and recycling materials	542	473	108		
Breakdown	(1)-1 Costs for Preventing Pollution	178	209	39	Reducing cost of wastewater treatment	
	(1)-2 Costs for Global Environment Protection	182	102	438	Cost reduction with introduction of energy conservation, natural energy	
	(1)-3 Resource Recycling Costs	11	162	69	Reducing landfill by separating rubbish, cost reduction by cutting back on waste	
(2) Upstream and Downstream Costs	Cost of cutting paper to use reverse side	0	1.4			
(3) Management Activity Costs	Administering and maintaining ISO14001 standards; providing training (general, specialized, screening panel, for internal auditing); monitoring the implementation of action plans; receiving regular screening; expansion and maintenance of green areas; confirmation of PRTR; and measurement of VOC	49	180			
(4) Research and Development Costs	Research and development of energy-saving products and renewable energy use, energy-saving design of construction machinery, development of models that support emission controls, development of technologies to counter corrosion in melting chlorine furnaces, development of combustion technologies for high alkaline fuel for CFB boilers, development of low-grade combustion technology, research on improved fuel consumption for ships, development of reduction gears for wind power generator, development of IE3 motor (development division), improvement of hybrid power supply, development of reduced-weight CSU, improvement of effluent treatment equipment functionality and energy saving, forklift development, emissions control support, other environmental support, development of energy-saving products	580	735			
(5) Cost of dealing with environmental damage	Levies on air pollution loads; share of compensation for contamination and green belts charged to regional corporations	0	0.01			
Total		1,171	1,388	545		

Item	Description	Amount	Unit: million yen
Total amount of investment made in the period	Renovations of wastewater treatment facilities; Maintaining sewage systems; Installing oil-water separating tank; Upgrading transformers (high-performance); Lighting INV and scaling back on lighting; Investing in energy conservation measures; Upgrading air conditioning; Upgrading lighting; Upgrading compressors	1,171	
Total cost assumed in the period	Recycling, collecting, transporting, processing and disposing of waste; Inspections to detect extremely small amounts of PCBs; Operational control of waste water treatment facilities; Measuring water quality, exhaust gas, noise and vibration; Administering and maintaining ISO14001; Providing training; Monitoring implementation of action plans; Fixed term; Updated inspections	1,388	
Total cost of research and development in the period	Researching and developing energy-saving products and renewable energy; developing technologies to counter corrosion in melting chlorine furnaces; developing combustion technologies for high alkaline fuel for CFB boilers; researching improved fuel consumption for ships; Developing high-efficiency motors; energy conservation; developing commercial versions of compact (resource-saving) equipment (water treatment); developing forklifts; emission control responses; other environmental responses; developing energy-saving products	1,314	
Cost of disposal of valuables etc. in the period	Effective utilization of remainder materials such as metal scraps etc.	455	
Total cost of environmental protection activities during the period		2,559	

Activities in FY2011 – General Overview

We are promoting our third medium-term environmental plan (FY2011-2013) based on lessons learned with the second medium-term environmental plan.

The status of achievement of FY2011 activities is as follows.

Index	Item	Third Medium-Term Plan (2011 – 2013)	Targets in FY2011	Achievements in FY2011	Evaluation
Environmental Management	① Zero environmental accidents (legal violations)	Zero environmental accidents (legal violations)	Continue zero environmental accidents (legal violations)	Zero environmental accidents (legal violations)	⊙
Prevention of Global Warming	① Reduction in CO ₂ emissions at works and offices	Reduction by 19% from the FY2004 level by FY2013 (28% reduction over FY1990 levels)	Reduce CO ₂ emissions by 17% from FY2004 level (26% reduction over FY1990 levels) (Target exceeds medium-term plan)	27% reduction compared to FY2004	⊙
	② Improved energy productivity Energy productivity = Net sales/CO ₂ emissions (CO ₂ reduction due to productivity improvements at factories)	By FY2013, a 7% improvement in the energy productivity indicator compared to FY2008	Improvement by 5% compared to FY2008	Reduction of 1.5% for the Group	△
	③ Raising scores for process improvement	Achieve four points of a maximum five-point score as in-house benchmark for process improvement activities across all departments	Average score 3.4 points	Average score 2.7 points	○
	④ Reduction in paper usage	Reduction by 45% from FY2005 level by FY2013	Reduction by 42% from the FY2005 level	50% reduction compared to FY2005	⊙
	⑤ Promotion of green logistics Reduction in CO ₂ emissions in transportation	By FY2013, 14% reduction per basic unit of transportation against FY2006 benchmark	12% reduction per basic unit of transportation against FY2006 benchmark	15% reduction compared to FY2006	⊙
Promotion of Resource Conservation and Recycling	① Reduction in volume of waste generated and disposed of	• 13% reduction in amount generated compared to FY2007 • Amount disposed of is less than 0.05% of amount generated	• 11% reduction in amount generated compared to FY2007 • Amount disposed of is less than 0.5% of amount generated	• Amount generated 31,216 tons (8% reduction compared to FY2007) • Amount disposed of 39 tons (0.05% of amount generated)	○
	② Achievement of zero emissions	Achieve zero emissions factories	Continue achieving zero emissions factories	Achieved by all divisions	⊙
	③ Reduction in water usage	Reduction by 25% or more from the FY2005 level	• 22% or greater reduction compared to FY2005 • Reduce non-attaining divisions to zero	33% reduction compared to FY2005	⊙
Promotion of Prevention of Environmental Pollution	① Emission control of organochlorine chemicals (Soil Contamination Countermeasures Law, Montreal Protocol)	Use completely abolished	• Dichloromethane completely abolished, continue complete abolition of trichloroethylene and tetrachloroethylene • Continue complete abolition of ozone-depleting substances HCFC-141b, HCFC-225	• Completed shift to dichloromethane alternative • Trichloroethylene completely abolished • Continuing complete abolition of tetrachloroethylene • HCFC-141b reduced 44.5%, continuing complete abolition of HCFC-225	⊙
	② Emission control of substances designated as VOC (Air Pollution Control Law)	Reduced by 33% from the FY2006 level	Reduced by 31% from the FY2006 level	25% reduction compared to FY2006	○
	③ Total abolition of equipment that uses PCB (Law Concerning Special Measures Against PCB Waste)	Total prohibition of use	• Complete early registration with the Japan Environmental Safety Corporation of equipment with high concentration of PCB. Dispose of appropriately after receipt of disposal notice • For low concentrations, replace and store in accordance with plans	• Early registration of equipment with high concentrations of PCB completed • Continuing investigation of low concentrations	⊙
Expansion of Line-up of Environmentally Friendly Products	Promotion of measures for green procurement (purchase of raw materials and components)	Review Green Procurement Guidelines, eliminate prohibited substances	Review Green Procurement Guidelines; Develop regulations for prohibited substances	Continue in accordance with Green Procurement Guidelines	⊙
Environmental Management	① Increase in the number of ISO14001 certifications	Expand certification at overseas factories to 10 companies	Three overseas Group companies acquire certification for total of 10 companies certified	Three overseas companies acquire certification Total 10 companies acquire certification	⊙
	② Expansion of the scope of the Consolidated Environmental Management	Expand to principal overseas manufacturing bases	• Local guidance by head office, periodic environmental audits • Post full-time staff to Shanghai, create a network • Raise the level of education for environmental managers at Chinese factories	• Implement environmental audits at principal overseas manufacturing bases • Post full-time staff to Shanghai • Conduct education for environmental managers in China	⊙
	③ Contribute to biodiversity	Expand tree-planting and growing programs at factory premises	Expand tree-planting and growing programs at factory premises	Systematic tree-planting and growing programs in all areas	○

Evaluation: ⊙ Achieved ○ Achieved by 70% or more △ Achieved by less than 70%

Global Warming Prevention Activities

In its business activities, including procurement, manufacturing and logistics, Sumitomo Heavy Industries Group has been taking measures to reduce CO₂ emissions by positioning it as the most important issue.

Promoting Environmental Management

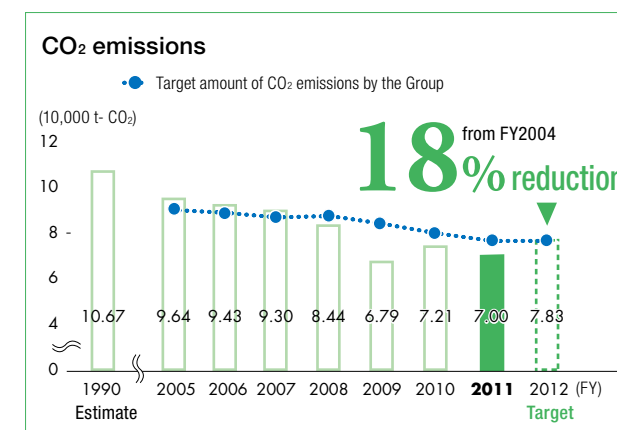
In the Sumitomo Heavy Industries Group, activities to prevent global warming are positioned as a part of environmental management with discussions conducted at evaluations by the President on visits to the manufacturing floor. The results from each business division are fed back for monthly processing at the Environmental Management Division. The results are also announced at the quarterly meetings of the Executive Board.

Each division in the Group promotes activities to prevent global warming and is engaged in activities to improve a range of processes in order to further enhance the efficient use of energy and to “visualize” activities and initiatives through “the participation of all employees.”

Reducing CO₂ Emissions

The Sumitomo Heavy Industries Group started to take action in FY2005 with the First Medium-Term Environmental Plan to reduce CO₂ emissions by 10% from FY2004 levels by FY2007. As of FY2011, we launched the Third Medium-Term Environmental Plan aiming to further reduce CO₂ emissions by 19% from the FY2004 level by FY2013. Compared to the benchmark year of FY1990 for the Kyoto Protocol, the target is to achieve a 28% reduction.

In FY2011 we were able to control emissions to far exceed the target with a 27% reduction over FY2004 levels and a 35% reduction over FY1990 levels.



Energy Productivity

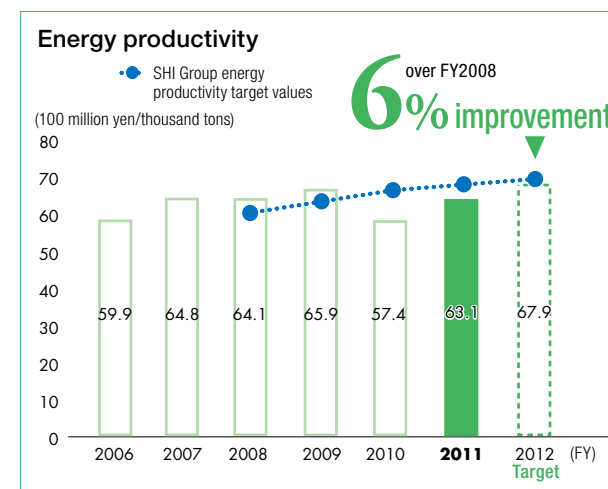
We have been using the new unified index of energy productivity (sales/CO₂ emissions) since FY2009 to conduct monthly management and operations by each business unit while taking the particular business characteristics of the SHI Group into consideration.

We operated with the declared target of 5% improvement over FY2008. As a result, where in FY2010 the SHI Group overall achieved a 10% reduction over FY2008, in FY2011 it achieved a 1.5% reduction, which was an improvement over FY2010 but ultimately did not meet the target. Our principal manufacturing bases did meet the target in FY2011 with a 17% improvement over FY2008.

FY2008 sales were the highest in the past several years, and sales then decreased due to the subsequent collapse of Lehman Brothers. Even though FY2011 sales recovered to a higher level than FY2010, they were lower than FY2008. The reason that targets were not met is that some departments were unable to achieve reductions in CO₂ emissions appropriate to this decrease in sales.

Going forward, we will continue to promote the following measures:

- 1 Concentrate operating hours
- 2 Minimize standby power
- 3 Minimize working areas
- 4 Make effective use of facilities.



Promoting Green Logistics

In transportation, we have been making efforts to reduce CO₂ emissions by eliminating waste and by improving efficiency. With FY2006 as the benchmark year, we aimed to achieve an 12% reduction in the basic unit of transportation (t-CO₂/t) in FY2011. Through measures such as a switch to modal shift, efficient transportation planning and by making improvements to loading ratios, we exceeded the target with a 15% reduction in FY2011.

We will be pushing activities toward the goal of a 13% reduction in FY2012 compared to FY2006 levels.

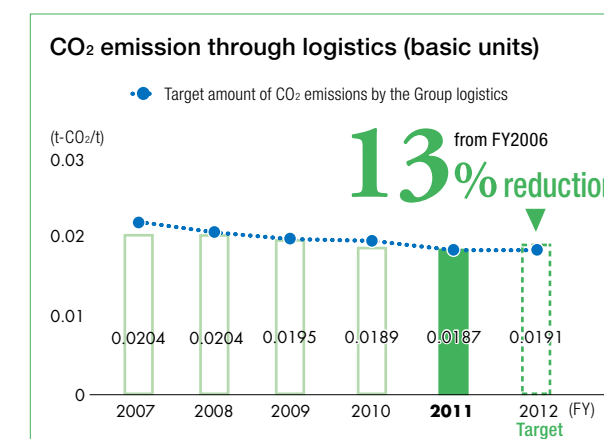


Using ships to achieve a modal shift

Activities to Reduce Paper Usage

Reducing paper use is part of activities to save resources and at the same time, it is linked to activities to prevent global warming such as reducing CO₂ emissions in the papermaking process. In FY2013, the Sumitomo Heavy Industries Group aims for a 45% reduction compared to FY2005 levels.

In FY2011 we exceeded the target of a 42% reduction over FY2005 levels with a reduction of 50%.

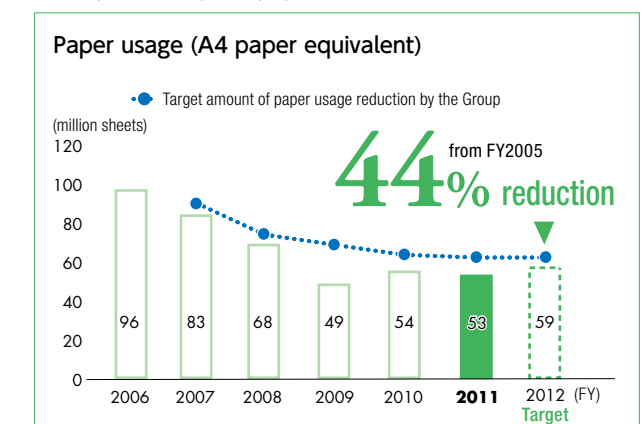


Environmentally Friendly “First-Class Products”

The Sumitomo Heavy Industries Group has created systematic and voluntary standards across the Group such as carrying out Lifecycle Assessments*, improving recycling rates at the time of disposal, reducing the volume of packaging, curtailing harmful substances contained in products, and developing products that consume less energy, weigh less, are more compact and last longer. We have launched initiatives for continuous improvements and evaluation based on these standards.

As a result, we were able to increase the number of “first-class products” from three products, consisting of the biomass boiler (Energy & Environment Group), the hydraulic excavator (Sumitomo (S.H.I.) Construction Machinery Co., Ltd.) and the bag filter (Nihon Spindle Mfg. Co., Ltd.), to 11 products with the addition of these in FY2011: Electric-powered reach forklifts (Sumitomo NACCO Materials Handling Co., Ltd.); plastic injection molding machines (Plastics Machinery Division); turbines with longer blades (Shin Nippon Machinery Co., Ltd.); hot forging presses (Sumitomo Heavy Industries Techno-Fort Co., Ltd.); dividing-wall distillation columns (Sumiju Plant Engineering Co., Ltd.); compact 25-ton biomass boilers (Energy & Environment Group); dry-type desulphurization equipment (Energy & Environment Group); and asphalt finishers (Sumitomo (S.H.I.) Construction Machinery Co., Ltd.).

* Lifecycle Assessment: A method of objective and quantitative evaluation of environmental impact throughout the lifecycle (all stages from extracting the resources to manufacturing, use, disposal and transportation) of products and services



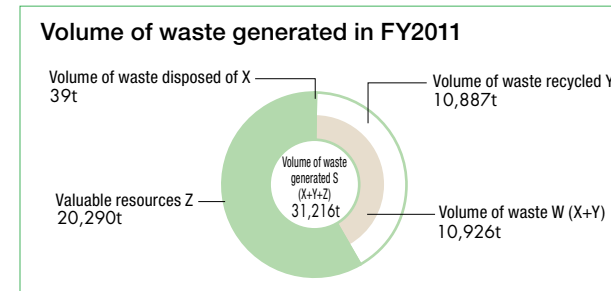
Activities Directed Toward Creating a Society Based on Recycling

In order to build a recycling-oriented society, we at the Sumitomo Heavy Industries Group are controlling the discharge of waste generated by our business activities, reusing and making efficient use of resources as well as working on initiatives to reduce the environmental burden posed by our business activities.

Measures for Reducing the Environmental Burden

Establishing a society based on recycling is essential for ensuring the sustainable development of society. We manage our waste by classification into the three categories shown below. We aim to reduce the volume of waste generated through our business activities and put more emphasis on improving the recycling of waste. We also take action to reduce the burden on the environment by setting specific goals.

Waste for Disposal	Discarded as landfill or incinerated as unusable waste
Valuable Resources	Recycled for reuse. Metal scraps account for the main part.
Waste for Recycling	Discarded as waste, but recycled and later reused



Control of Waste Generated and Reduction in the Volume of Waste Discarded

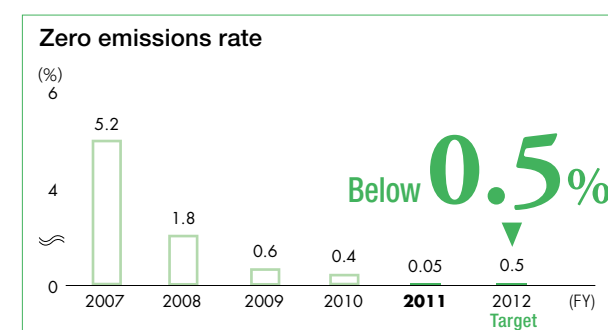
In FY2013, we aim to reduce the volume of waste discarded by 13% compared to FY2007 levels. In FY2011, we worked to control the volume of waste including metal scraps, to eliminate wastefulness and to streamline production activities, and the volume of waste decreased to 31,216 tons, a reduction of 8% compared to FY2007 levels, but we did not meet the FY2011 target, which was a reduction of 11%. The target for waste disposal is less than 0.5% of the volume of waste. In FY2011, the disposal volume of 39 tons was 0.05% of the volume of waste, thus achieving the target.



Zero Emissions in FY2011 Achieved by Entire SHI Group

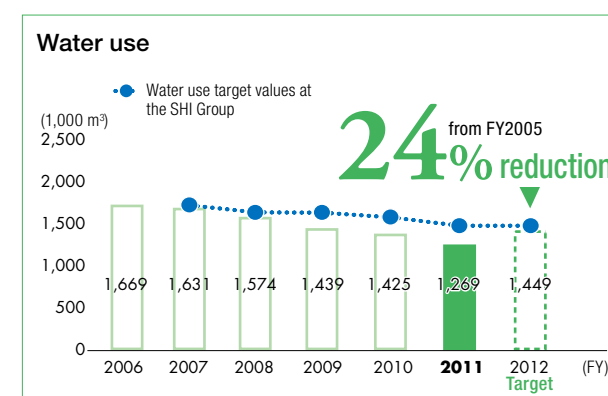
The SHI Group has defined factories at which the amount of waste disposed of as landfill as a percentage of total waste (the zero emissions rate) is less than 0.5% as zero emissions factories. We have been promoting this program since FY2005, and as a result in FY2011 we achieved zero emissions at all seven works and all eight Group companies. We were also able to achieve a zero emissions rate of 0.05% for the SHI Group as a whole, greatly exceeding the target.

Recycling by separating waste is crucial in achieving zero emissions. Going forward, we will conduct thoroughgoing waste separation so that we can maintain zero emissions status, and we will aim to make our plants friendly to the global environment.



Reducing Water Consumption

Reducing water consumption is linked to protecting resources and reducing discharge into public water systems. The SHI Group has set a target of reducing water consumption in FY2013 by 25% compared to FY2005 levels. In FY2011, we continued to install visible water pipes (aboveground installation) in order to identify water leaks and eliminate waste. As a result, we achieved a 33% reduction from FY2005 levels. For FY2012, we will aim for further reductions without allowing ourselves to be limited by target figures.



TOPICS

Lecture at Seminar on Rationalizing Energy Consumption

Ministry of Economy, Trade and Industry has taken steps to further promote corporate energy-saving programs by holding a seminar on rationalizing energy consumption in February, which is designated energy-saving month, in order to promote the more efficient use of energy.

The seminar was sponsored by the Shikoku Bureau of Economy, Trade and Industry of the Ministry of Economy, Trade and Industry. At the seminar, the environmental manager of the Niihama Factory spoke about SHI Group activities to prevent global warming and described energy-saving measures at the Niihama Factory as a program case study.

The lecture covered a wide range of measures on both the

hardware and software sides, including consciousness-raising activities to encourage participation by all personnel, visualization, operating standards for air conditioners and lighting, updating of skylights to reduce lighting needs, installation of easily accessible switches for office lighting, and Group-wide lateral deployment of measures across organizational boundaries.



Lecturing at the Seminar on Rationalizing Energy Consumption

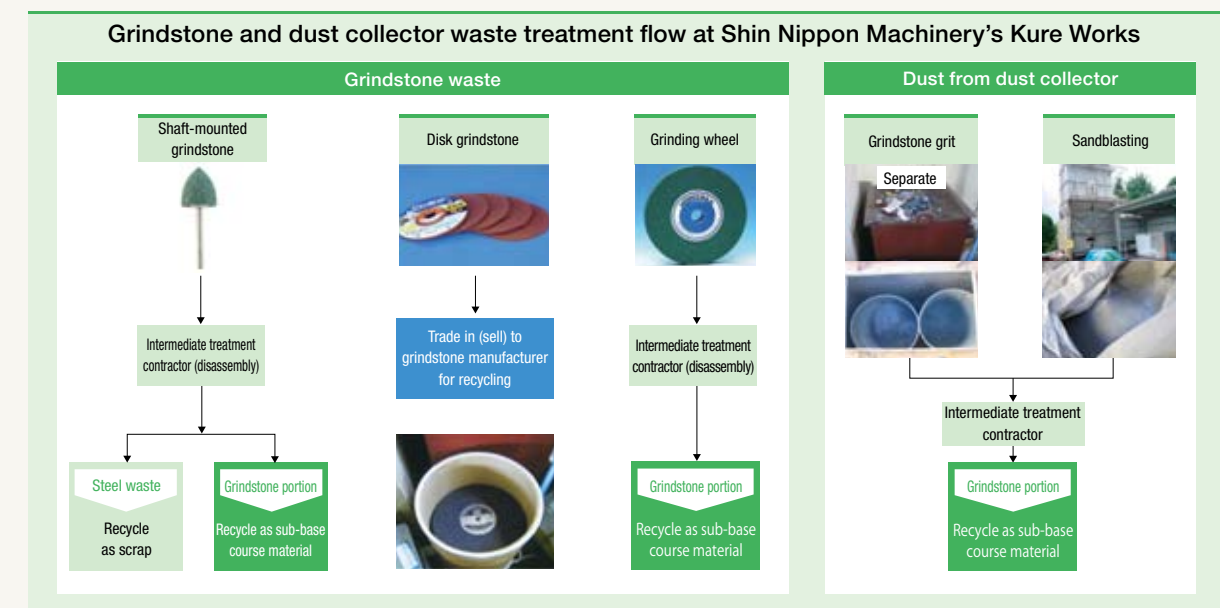
Example of Zero Emissions Program

Waste material at the Yokosuka Works has been thoroughly broken down into 80 types and recycling is being promoted. At the Nagoya Works, machining sludge is not being sent for disposal in landfill as before, but is instead being recycled. The same is being done with grindstone waste and dust from dust collectors at Shin Nippon Machinery Co., Ltd. Recycling of grindstone waste is also being promoted at Seisa Gear, Ltd., and Sumitomo NACCO Materials Handling Co., Ltd.

At Sumitomo Heavy Industries Himatex Co., Ltd., shot dust is being recycled as iron material. Steps are also being taken to promote recycling by rigorously separating the waste when upgrading furnaces.



Explaining the importance of separating waste to lower secondary school students visiting for a workplace experience (Yokosuka Works)



Activities for Managing Chemical Substances

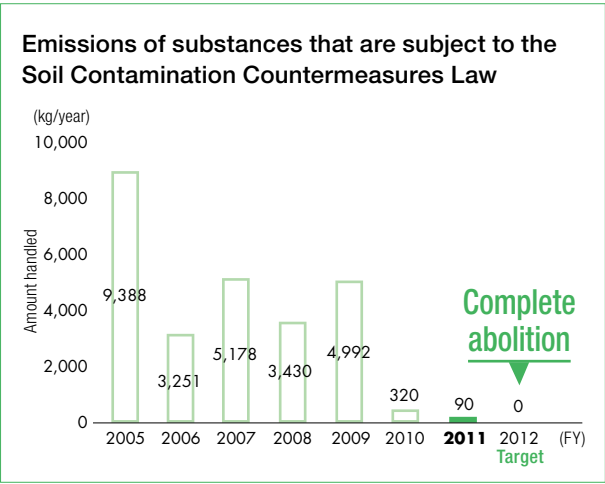
We manage chemical substances with the aim of implementing prevention of environmental pollution.

Complete Abolition of Organochlorine Chemicals

Complete abolition of substances subject to the Soil Contamination Countermeasures Law

In FY2011, we completed eliminating any use of dichloromethane, tetrachloroethylene and trichloroethylene, which are organochlorine substances subject to the Soil Contamination Countermeasures Law.

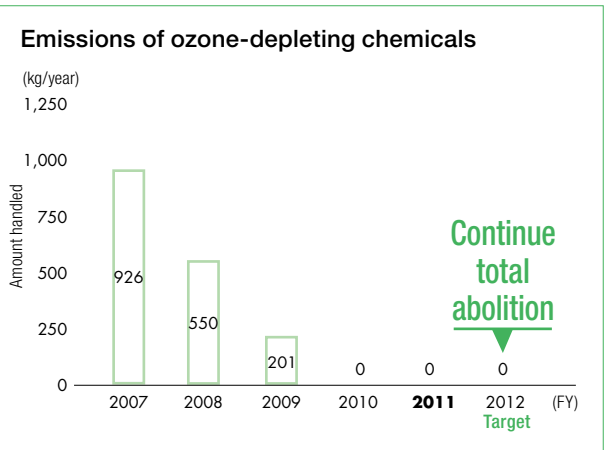
In FY2011, the total use of these three substances was reduced 99% compared to the level in FY2005. The achievement by substance shows a 95% reduction in dichloromethane from the FY2005 level, and the shift to substitutes was completed during FY2011. The use of trichloroethylene continued to be completely abolished in FY2011. The use of tetrachloroethylene was completely abolished as of FY2009.



Total abolition of ozone depleting substances

We have worked toward the goal of total abolition of the ozone depleting substances HCFC-141b and HCFC-225 by FY2010.

We completely abolished the use of HCFC-225 as of FY2008 while HCFC-141b was completely abolished in FY2010 with the adoption of substitutes.



TOPICS

Management of PCB (Polychlorinated Biphenyl) and Total Abolition of Equipment Containing PCB

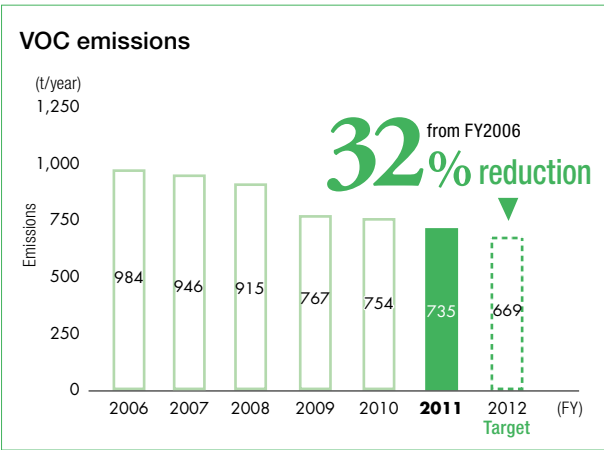
We have completed early registration of all equipment with high concentrations of PCB with the processing company, Japan Environmental Safety Corporation, and we have undertaken a systematic course of detoxification based on the Law Concerning Special Measures Against PCB Waste. Until FY2011, this material was processed at the Tanashi Works, Okayama Works, Nihon Spindle Mfg. Co., Ltd., and Izumi Food Machinery Co., Ltd. The survey of equipment with low concentrations of PCBs was furthered and updated in FY2011. Study is underway regarding treatment of items presently being stored. In FY2011, we also undertook a major upgrade with regard to lighting equipment with stabilizers and transformers containing PCBs.



Emission Control of VOC (Volatile Organic Compounds)

Toluene, xylene and ethylbenzene in paint solvents account for over 90% of the VOC we use. Our goal is to reduce emissions of these chemicals by at least 33% by FY2013 compared with the level in FY2006.

Progress was made with reduction in FY2011 thanks to the operation of solvent collection and removal equipment at our large-scale paint facilities that are subject to legal controls. As a result, we saw reductions of 25% compared to the level in FY2006. Measures to control VOC emissions in FY2012 will continue from FY2011 through such steps as the operation of solvent collection and removal equipment, the expanded use of powder paint, and the adoption of low-solvent paints to control emissions.



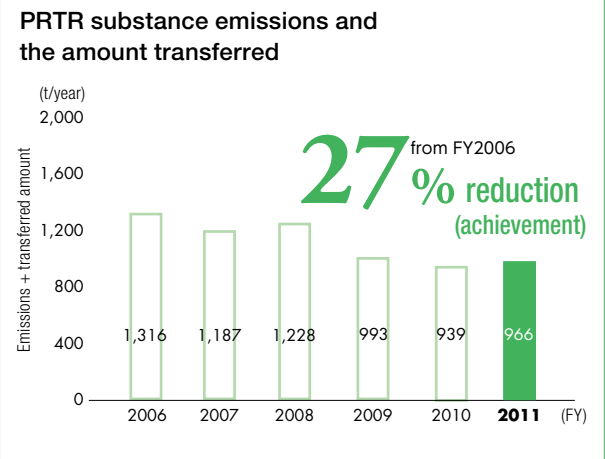
Emissions and Transfer of PRTR Substances

More than 90% of PRTR substances are paint solvents (toluene, xylene, ethylbenzene). In FY2011, we reduced these substances by 27% of the level in FY2006. We will continue to expand the use of low-solvent paint while ensuring that we maintain the quality of our products. We will also install and expand solvent collection and removal equipment to reduce the emission and transfer of PRTR substances.

Emissions and transfer volume of Class I Designated Chemical Substances under the PRTR Law in FY2011 (Substances subject to reporting)

Substance number	Substance designation	Emissions + transferred amount (kg/year)
53	Ethylbenzene	204,787
80	Xylene	498,489
240	Styrene	1,784
296	1, 2, 4-trimethylbenzene	1,217
297	1, 3, 5-trimethylbenzene	7,370
300	Toluene	184,885
349	Phenol	1,347
374	Hydrogen fluoride and its water-soluble salts	39,839
384	1-bromopropane	4,000
392	Normal hexane	732
405	Boron and its compounds	2,578
412	Manganese and its compounds	14,709

* Emissions + transferred amount is the total amount for Sumitomo Heavy Industries and all Group companies



Stronger Environmental Management at Our Overseas Factories

Sumitomo Heavy Industries Group is strengthening environmental risk management and global warming prevention measures at overseas factories.

Stronger Environmental Risk Management

Stronger environmental management system at our overseas factories

To strengthen environmental risk management at our overseas factories, we created the Headquarters post of environmental manager for overseas factories in FY2011. In addition, to strengthen environmental management at eight of our subsidiary companies in China, we set up and appointed a manager to a new Environmental Management Department in Shanghai. At the same time we began organizing China area environmental management meetings. With the purpose of enhancing environmental management measures in China, these meetings oversee environmental management at each factory in this area, providing guidance regarding problem issues and allowing pooling of knowledge on these issues.

At our overseas factories, we are making pollution prevention the top environmental management priority.

We verify that each factory has environmental standards in accordance with all local laws and regulations, and we are putting in place compliance systems to ensure that these standards are maintained. At factories in Vietnam and China, in response to tighter local environmental standards, we are carrying out measures such as extensions, upgrades and increasing cleaning rates of factory waste water systems.



China area environmental management meeting
Managers from eight factories in China attend the environmental management meeting with the environmental manager from our Shanghai office.

Progress in acquiring ISO 14001 external certification, maintaining and expanding the scope of certification

Our overseas factories are continuing to acquire ISO 14001 external certification, with five factories receiving new ISO 14001 external certification in FY2011. By the end of FY2011, among 22 subsidiary companies running factories, 10 companies with 11 factories had been certified. This represents a certification rate of 45%.

Furthermore, whenever we extend our factories to increase production, we also expand the scope of certification.

Stronger environmental auditing at overseas factories

We are increasing the frequency of environmental audits by Headquarters managers at our overseas factories, with 10 factories in China and Southeast Asia audited in FY2011. The environmental audit evaluates environmental risk for each factory, and the interval between audits is based on this risk.

The audit verifies that environmental management systems in accordance with local environmental regulations are in place, and that factories have sufficient capacity to prevent pollution incidents. It also examines natural resources conservation and global warming prevention operations at each factory, and provides guidance on making these operations more effective.



Environmental audit
Inspecting the environmental bulletin board at the speed reducer factory in Shanghai, China



Environmental audit
Operational inspection of a boiler used for heating at the speed reducer factory in Tianjin, China



Environmental audit
Inspecting the waste water drainage channel at a speed reducer factory in Vietnam

Guidance for initial environmental management operations at new factories

Before a new factory goes into full operation, an environmental manager from our Headquarters is sent to the factory to advise local environmental managers and provide support for the initial phase of environmental management operations.

In FY2011, Headquarters environmental managers were sent to advise local environmental managers at the new construction machinery factory in Indonesia and the new speed reducer factory in Brazil.



Speed reducer factory in Brazil
Providing operational guidance to environmental managers



Construction machinery factory in Indonesia
Advising on management of the waste water discharge box at the site boundary

Progress in Global Warming Prevention Measures

As Sumitomo Heavy Industries Group establishes new overseas factories and extends existing ones, total CO₂ emissions for overseas factories are tending to increase.

In FY2011, 47% of our Group's CO₂ emissions came from overseas factories.

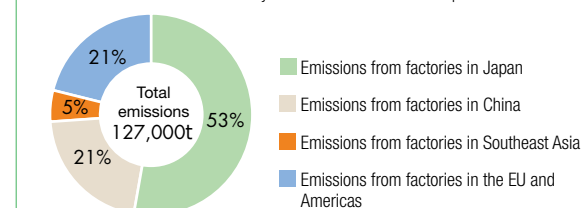
In response to this situation, to strengthen our global warming prevention measures, Sumitomo Heavy Industries Group has been setting a CO₂ emissions reduction target for each of its factories since FY2011.

We have set a target for CO₂ emissions reduction of at least 2% per year from a baseline year established factory by factory. For factories which expand production, the target is adjusted to take the sales budget for the fiscal year into account. In addition, we have set a target for improvement in energy productivity (the ratio of CO₂ emissions to net sales) of at least 1% per year. In FY2011, we met our targets for both CO₂ emissions and energy productivity.

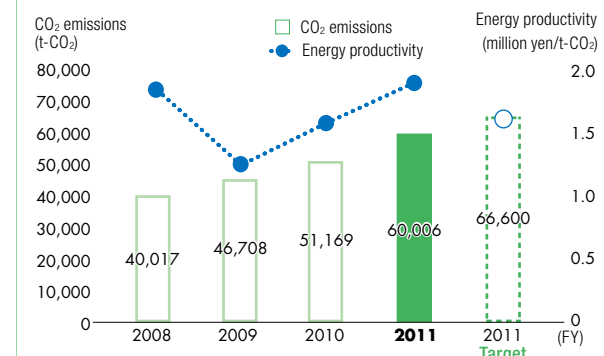
With the expectation that CO₂ emissions will increase in the future, we are continuing to enhance our environmental management.

CO₂ emissions by Sumitomo Heavy Industries Group area in FY2011 (t)

CO₂ emissions from overseas factory account for 47% of our Group's total emissions.



Change in overseas factory CO₂ emissions and energy productivity



NOTES: Constants used to calculate CO₂ emissions vary according to country of factory location.
Sales have been calculated using 2007 currency exchange rates.
The annual emissions are the total amount of emissions for each fiscal year.

Stronger Environmental Management at Our Overseas Factories

Global Warming Prevention Measures in Factory Construction

To prevent global warming, whenever Sumitomo Heavy Industries Group overseas factories are constructed or extended, we use buildings and equipment designed with a commitment to saving energy.

In our recently constructed overseas factories, multiple inverter-type and other compressors have been installed for efficient air supply. Also, we are progressively adopting energy-saving lighting equipment such as metal halide lamps and energy-saving air-conditioning systems.

Energy-Saving Designs for New Factories

We are adopting designs for factory buildings which, by taking the local climate into account, allow large-scale reductions in energy consumption for lighting and air-conditioning equipment.

Reducing Electricity Consumption for Factory Lighting

■ Installing factory ceiling skylights

To reduce the electricity consumed by factory lighting, our factories are being comprehensively fitted with ceiling skylights.

Speed reducer factory in Tangshan, China

In comparison with the existing building constructed in 2009, the number of skylights was greatly increased in the 2011 extension to the factory. This allowed about two-thirds fewer lighting units to be used in the factory.



The increased number of skylights in extension to the speed reducer factory in Tangshan, China. The extension to the factory can be seen through the doorway. The number of rows of skylights has been increased from one to two.

Speed reducer factory in Brazil and construction machinery factory in Indonesia

In these newly constructed factories, large skylights have been installed in the ceilings and even in the walls. On clear days, the intense sunlight in these low-latitude areas makes lighting inside the factory unnecessary.



Speed reducer factory in Brazil
With the skylights in the ceiling and walls, lighting inside the factory is unnecessary in daytime.



Construction machinery factory in Indonesia
Despite the height of the ceiling, skylights make lighting inside the factory unnecessary in daytime.

Reducing Electricity and Fuel Consumption for Air-Conditioning

■ Installing air-conditioning equipment which meets operational needs

Speed reducer factory in Tangshan, China

At the speed reducer factory in Tangshan, north China, using the air-conditioning system to cope with the cold winters and hot summers of a continental climate causes high consumption of electricity and fuel.

When the factory building was extended in 2011, local air-conditioning units controllable at each work site were installed to enable rational use of air-conditioning to meet operational needs.



Speed reducer factory in Tangshan, China
Local air-conditioning units allow rational air-conditioning use at individual work sites.

■ Using extensive natural ventilation to cut down on factory air-conditioning

Speed reducer factory in Brazil and construction machinery factory in Indonesia

Local temperatures are higher than in Japan and less variable throughout the year. With the local climate in mind, the factory building walls are fitted with large air vents, making an air-conditioning system unnecessary.



Speed reducer factory in Brazil
Wall vents



Construction machinery factory in Indonesia
Wall vents

Ingress of insects and small animals through the vents is prevented by netting, and this structure can provide natural ventilation 24 hours a day.

Another feature of the construction machinery factory in Indonesia is that the cafeteria has walls on two sides only and is open on the other sides, providing a comfortable environment without air-conditioning.

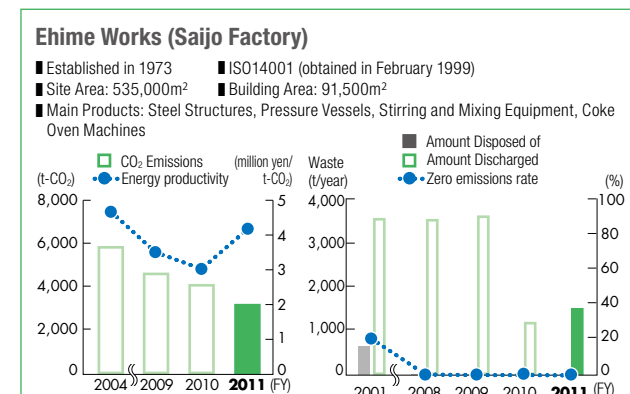
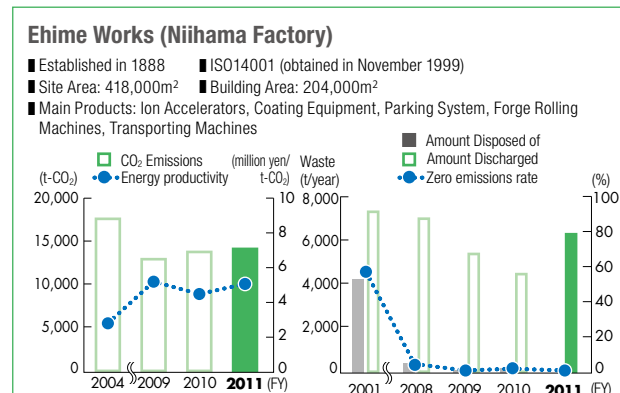
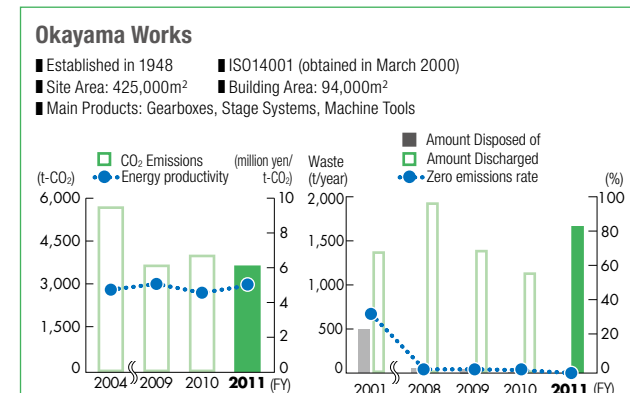
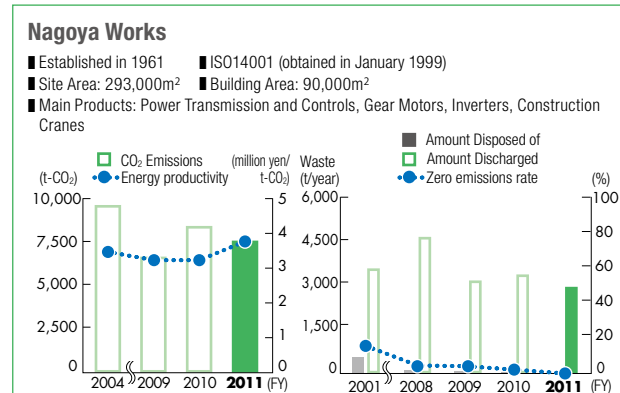
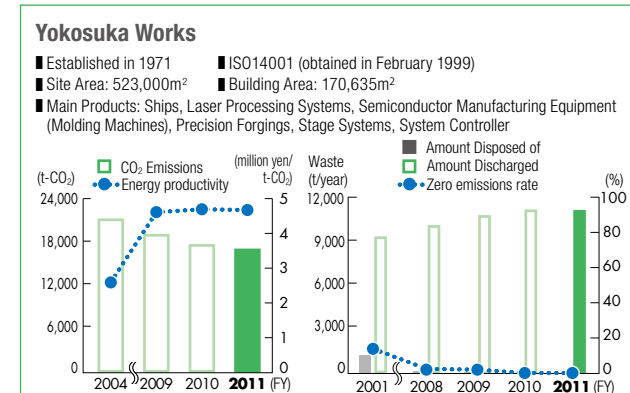
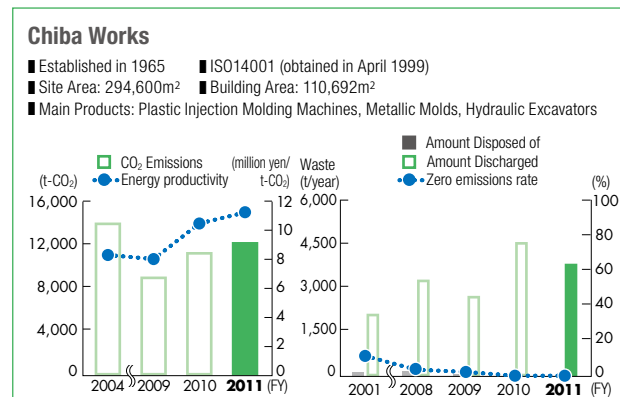
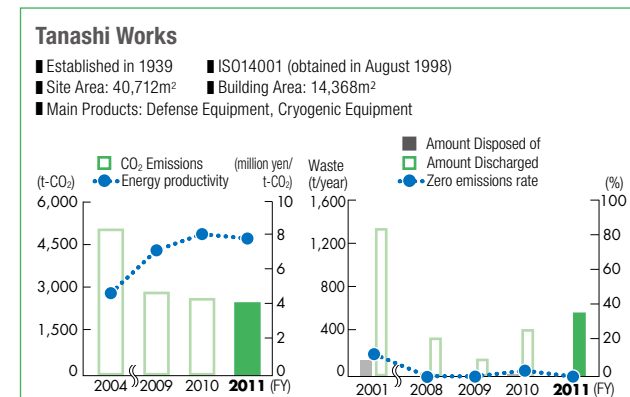


Construction machinery factory in Indonesia
The cafeteria is open on two sides.

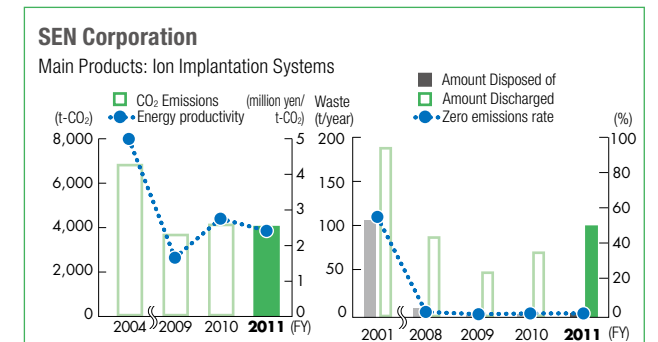
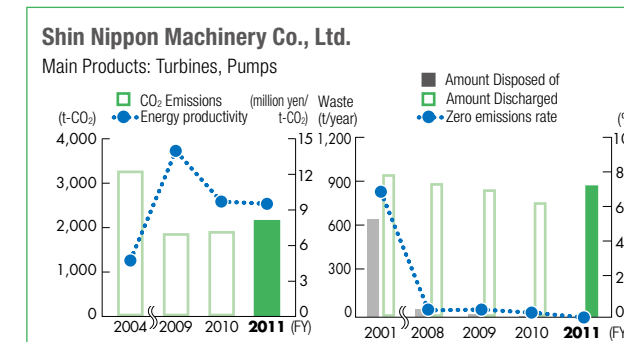
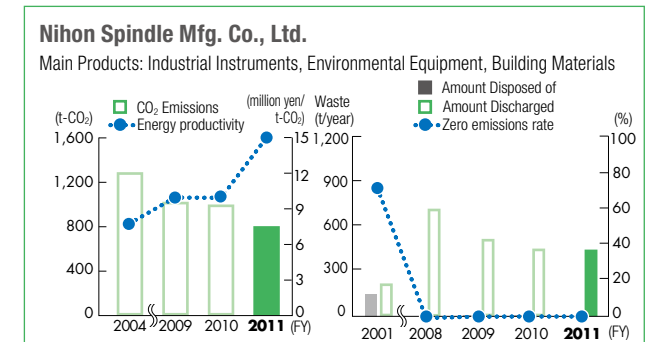
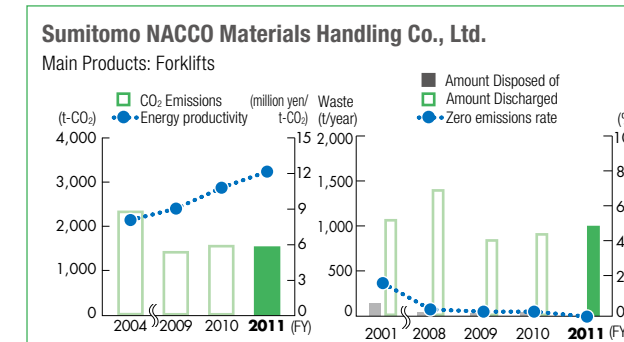
Environmental Impact Data

Environmental impact data for SHI works (including Group companies within the works), Group companies in Japan (away from SHI works) as well as the main overseas Group companies

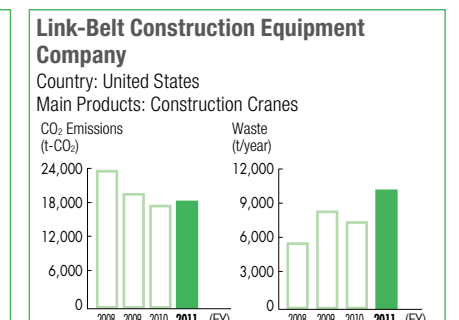
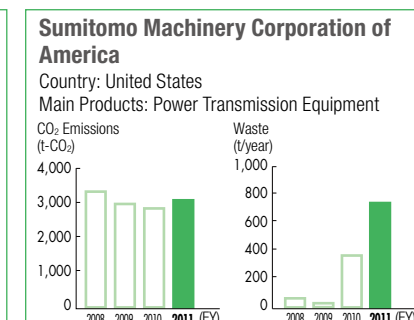
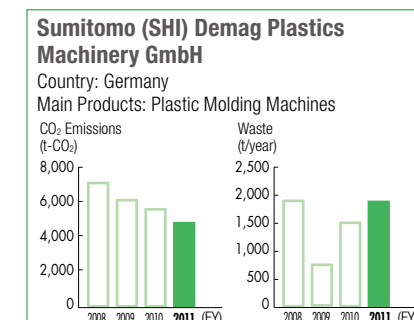
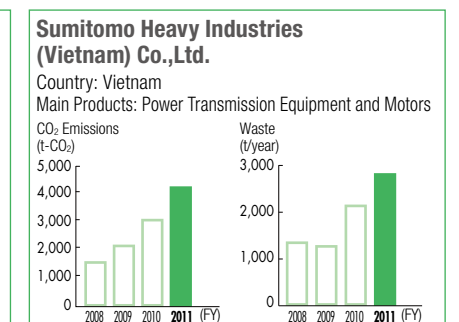
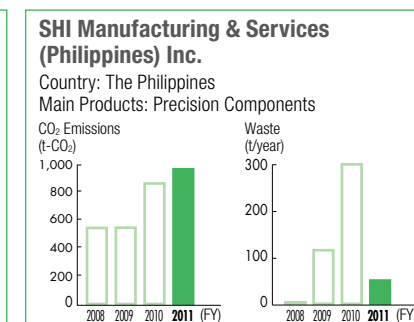
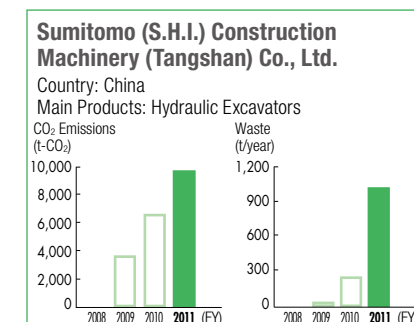
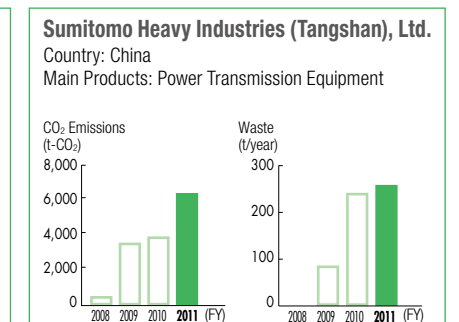
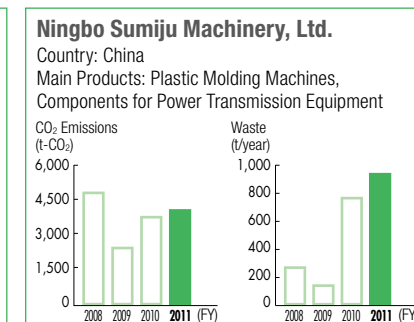
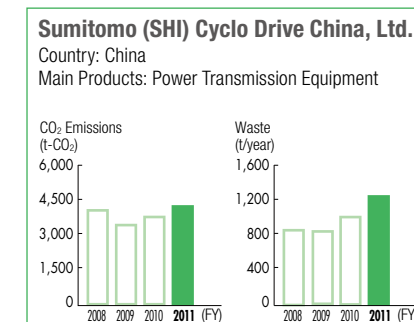
Environmental impact data for each works



Environmental impact data for Group companies in Japan (away from the works)



Environmental impact data for main overseas Group companies



Social Contribution Activities

Each division and company in the Sumitomo Heavy Industries Group aims to establish itself in the local community.

Each employee takes the initiative in planning and implementing activities for contributing to the community.

Biodiversity Measures

The SHI Group is committed to planting trees and greenery in order to contribute to biodiversity conservation.

Our Tanashi Works is preserving the Musashino Forest, which occupies approximately 30% of the 41,000-m² campus. This forest contains over 4,500 trees of 40 or more species, and 164 of the trees have been designated protected trees by Nishi-Tokyo City. Past wildlife habitat surveys confirmed the presence of considerable wildlife in the forest, which is a stronghold for the local ecosystem as well as a precious natural asset for scientific research.

With its abundant greenery, the Tanashi Works has named a portion of these woods the Forest of Inspiration and opened it to the public as a place where local communities and corporations can think together about the future of the earth. Artificial plantings have been avoided so that visitors can get a feeling of what the original Musashino landscape was like. Barrier-free walking paths have been set up with wooden benches to make a place where local residents can come to relax. In the autumn, nursery school children come to gather acorns.

The acorns gathered in the forest at the Tanashi Works are distributed to other works and Group companies for use in our tree-planting campaigns. Our aim is to make effective use of the space within the works, expand the green area, and make it an ecologically friendly facility.

We are aiming to expand the green area at all of our works. At the Yokosuka Works, we plant a tree every time we build and deliver a ship.

At the Niihama Factory, we have demolished buildings and converted those areas to greenery as part of redevelopment of the campus. Plans call for continuing expansion of green areas.



(Tanashi Works)



Children collecting acorns at the "Forest of Inspiration" (Tanashi Works)



Cultivating seedlings from planted acorns from the Tanashi Works (Niihama Factory)



Newly expanded green area (Niihama Factory)



Family tour groups planted 2,200 trees with the wish they would grow into a "thousand-year forest" (Yokosuka Works)



A commemorative tree is planted for every ship delivered (Yokosuka Works)



Green curtain (Yokosuka Works)



Changing the border of the sidewalk to a green area (Nihon Spindle Manufacturing Co., Ltd.)



Planting camellias, the flower of Kure City, by the roadside on the campus (Shin Nippon Machinery Co., Ltd.)

Traffic Safety Measures

The SHI Group is taking part in traffic safety campaigns as a member of the local Traffic Safety Association. In order to heighten the awareness of traffic safety among Group employees, we also hold lectures in all of our districts, and we request the cooperation of transportation contractors that carry loads into and out of our works.

The Nagoya Works and Sumitomo NACCO Materials Handling Co., Ltd. periodically take on traffic monitoring duty, and they are actively cooperating with community traffic safety.

At the Yokosuka Works, Japanese radishes together with reminders of traffic safety were distributed to visitors who came by car. The Japanese radishes were symbols of the slogan, "Root out traffic accidents completely," for the year-end traffic accident prevention campaign conducted by the Taura Traffic Safety Association of Yokosuka City.



A lesson in driving a motorcycle (Yokosuka Works)



Distributing leaflets calling for traffic safety (Yokosuka Works)



"Root out traffic accidents completely" (Yokosuka Works)

Also at the Yokosuka Works, we sponsor lessons in improving motorcycle driving skills with the cooperation of the local police department.

Blood Donation

SHI Group collaboration with blood donation drives has continued over many years, and for our employees, these have become well established as the blood drives they feel closest to.

In FY2011, a total of 1,000 people throughout the Group companies donated blood.

The Chiba Works and the Chiba Factory of Sumitomo (S.H.I.) Construction Machinery Co., Ltd., received commendations from Chiba Prefecture for their long years of cooperation on blood drives.

The SHI Group will continue to promote blood drives to help save people's precious lives.



Blood donation (Chiba Works)

Rescue Drills

The SHI Group conducts rescue drills with the guidance of the fire department.

Last year, the Chiba City Fire Department designated the Chiba Works as a business establishment cooperating in the promotion of first aid. We sponsored an emergency care and life-saving course that was attended by 30 people.

This course provided advanced emergency response training intended not only for within the works but also for traffic accidents and other such needs on neighboring prefectural roads. All the participants qualified to receive a certificate of completion.

A course in advanced life-saving skills was held at the Yokosuka Works with guidance from the Yokosuka Kita Fire Station. Course content included how to transport injured and ill people, casualty management, clearing foreign matter from airways, infant to adult cardiopulmonary resuscitation, and the use of AED.

At the end of the course, a life-saving relay session (from preventing cardiopulmonary arrest, to early recognition and notification, to primary life-saving measures) was held with both practical and written tests.

The SHI Group will continue to provide courses to prepare us to contribute to local communities in the event of future disasters and other emergency situations.



Emergency care and life-saving course (Chiba Works)



Course in advanced life-saving skills (Yokosuka Works)

Providing a Heliport for Air Ambulance Service

The Nagoya Works makes an adjoining playing field available for use as an air ambulance heliport.

We will continue to provide this facility to enable us to contribute in the event of emergency.



Air ambulance (Nagoya Works playing field)

Social Contribution Activities

Environmental Classroom Display at Environmental Fair

The Sumitomo Heavy Industries Environment Co., Ltd., placed an environmental classroom on display at an environmental fair in Minamishigara City, Kanagawa Prefecture.

The display allowed visitors to observe the organisms that inhabit clean rivers and polluted rivers, explained differences between the two, and conveyed the importance of preserving river environments.

Visitors were also given opportunities to observe rice paddy-dwelling *Branchinella kugenumaensis* (a species of fairy shrimp) and water purifying microorganisms that could only be observed during the time of the environmental fair, as well as to try out experiments in purifying polluted water using powdered activated carbon.

We intend to continue these activities in the future to convey to children the importance of environmental preservation.



Environmental classroom

Active Participation in Local Community Events

The SHI Group takes active part in local community events.

At the Niihama Factory, we participated in a sports day in the Ofuki area of Saijo City as part of Ehime Prefecture's Support Group Matching Project for Healthy Village Development. The Ofuki area has a large elderly population, and the sports days there tended to be shorthanded. In response to a request from the community, three members went from the SHI Group to participate.



Costume party

Cooperation with Welfare Facilities

The Yokosuka Works provides the Kagamida-En, a Yokosuka municipal welfare support center, with cut ends of electrical wire generated during shipbuilding and empty cans from dormitories and so on.

At the facility, the insulation is stripped off to remove the core wire and aluminum cans are crushed together in a compactor. The materials are then sold and the proceeds are applied toward facility operating costs.

The Nagoya Works cooperated with the Akebi-En, a welfare facility located in Obu City, by regularly placing cookies and bread baked at the facility on sale in the employees' dining hall.



Work underway at the Kagamida-En in Yokosuka

Selling cookies and bread from the Akebi-En in Obu

The weather on the day of the event was poor, with intermittent rain, but it turned out to be a very enjoyable and meaningful day of exchange with members of the local community.



100-meter dash by age group

Preparing the playing field before the event

Cleanup Activities

The SHI Group conducts regular cleanup activities of neighboring areas. We also take part in cleanup activities organized by local governments and volunteer groups.

In addition to cleanup activities in the vicinity of the works, in FY2011 our Saijo Factory and the SEN Corporation also participated in the "Refresh Setouchi" Inland Sea cleanup activities at Takasu Beach in Saijo City, Ehime Prefecture. Takasu Beach is the only natural sand beach that remains in Saijo City, and protecting the environment there is seen to be in everyone's interest.

This campaign, launched in 1993, marked its 20th meeting this year, and it was a major event among the city's volunteer campaigns.

The Nagoya Works and Sumitomo NACCO Materials Handling are also participating in the Adopt Program* supervised by Obu City in Aichi Prefecture while the Niihama Factory is taking part in the Adopt Program in Niihama City. We are undertaking cleanup activities in their environs through these programs, as well.

We will maintain the SHI Group's commitment to this local work to keep the environment beautiful.



Cleanup (Niihama Factory)

Families cleaning up Takasu Beach in Saijo City

* Adopt Program

It is a volunteer campaign in which residents designate a public facility, such as a park or a footpath, to take care of on their own responsibility. They then pick up trash, water the plants, and weed it as if it were their own, so that people will be able to enjoy using that facility.

Overseas Activities

The Philippines

SHI Designing & Manufacturing, Inc., in the Philippines has been engaging in social service activities two or three times every year since 2009. An executive committee has organized badminton meets and bingo games to raise funds. The company then donates a matching amount to the executive committee, which is used to support social service activities.

In 2011, participants took food and clothing to people who had suffered in that year's floods. They also visited elementary schools in the mountains, where they engaged in cleanup, took part in classes, gave presents of games and stationery, planted trees, and so on.



Visiting flood victims

Fun in elementary school classes



Classroom scene



Tree planting

Germany

Sumitomo (SHI) Demag Plastics Machinery GmbH in Germany held a family day on July 2 and invited employees' families to visit their plant.

Some 800 or more visitors came on the day of the event, exceeding expectations. The event was a great success, and the president received many messages of thanks from employees.

Japanese resident staff members and their families also cooperated by setting up a typical Japanese festival game of fishing for water balloons and putting up Tanabata summer festival decorations. These were a kind of amusement and a kind of seasonal observance not found in Germany, and the other participants greatly enjoyed this contact with Japanese culture.



Scenes from the family day

