Endorsing the Kyoto Protocol, Ricoh promotes a reduction in total greenhouse gas emissions.

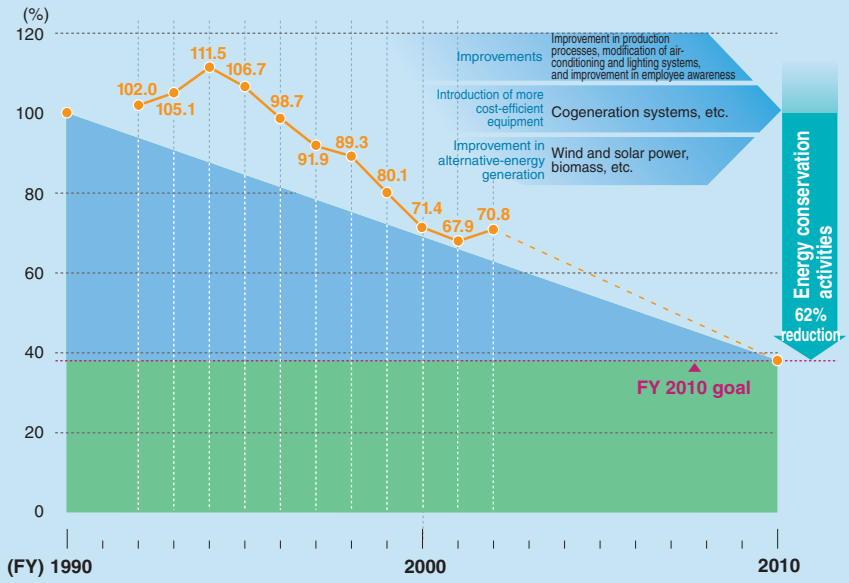
In July 2001, Ricoh joined e-mission 55, a signature-collecting campaign that was conducted by companies supporting the Kyoto Protocol. Ricoh was the first leading manufacturer in Japan to sign the document and make a commitment to the environment. In fiscal 2002, increased production of supplies and semiconductors, the manufacture of which requires significant amounts of energy, was the primary reason for Ricoh's higher energy consumption. The Ricoh Group, however, has set a number of energy conservation goals to help prevent global warming and it will continue working to reduce energy consumption. Greenhouse gases other than CO_2 are expected to be cut 10% from their 1995 level by the end of fiscal 2010.

The Ricoh Group's Goals for Reducing CO_2 emissions (Total Amount Emitted)

		Goal for fiscal 2004 (compared to fiscal 2000 figures)	Goal for fiscal 2010
Japan	Ricoh and Ricoh Group manufacturing subsidiaries	2% reduction	12% reduction * 13% reduction for Ricoh (compared to fiscal 1990 figures)
Japan	Ricoh Group nonmanufacturing subsidiaries	2% reduction	—
Outside Japan	Ricoh Group manufacturing subsidiaries	2% reduction	10% reduction (compared to fiscal 1998 figures)

Scenario of Ricoh's Reduction in CO_2 Emissions per sales unit up to FY 2010

Reviewed by BVQI (14)



Ricoh is aiming at a 13% reduction in total CO_2 emissions from its production and nonproduction sites from the 1990 level by 2010. Converted into CO_2 emissions per sales unit and taking business expansion into consideration, this reduction is calculated to be 62%. In calculating CO_2 emissions, a CO_2 emission coefficient set in the environmental assessment program issued by the Environment Agency is used.

Japan

Installation of New Air-Conditioning Systems

Much of the equipment at Ricoh Microelectronics Co., Ltd. plants produces heat, making 24-hour air conditioning indispensable. Air conditioning accounts for more than half the total energy consumption at these plants. In May 2002, the company installed new air-conditioning systems that combine an ice thermal storage system and a chilled water system for improved environmental performance and economic efficiency. The systems enable 24-hour operation by making ice and chilled water at night. Compared to the heavy oil thermal power generation system previously in operation, the new systems reduce annual CO_2 emissions by 60%, or 1,000 tons, and annual operating costs by 45%, or ¥10.1 million.

Brine screw chiller

Ice thermal storage tank

Achieving Environmental Conservation and Cost Reduction Simultaneously through TPM

Ricoh's Fukui Plant* is engaged in environmental conservation activities under the slogan, "Environmental conservation is a mission we should accomplish." Extending to environmental conservation the goal of improving its total productive maintenance (TPM), whereby all employees pay continuous attention to their daily activities, the plant achieved Zero-Waste-to-Landfill through such efforts as saving raw materials, avoiding waste in manufacturing, and streamlining business activities. Fukui Plant also worked to reduce CO_2 emissions and drew up plans for each production

Estimated Costs Efficiency of an Ice Thermal Storage/Chilled Water System in Environmental Conservation (Segment Environmental Accounting)

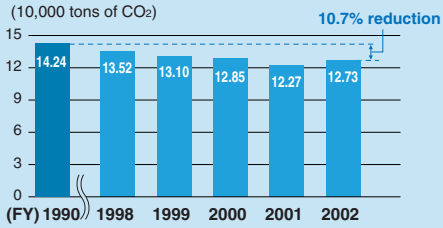
Costs			Effects			
			Economic benefits		Effect on environmental conservation	
Item	Main costs	Amount	Item	Amount reduced	Item	Amount reduced
Business area costs	Investment	34.45 (millions of yen) (Difference from the conventional method)	Reduction in heat and light expenses	12.9 (millions of yen)	CO_2 emission	866 (t)
			Reduction in water expenses	1.4 (millions of yen)	Water consumption	10.9 (t)

* Effects are calculated through a comparison to fiscal 2000 figures. Calculated from total investment (¥169 million)

Japan

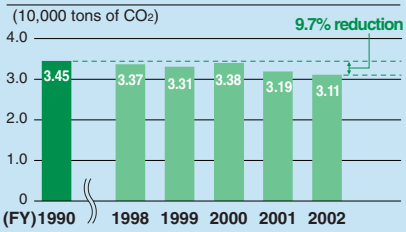
Ricoh's Energy Consumption (CO_2 conversion[1])

Reviewed by BVQI (15)



Energy Consumption at Production Sites in Japan Other than Ricoh's (CO_2 conversion[1])

Reviewed by BVQI (16)



1. Calculated using a CO_2 emissions coefficient taken from an examination on greenhouse gas emission calculations issued by the Ministry of the Environment

Energy Consumption at Nonproduction Sites in Japan Other Than Ricoh's (CO_2 conversion[1])

Reviewed by BVQI (17)

(100 tons of CO_2)

	FY 2002
Sales	346
Maintenance and Services (Ricoh Technosystems)	138
Logistics (Ricoh Logistics System)	37
Finance (Ricoh Lease)	5
Total	526

Changes in Ricoh's Major Energy Consumption

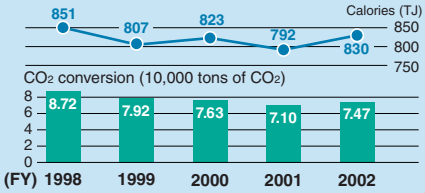
Reviewed by BVQI (18)

	FY 2000	FY 2001	FY 2002
Kerosene (kℓ)	7,811	6,624	7,273
Heavy oil A (kℓ)	171	183	188
Town gas (1,000 m^3)	11,958	11,809	12,677
Electric power purchased (1,000 kWh)	228,935	222,169	224,983

Energy Consumption outside Japan

Energy Consumption at Production Sites (CO_2 conversion[2] and calories)

Reviewed by BVQI (19)

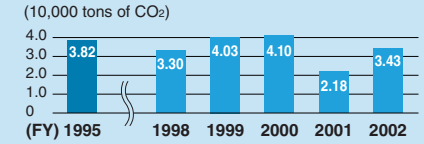


2. In order to increase accuracy, data was revised based on the CO_2 conversion coefficient and power generation condition of each country. Therefore, the figures listed are different from those in the Ricoh Group Sustainability Report (Environment) 2002.

The Ricoh Group Worldwide

Greenhouse Gas[3] Emissions Other Than CO_2 at the Ricoh Group Worldwide (CO_2 conversion)

Reviewed by BVQI (20)



* The following formula was used to determine the greenhouse gas emissions.
Emission=Σ (amount emitted into the atmosphere × global warming coefficient)

3. NF3 and substances that have a global warming effect and designated in the Kyoto Protocol.

line, aiming to maximize energy efficiency throughout the plant. This has enabled the plant to achieve environmental conservation and cost reductions simultaneously, resulting in savings equivalent to 900 tons of CO_2 emissions and ¥16 million yen in power and kerosene costs in fiscal 2002.

* http://www.ricoh.co.jp/fukui-plant/ (Japanese only)

Improvement of Lighting Equipment

As a part of the renovation project at Ricoh's Atsugi Plant, the water tower was painted in organic fluorescent paint, and spotlights were replaced with black lights, resulting in a reduction of CO_2 emissions by 11.3 tons and savings of ¥440,000 per year. Replacing the footlights along sidewalks outside the plant with solar-powered lamps reduced CO_2 emissions by one ton and electricity charges by ¥20,000 per year. Photocalytic reaction in the paint is able to break down 5.7 kilograms of NO_X in the air annually.

The Americas

United States: Optimizing Air-conditioning Control

At the California plant of Ricoh Electronics, Inc. (REI) chillers are used to prevent molding devices from overheating. If the room temperature is too low, however, condensation occurs, which means the room must be heated. By conducting tests to optimize the operation of heaters and chillers, the plant was able to reduce power consumption in air conditioning and heating by 80%.

China

Shenzhen: Energy Conservation at RAI

Ricoh Asia Industry (Shenzhen) Ltd., which is facing increased production demand, is making earnest efforts at environmental conservation. Examples include replacing conveyor belts used to manufacture leading models with those that operate intermittently, improving air conditioning refrigerants, and making effective use of insulation to maintain the appropriate temperature for molding devices. In these ways, RAI is promoting an approach to sustainable management in which all employees participate in reducing energy consumption, thereby helping to prevent global warming and cut costs.

Intermittent operation production line