

ENVIRONMENTAL SUSTAINABILITY REPORT 2004



Company Profile

Company Profile

Corporate Name: Hitachi, Ltd.

Incorporated: Incorporated February 1, 1920 (founded in 1910)

Head Office: 6, Kanda-Surugadai 4-Chome, Chiyoda-ku, Tokyo 101-8010, Japan

Representative: Etsuhiko Shoyama, President and Chief Executive Officer

Hitachi Group Profile

The Hitachi Group has its origins in Hitachi, Ltd., which started designing and manufacturing motors in 1910. Today it has grown to 1,121 companies in Japan and around the world.

The Group covers a wide range of business areas, from home electronics, information devices and services, to the development of new materials and infrastructure. Group companies employ 340,000 people, account for 8 trillion yen in consolidated revenues (of which 34% is outside Japan), equivalent to about 1% of

Japan's gross domestic product, and consume the equivalent of about 0.015% of Japan's energy consumption.

Since the preceding fiscal year Hitachi has been proceeding with strategic alliances, M&As and reorganizations. These have included the acquisition of IBM Corporation's hard disk drive (HDD) operations and the transfer of system LSI and other semiconductor business operations to Renesas Technology Corp., a company jointly established with Mitsubishi Electric Corporation.

Business Unit	Product	Customer	
		Personal/Home	Business/Society
Information & telecommunication systems	High-end disk array subsystem SANRISE9980V	System Integration/Software	<ul style="list-style-type: none"> ▲ μ-chip P33 ■ ALS Patient's Communication Equipment P34
		PCs, peripherals	<ul style="list-style-type: none"> ● Disk arrays, hard disk drives, servers, general-purpose computers ● Hard disk drives P20
Electronic devices	Hitachi CD-measurement SEM	Liquid Crystal Displays (LCD)	Semiconductor manufacturing devices, measurement/analysis devices, medical devices
			● Optical topography systems P22
Power & industrial systems	Ultra-large Hydraulic Excavator EX8000	Nuclear power generators, thermal power generators, hydraulic power generators, industrial machinery/plants, air conditioners, construction machinery, vehicles, elevators, escalators, automotive equipment, environmental equipment	
		<ul style="list-style-type: none"> ● Millimeter wave radar P20 ● Amorphous transformers P24 ▲ Tokyo Eco Recycle Co., Ltd. P31 ▲ Recycling construction machinery components P32 ▲ Recycling automobile components P32 	<ul style="list-style-type: none"> ▲ Bio-degradable plastics plant P32 ▲ Urban models P33 ■ Biometric Authentication System using Finger Vein Patterns P34 ■ Nanoimprint P34 ■ Elevators P34
Digital media & consumer products	Plasma Television W42-PDH5000	Optical storage drives, televisions, cellular phones, LCD projectors, air conditioners, refrigerators, washing machines, batteries, information recording media	<ul style="list-style-type: none"> ● DVD video cameras P18 ● Plasma televisions P21 ● Air conditioners P21
High functional materials & components	Anisotropic conductive films for LCDs ANISOLM	Electrical wire, cable, copper and copper alloys, cast iron, cast steel, high-grade metal, magnetic materials, chemical material, electronic insulating materials, synthetic resins, circuit boards, ceramic materials	
Logistics, services & others	Hitachi Transport System operates this distribution center for the AEON Group	Freight transport, property management/sales and leasing	
		▲ Modal shifting P22	
Financial services	Multifunctional IC card	Loan sales, leasing, life and non-life insurance agency	

The following symbols indicate product and service categories that are covered in this report.

● Nature-friendly Products & Eco-factories ▲ Sustainable Business Models ■ Social Report

Economic Performance

As of March 31, 2004

Capital Stock: ¥282,032 million

Number of employees (Unconsolidated basis): 36,582

Number of employees (Consolidated basis): 334,324

Number of consolidated subsidiaries: 956 (Japan: 545, overseas: 411)

Number of affiliated companies that use the equity method:
165 companies

Period: March 2004 (consolidated basis)

Net sales: ¥8,632.4 billion (105% compared with the previous year)

Operating income/loss: ¥184.8 billion

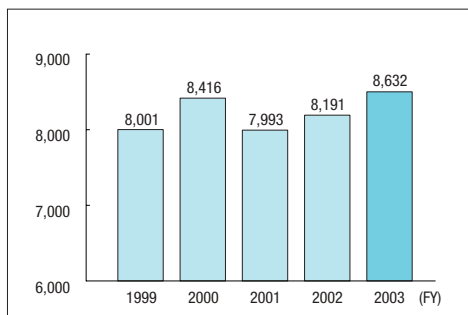
Capital investment: ¥816.5 billion (104% compared with the previous year)

R&D expenditure: ¥371.8 billion (99% compared with the previous year)

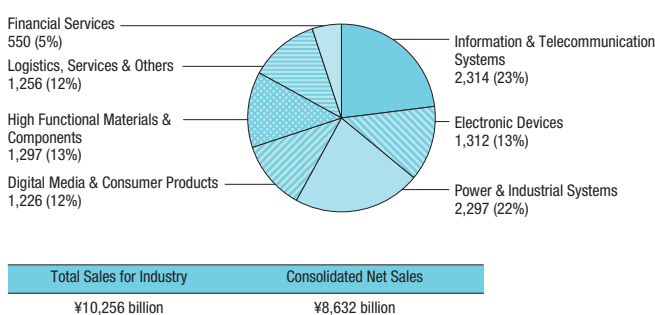
Overseas output as a percentage of consolidated net sales: 34%

Trends in Performance Results (Consolidated basis)

Net Sales (billions of yen)



Net Sales by Industry Segment for Fiscal 2002 (billions of yen)



For more details, please see <http://www.hitachi.com/IR-e/index.html>

About this Report

The Environmental Sustainability Report 2004 reports on the recent activities and results of the Hitachi Group relating to corporate social responsibility, and also reports on future plans.

Editorial Note

The Hitachi Group has been publishing reports on its environmental activities since 1998. We began reporting on corporate social responsibility (CSR) with the Environmental Sustainability Report 2002, which included information on personnel systems, worker health and safety, regulatory compliance, and social contribution activities.

The current issue shows the attention we have given to CSR activities to date and indicates our organizational structure and orientation to expand them further. In particular, this year we have added sections on "Contributing to Society through Business Activities" and "Expanding the Shared Sense of Social Responsibility." Meanwhile, we have limited the reporting of economic performance here to introducing the Internet Web sites where this information is available, because it is provided separately in financial and annual reports. And for the descriptions of activities and environmental impact data, we have enhanced our reporting as a group of companies that is active on a global scale.

Scope of this Report

In total, a total of 1,121 companies in the Hitachi Group are covered under consolidated reporting. The environmental impact data reported here covers 258 companies (including Hitachi, Ltd. and 257 related companies, subsidiaries and affiliates). The companies subject to reporting have changed from last year, as we have excluded companies to which the equity method of consolidated reporting applies, and there have also been changes in group companies. Because of this, for environmental impact data, for fiscal 2003 we display the data for the new scope of companies covered; for past data we show the original previous data; and for data having a comparison with a base year, we give the base year data for the new scope of companies covered. Also, data that is given without reference to Japan or overseas represents the total for both Japan and overseas.

Period Covered in this Report

Mainly fiscal 2003 (1 April 2003 to 31 March 2004)

Guidelines Used in Preparing this Report

"Environmental Reporting Guidelines" (FY2003 version), by Japan Ministry of the Environment

"Guidelines on Environmental Performance Indicators for Business" (FY2002 version), by Japan Ministry of the Environment

"2001 Environmental Reporting Guidelines with an Emphasis on Stakeholders," by Japan Ministry of Economy, Trade and Industry

"Sustainability Reporting Guidelines 2002," by Global Reporting Initiative

Third-Party Comments

Since 2000, we have received comments from Ms. Kimie Tsunoda of the Valdez Society*1 regarding our environmental reporting. This year we received comments on two occasions from five persons from the Valdez Society (Yasunobu Okada, Kojiro Tanaka, Kimie Tsunoda, Yoshiaki Midorikawa, and Tamio Yamaguchi), once during preparation of the report, and once at the final editing phase.

In terms of social reporting from the CSR perspective, we received comments from Reitaku University's Prof. Iwao Taka, a member of the Japan CSR Standardization Committee, regarding his evaluation of this report as well as expectations for the future.

For the selection of eco-product examples, we held meetings with product developers and customers to discuss matters, particularly from the environmental perspective, and we report on those meetings here.

*1. This non-governmental organization is based on three pillars: environmental management for companies, social responsibility for investors, and green perspectives for consumers. It is the sole Japanese registered member of the Coalition for Environmentally Responsible Economies (CERES), which created the Global Reporting Initiative (GRI).

Next Report

The next report is planned for June 2005.

Other Matters

Symbols used in this report

Terminology:

This symbol appears beside certain specialized terms and names. Please see the terminology list on pages 43 and 44 for explanations.

Web:

This symbol indicates a related Web site address.

Graphs and other visuals use universal design for readers with color-impaired vision.

Company names of customers and suppliers may be abbreviated in this report.

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Highlights of 2003

Main topics of social responsibility activities in fiscal 2003.

Complete Phase-Out of Lead Solder

We solved problems of reliability and usability of in low heat-tolerant parts of actual circuit boards by adopting indium-based lead-free solder, and completely phased out leaded solder in products produced in Japan. For parts produced or procured overseas, we plan to completely phase out products subject to the European Union's RoHS Directive by the end of fiscal 2004. [▶p18](#)

Environmental Town Meetings

In order to have direct dialogue with stakeholders, we held an "environmental town meeting" for readers of a popular Japanese-language environmental information portal Web site, "Kankyo goo." We received evaluations of our environmental reports and opinions regarding the activities of the Hitachi Group, and we are responding to that input and with more detailed information disclosure. [▶p30](#)



International Association for Universal Design

Hitachi, Ltd. became a member and chair of the International Association for Universal Design, formed in Japan in November 2003. This is a body formed to offer ideas from Japan to the world for the benefit of society. The Hitachi Group will work to make contributions by offering technology and know-how in information technology fields. [▶p34](#)



Hitachi Young Leaders Initiative

As our contribution to the development of the next generation of leaders in Asia, we support students by organizing public forum, workshops and local community work project for them to participate in. In December 2003, we held the conference in Bangkok, Thailand under the theme "Charting a New Course for Asia", and also arranged volunteer work for the students in the form of educational activities for the disabled. [▶p38](#)



We Aim to be the World's Most Trusted Company

Interview by Aki Sato and Kyoko Tajima, Corporate Environmental Policy Division



Since I became the president of Hitachi, Ltd., the company has aimed to become the “best solutions partner” for customers around the world. Being the “best solutions partner” means having advanced and broad technological capabilities and the ability to propose ideas, offering unique services and physical products, and providing the right solutions. And if we can do this for our customers and for society, we will be a company like no other. I believe that this is at the core of corporate social responsibility (CSR).

Since Hitachi was founded, it has been our motto to “Contribute to society through business,” and the company has consistently worked with the corporate philosophy of contributing to the advance of society through technology. This founding philosophy still drives us today in the twenty-first century. We want to be a company whose customers are always glad they gave us business, investors are glad they invested in us, and employees are glad they work with us.

The Hitachi Approach

Hitachi has worked hard to provide exactly the services and solutions that our customers want, and at the same time, to fulfill our duties in the broadest sense as a corporate and global citizen. Through these efforts we have built trust for the Hitachi brand.

A good brand can only be realized if each and every person behind it has pride in it, is fully conscious of its value every day as he or she works, and has the desire to constantly improve its value. So a brand is very important, and it is built by a lot of hard work over a long period of time. I would like to make the reliability and technical ability that stand behind our brand be our very core

and from this base to continuously develop our CSR activities. For this, I think it is important that not only our employees but also their families think about society, and take action, so that we aim for action that each individual can be proud of.

Our customers are a part of society, of nations, and of the entire world. The principle of providing service to our customers ultimately means doing something for society, and this also benefits each and every Hitachi employee. Because of this, I have set a high objective, of being the most trusted company in the world.

Using the Synergies of the Hitachi Group

The Hitachi Group is active in a wide range of businesses, including heavy electrical machinery, computers, home appliances, and many more. And it is a corporate group rich in variety, with many of our companies listed on major stock exchanges. Each company has built its business on its own uniqueness through creative management, and built strength in its own line of business. As a result, the entire Hitachi Group has also grown strong.

But today we are in an age of unprecedented global competition. For the Hitachi Group to continue developing and increasing its corporate value, besides having the strengths of each business, we must also use our synergies.

So this spring, in order to more consciously conduct integrated management and use the synergies of the Hitachi Group, we created the Hitachi Group Headquarters. In particular, CSR and other initiatives for environmental and social contribution activities are a common theme of all companies of the Group. Thus, aware that we would produce greater results by organizing these activities at a group-wide level, we made CSR one of our most important themes and will move forward with action. I think that by making use of the experience and know-how that has been cultivated over many years in the companies of the Hitachi Group, we can conduct activities at a higher level.



Continuous Expansion of CSR Activities, Hitachi Style

The Hitachi Group has done quite a variety of activities in the past. For example, the development of what we call the “Heart Communicator,” a device that helps people to communicate, started when one of our employees contracted an incurable disease known as amyotrophic lateral sclerosis (ALS). After repeated improvements, it now supports sufferers of this disease by allowing them to read and write messages.

Also, besides inviting students from six countries in Asia to help develop the next generation’s leaders and providing a forum for discussions, we are also working in a variety of areas, including supporting local cultural activities; advancing home education and youth issues; promoting understanding of environmental issues; conducting foundation activities that support research into original science and technology; and volunteer activities, etc.

But with many of these activities, there was no conscious effort to advertise, so many people may have never heard about them. The spirit of quiet virtue may be a tradition at Hitachi, but from now on, we need to make a greater effort to communicate our activities to stakeholders, to get them to understand, and to get them to participate in our activities. Thus, we recently created content on the Hitachi Web site titled “Hitachi Kokodemo Hakken!” (“You can find Hitachi’s products and services here!”) This is because we want people to know that we have many approaches to CSR activities.

Just as the business areas of Hitachi companies are broad and varied, the people targeted by our CSR activities are also diverse and complex. It is, of course, important to provide accurate reporting, but in order to ensure that our activities are not just in a narrow range, it is also important to listen to the opinions of people who are at various levels and differ in perspective and age.

Towards Management Transparency and Creation of Good Work Environments

In June 2003, we conducted some management reforms, including a move toward adopting the committee system. The goals were to improve management supervision and transparency, and to improve the flexibility of management by clarifying the responsibilities and powers at the management unit level. In addition, we invited four outside leaders from the areas of corporate management, government administration, and law to join as directors. Through this, we receive objective external opinions, and we have created a structure to manage, infused with the spirit of regulatory compliance.

Meanwhile, creating a good work environment is one of the

important missions of management.

This fiscal year we reviewed our evaluation system for employees below the management level, and introduced a new compensation system that rewards ability and results. Under this system, the burden on the evaluating side is not difficult to imagine. If you don’t know your counterpart, you can’t evaluate them. This will increase dialogue with section and department managers, for example, and improve communications, and I expect it will help to create good work environments.

In addition, to allow both men and women to be promoted without any discrimination, and to create a good work environment for women, we are gradually working to make improvements, such as by creating a daycare service in Totsuka, Yokoyama. We are also trying to support the lifestyle changes that come with marriage and childbirth, and considering how to positively promote women to the top management level.

“Inspire the Next”: Hitachi Continues with the Challenge

Hitachi’s corporate statement “Inspire the Next” expresses our spirit. During this time of change in society, we want to continue inspiring new ideas and create people-friendly companies, through new strategies that only Hitachi can do and that Hitachi alone can do because of what it is.

But technology can sometimes cause unforeseen problems. In a broad sense, it may have negative impacts on the environment and society. Thus, we are prepared to evaluate things in a balanced way, to ensure that the checking functions are working properly, and to conduct careful examinations at many levels to ensure that no problems arise. And if a problem does arise inadvertently, we will investigate carefully and make quick corrections. It is also important to try to limit the damage to the smallest extent possible.

In the future, we will continue to fulfill our corporate responsibility as a “best solution partner” for our stakeholders. We will care for each and every person as the basic principle of our corporate activities.



Etsuhiko Shoyama

Etsuhiko Shoyama
President and Chief Executive Officer

Hitachi's Social Responsibility Initiatives (Environmental and Social)

Basic Philosophy for Corporate Activities

The basic credo of Hitachi is to further elevate its founding concepts of harmony, sincerity and pioneering spirit, to instill a resolute pride in being a member of Hitachi, and thereby to contribute to society through the development of superior, original technology and products.

Deeply aware that a business enterprise is itself a member of society, Hitachi is also resolved to strive as a good citizen of the community towards the realization of a truly prosperous society and, to this end, to conduct its corporate activities in a fair and open manner, promote harmony with the natural environment, and engage vigorously in activities that contribute to social progress.

Adopted June 1983 (revised September 1996)

Since Hitachi, Ltd. was established in 1910, it has aimed to contribute to the economic and social development using the Hitachi Group's technologies. The basic credo includes aspects of corporate ethics, a customer first philosophy, the satisfaction of employees, and activities as a corporate citizen. These principles have been carried on for generations.

In recent years, various issues have surfaced in Japan and around the world relating to the social responsibility of corporations. The circumstances in which corporations operate have changed dramatically, and corporations are now expected to be more socially responsible than ever and society has challenged the role of corporations from the perspective of corporate social responsibility (CSR). As a group of corporations that are active internationally, the Hitachi Group also views these as important topics.

In this context, we have reviewed initiatives relating to corporate responsibility, and have strengthened the Hitachi Group's responses, clarified guidelines for proactive information disclosure, and in December 2002, created the meeting to prepare for CSR. This body is comprised of departments responsible for Group operations, brand strategies, customer satisfaction, global business strategies, labor and personnel, legal affairs, social contribution, environmental protection, quality assurance, materials procurement, and regulatory compliance. It coordinates interdepartmental sharing of information from inside and outside the company, and has promoted research and discussions about operating guidelines, details of activities, and other matters.

In addition, to keep up with changes in the corporate economic and social environment and to avoid gaps between internal corporate values and the expectations of society, we created the Advisory Board Meeting in 1999, and invited objective input from external experts. In June 2003, the company adopted the Committee System. We aim to accelerate the pace of management operations, and by inviting directors from outside the company, also aim to ensure that management is fair and transparent.

In June 2004, the CSR Promotion Committee was established under the CEO of Hitachi, Ltd., chaired by Isao Uchigasaki, Chief of the Hitachi Group Headquarters. This step created the structure to promote CSR initiatives on a group-wide level, both in Japan and overseas. The CSR Promotion Department was also set up within the Legal and Corporate Communications Division.

Main pillars of activities include example setting by the top management, creation of a dynamic company through products and technology, information disclosure and communications, corporate ethics and respect for human rights, environmental protection, promotion of social contribution activities, creation of a good work environment, and sharing of awareness about social responsibility. It will work actively with the aim of helping every person involved in the company to work to make it the "Best Solution Partner," while promoting linkages with other companies in the Hitachi Group.



Original buildings where Hitachi started in 1910 as a repair shop for electrical equipment.



The Hitachi Group has created a vision based on its guidelines, to achieve good environmental management. We have also established an environmental action plan and are working to achieve its objectives.

Environmental Initiatives

Basic Environmental Philosophy

Hitachi's Environmental Vision (Sustainability Compass) expresses the direction of the Hitachi Group's environmental activities until the year 2010, and is based on Hitachi's Basic Philosophy for Corporate Activities [P.8](#) and Environmental Protection Action Guidelines.

Environmental Protection Action Guidelines

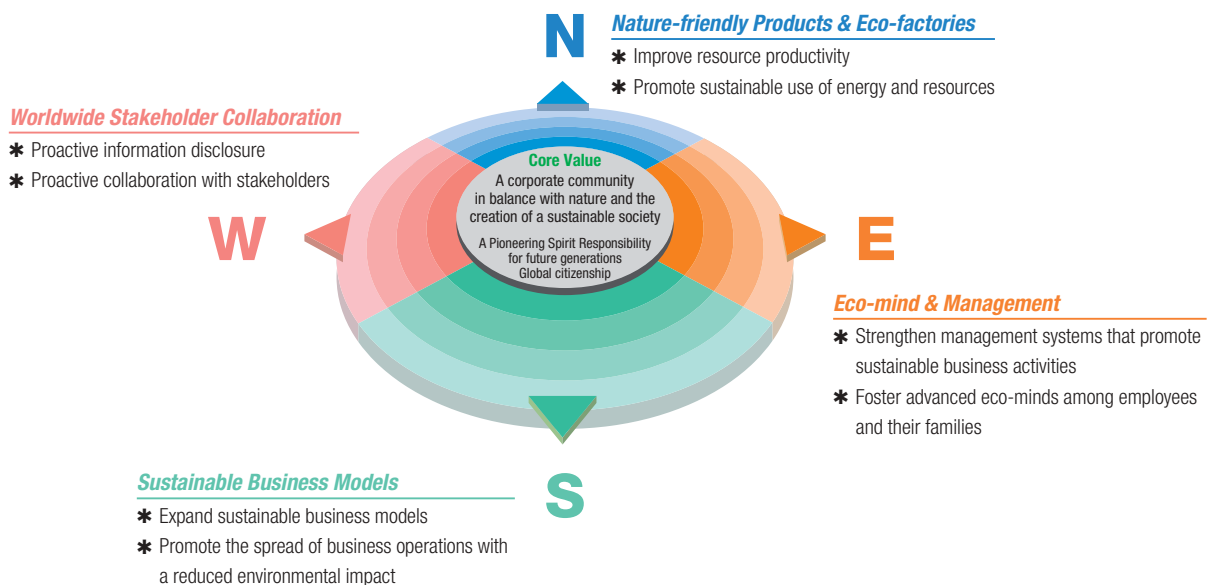
As part of Hitachi's Standards for Corporate Activities (A Basic Philosophy), these guidelines express standards in response to environmental issues concerning the Company's business activities.

1. In recognition that problems affecting the global environment are serious matters for all humankind, harmony with the environment will be a top management priority throughout the Company.
2. By establishing a structure for the promotion of environmental preservation, enacting regulations relating to the environment, setting environmental impact reduction targets, and similar measures, officers and site directors in charge of environmental promotion will promote environmental preservation activities. Moreover, environmental audits will be used to confirm the efficacy of activities and our efforts towards continued improvement.
3. Through a concise understanding of how best to resolve environmental problems facing the world, the Company will work to make contributions to society through the development of highly reliable technologies and products that meet those needs.
4. The Company gives due consideration to reducing the environmental effects a product will have throughout its entire life cycle, from the R&D and design stages, through to production, logistics, use, and disposal.
5. The Company will investigate and examine the effect of its business operations on the environment and seek to introduce new technologies and materials with superior functionality regarding environmental safety, energy conservation and resource conservation.
6. In addition to observing international, national and local regulations with regard to the environment, the Company will develop its own standards where necessary to maintain environmental conservation.
7. With regard to overseas activities and the export of products, the Company will give due consideration to the effects of products on the local environment, and implement measures in response to the wishes expressed by local societies.
8. In addition to working towards enhancing the environmental awareness of its employees, the Company will focus its activities on society at large, contributing to that society, of which Hitachi is a part, through environmental preservation activities carried out from a broad perspective.
9. Should an environmental problem arise as a result of the Company's business activities, the Company will take appropriate steps to minimize the impact on the environment.

Adopted March 1993

Hitachi's Environmental Vision (Sustainability Compass)

Hitachi Group Companies worldwide will work to help create a corporate community in balance with nature and to open up the way to a sustainable society. For the sake of future generations, we will act as a good corporate citizen and use our products, services, and technologies to propose innovative new business models to society while taking progressive action in four major areas:



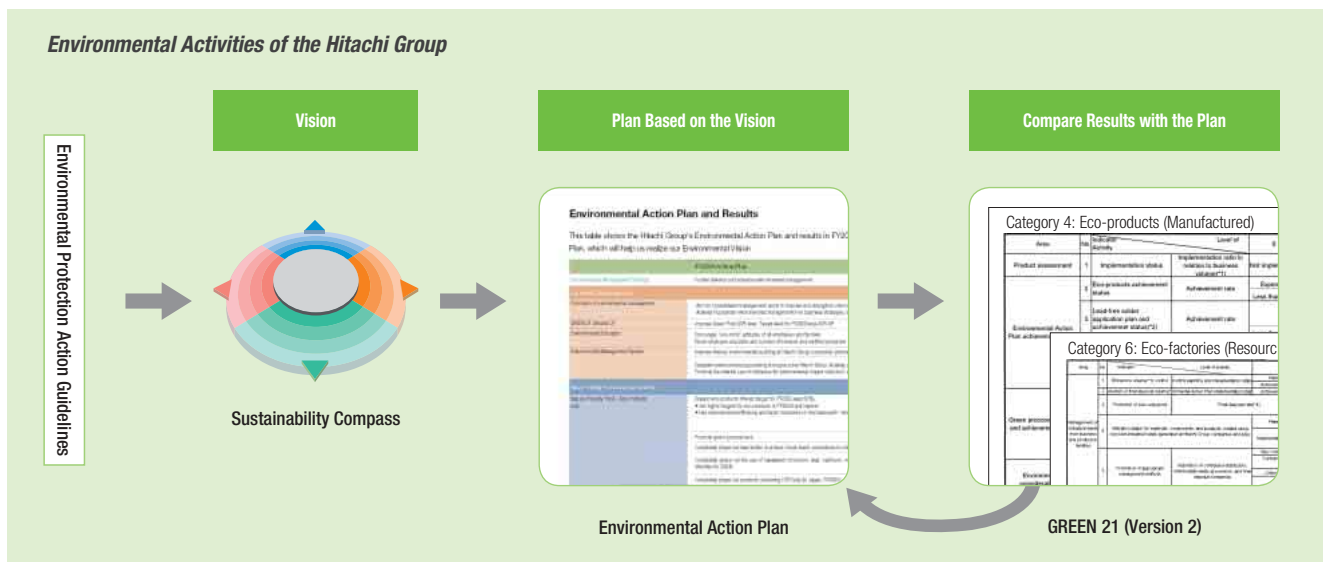
Environmental Management of the Hitachi Group

Our business has grown to what it is today on the principle of contributing to society. We believe that growth requires important preconditions: peace of mind, safety and a healthy environment. We established an environmental management center in 1971, and ever since then have been working to reduce the environmental impacts and risks associated with our production activities. The Hitachi Group conducts environmental management that takes the environment into account in the course of business—in a dynamic way. Our corporate management is based on the philosophy of contributing to society as a “Best Solution Partner,” by offering products and services designed with the environment in mind. We propose new sustainable business models to lead society towards sound material cycles, work to improve the environmental efficiency of products and services, and include environmental aspects as a key element of the product information we provide.

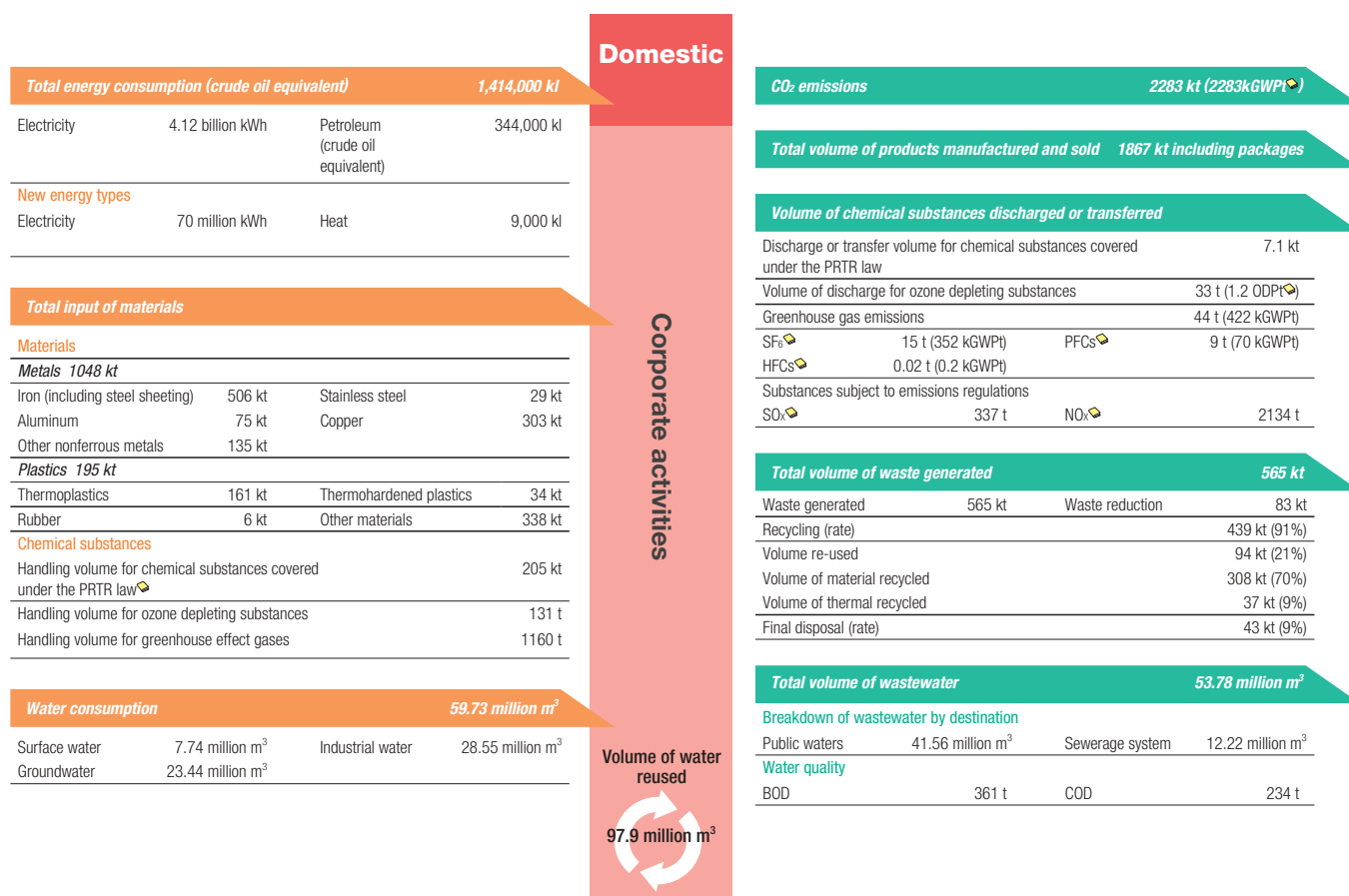
To promote environmental activities throughout the entire group, we created the Environmental Vision (Sustainability Compass) as a group-wide policy. Based on this, we also created a road map with targets for 2010. We call it the EcoValue Plan. To help us achieve the targets set in this plan, every year we create a group-wide environmental action plan. Each business facility in the Group also creates and implements an action plan that incorporates specific environmental features. Furthermore, to provide criteria to fairly judge and evaluate these environmental activities, we have introduced GREEN 21 (upgraded to Version 2).

Today the Earth is ringing a warning bell for humanity. It is essential that we undertake global initiatives at the global scale. In Japan, with the Household Appliance Recycling Law and other legislation, efforts are under way to move towards a recycling-oriented society, particularly with consumer products. The Hitachi Group’s environmental activities are expanding based on group-wide targets, not only for consumer products but also for a wide range of business areas. To help the progress toward sustainable societies, we are also developing new materials as a part of product development, and conducting research into the ideal models for cities. Through our future initiatives as a Group, we will be developing business models and new technologies that we can share with others.

The Hitachi Group has been able to reduce the total environmental burden of the overall Group by promoting environmental activities in an integrated way. ➔11 As future challenges, we will be working on other approaches to reduce impacts on the environment, such as developing better materials cycles, and finding alternative substances with lower environmental risks to replace certain chemicals. We also believe that one important role of environmental activities is to spread information and gain the understanding of stakeholders. We believe that if corporations and individuals put their energy into environmental activities with the same degree of enthusiasm, we will move ahead one step at a time, and the global environment will change in a positive way.

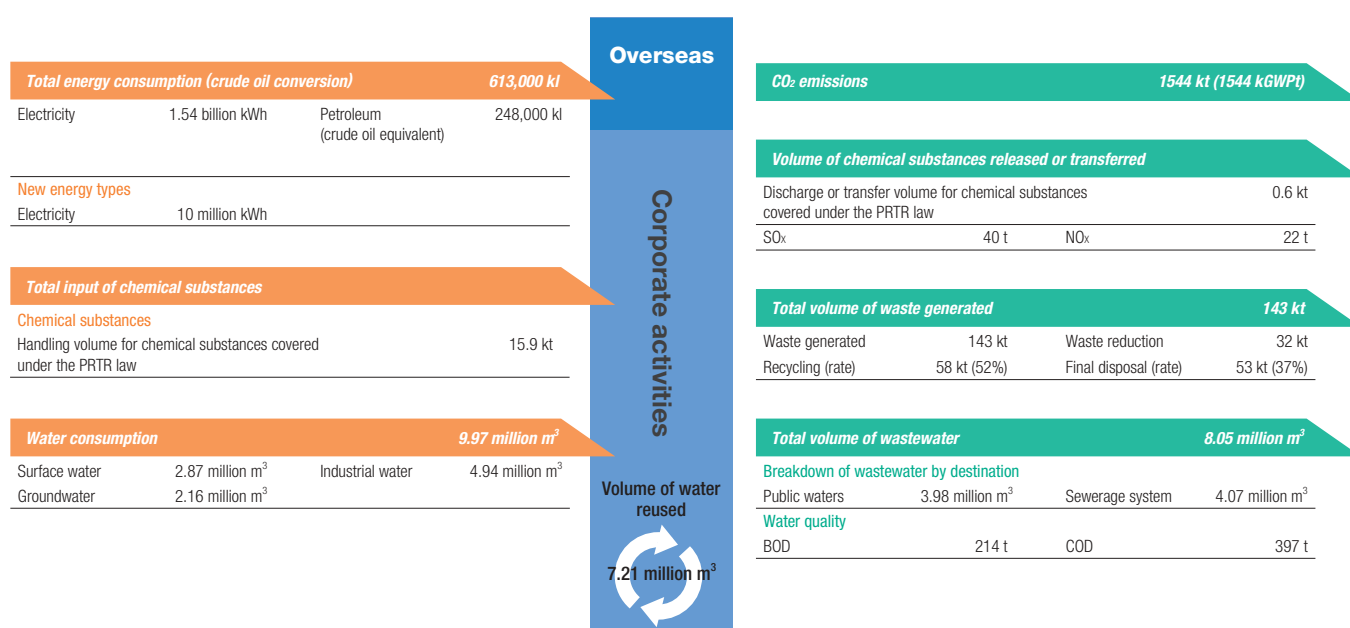


Environmental Impact Data for Corporate Activities (FY 2003)



INPUT




















OUTPUT



Environmental Action Plan and Results

This table shows the Hitachi Group's Environmental Action Plan and results in FY2003, and our roadmap for the future, the EcoValue Plan, which will help us realize our Environmental Vision.

2003 Performance Evaluation  Target achieved  Needs improvement

FY2003 Action Plan		FY2003 Actual Performance	Evaluation	EcoValue Plan (FY2010 targets)	See Page
Environmental Management Strategy		Further develop and advance environmental management		Create environmental value as a corporate group	9 – 10
Eco-mind & Management					
Promotion of environmental management	Aim for consolidated management, work to improve and strengthen environmental management structure to respond to stricter environmental regulations. Actively incorporate environmental management into business strategies, and strive to create environmental value.	Number of companies covered by environmental impact reports: Japan: 224 Overseas: 34 Total: 258		Promote consolidated environmental management. Become a corporate group that creates environmental value.	9 – 10
GREEN 21 (Version 2)	Improve Green Point (GP) level. Target level for FY2003 was 426 GPs	GP level: 441 points		Target GP levels: 533 GPs (FY2004), 640 GPs (FY2005). Continuous improvement toward GREEN 21 (Version 3).	14
Environmental Education	Encourage "eco-mind" attitudes of all employees and families. Boost employee education and number of licensed and certified personnel.	Distributed information pamphlets to employees and families (Mar. 04). Internet training completed for 22,000 employees.		Establish environment-friendly lifestyles.	15
Environmental Management System	Improve internal environmental auditing at Hitachi Group companies (improve environmental management systems at overseas affiliates). Establish environmental accounting throughout the Hitachi Group. Actively promote environmental management practices. Promote the internal use of indicators for environmental impact reduction, etc.	ISO 14001 certification acquired at 256 sites. Conducted environmental accounting in FY2003. Expanded the use of indicators showing reduction of environmental impacts.	 	Implement continuous improvement using management systems. Continue to reduce environmental impacts effectively.	15
Nature-friendly Products & Eco-factories					
Nature-friendly Products	Eco-Products	Expanded ratio of eco-products offered (achieved 66%) • Set higher targets for eco-products in FY2004 and beyond • Use environmental efficiency and factor indicators on trial basis with "showcase" products		Expand eco-products offered Target ratio of all products: 80% in FY2006, 100% in FY2010 Products covered: Information and communication systems, digital media, consumer devices Expand offering under "Eco Products Value" plan and "Environmental Top-Runner" products	18, 20, 21
		Promote green procurement		Improved the green procurement system	19
		Completely phase out lead solder in printed circuit board connections for electrical and electronic equipment (FY2003 in Japan)		Accomplished (Mar. 2004)	
		Completely phase out the use of hexavalent chromium, lead, cadmium, mercury, PBB, and PBDE (by the end of FY2004 electrical and electronic equipment covered by RoHS directive)		Started using alternatives	19
		Completely phase out products containing HCFCs (in Japan, FY2003)		Accomplished (Mar. 2004)	19
	Increase transport efficiency	Reduce environmental impacts of transporting products (emissions of CO ₂ , NO _x , and particulate matter, etc.). Promote the internal use of indicators of transport efficiency, etc.		CO ₂ emissions from transport were 425 kt (a 17% increase from FY2002). Transport factor: 1.1 (compared to FY2002)	23
Eco-factories	Global Warming Prevention	Systematically reduce CO ₂ emissions per unit of production Systematically reduce CO ₂ emissions (Japan) Systematically reduce emissions of greenhouse gases other than CO ₂ (follow industry action plans for HFCs, SF ₆ , PFCs)		Reduced CO ₂ emissions per unit of production by 7% (compared to FY1990) Reduced CO ₂ emissions by 20% (compared to FY1990) Limited SF ₆ emissions to 5% or less of quantity purchased Reduced PFC emissions by 12% (compared to FY1995)	24 – 25
	Chemical Substance Management	Properly manage chemical substances, reduce emissions, and systematically reduce emissions of targeted substances (reduce by 15% in FY2003 compared to FY2000) Properly store and control (control quantities, prevent leakage, etc.) electrical equipment containing PCBs (transformers, condensers, etc.)		Reduced targeted substances by 45% (compared to FY2000)	26 – 27
	Waste Reduction	Reduce the amount of waste going to final disposal sites Control the amount of waste and reusable waste generated Promote zero-emissions initiatives	 	Conducted proper controls Prepared plans for each business facility Achieved at 42 facilities	27 28
	Effective use of water resources	Recycle cooling water, strive to reduce water usage by boosting production efficiency, etc.		Reduced to 76% (compared to FY2001)	28
Worldwide Stakeholder Collaboration					
Environmental Communication	Improve information disclosure and communications with stakeholders • Disclose information through public relations and advertising (e.g., highlight environmental aspects when announcing products) • Regularly release information about production sites through environmental reports and Web site, etc. • Actively participate in environmental activities of other organizations, including exhibitions, lectures, local community activities, etc. • Hold "environmental town meetings," etc., for individual Group companies, and in each local area • Conduct exchanges of opinion through questionnaires, surveys, information sessions, and by accepting study tours, etc.	• Published Hitachi Group's "Environmental Sustainability Report 2003" (May 2003), as well as 28 separate reports for Group companies and individual facilities • Provided information on the Web site for 42 companies and facilities • Booth at Eco-Products 2003 exhibition (Dec. 2003) • Conducted an "environmental town meeting" (Sept. 2003) • Received 31 responses to questionnaire in environmental report		Expand "environmental town meetings" internationally	20 – 30
Global Citizen Activities	Become involved in ways that contribute to the community by planning volunteer activities and encouraging employees to actively participate in local volunteer activities • Raise environmental awareness in local communities by providing information about environmental activities, and by opening Hitachi facilities to the public, etc. • Conduct activities in cooperation with local NGOs • Conduct tree-planting and cleanup activities at the local level	• Conducted environmental education with local primary school students • Provided support for environmental non-profit groups (Hitachi Environment Foundation)		Expand cooperation with communities	36 – 37
Sustainable Business Models					
Creation of Sustainable Business Models	Create structure to consider sustainable business models. Develop strategies. • Expand the collection and recycling of used products • Promote R&D that contributes to environmental protection through products and services • Plan and implement environmentally beneficial activities (ecosystem restoration, independent power production, investment in renewable energies, funding assistance, etc.) Expand and spread environmental solution model businesses • Make use of the Hitachi Group's environmental protection technologies, and expand the "total solution" approach, including low environmental impact businesses and environmental information solutions	• Launched collection and recycling service for home-use personal computers (Oct. 2003) • Received Nanotech Grand Award 2004 (for PC running on fuel cell, etc.) from Nanotech Executive Committee		Expand product recycling systems, leasing, and rental businesses	31 – 33

The assessment for the "performance evaluation" symbols in the table was done as follows: If a target existed for FY2003, we used that target value; if no target existed for FY2003, we assumed a continuation of the annual rate of improvement.

Eco-mind & Management

Hitachi works to raise the environmental awareness of its employees. We build and continuously improve our management systems to promote environmental initiatives.

Environmental Management System

Hitachi's Senior Executive Committee for Environmental Policy, a managerial level committee chaired by the president, assesses and determines the environmental policies and strategies for the entire Hitachi Group. The environmental policies adopted here are delegated to the Environmental Management Operations Committee to be implemented and communicated throughout the organization. The Environmental Committee (and each sub-committee) works to attain environmental goals and tasks, by conducting investigations and developing useful evaluation methodologies and techniques. It also designates environmental operations officers, within the Hitachi's Group's business groups, subsidiaries and affiliated companies, who are responsible for managing environmental matters within each

organization, and tailors environmental activities to each business.

Both within Japan and overseas, the Hitachi Group shares information such as about laws, regulations and market trends, and reports on relevant topics to ensure that activities are timely and effective.

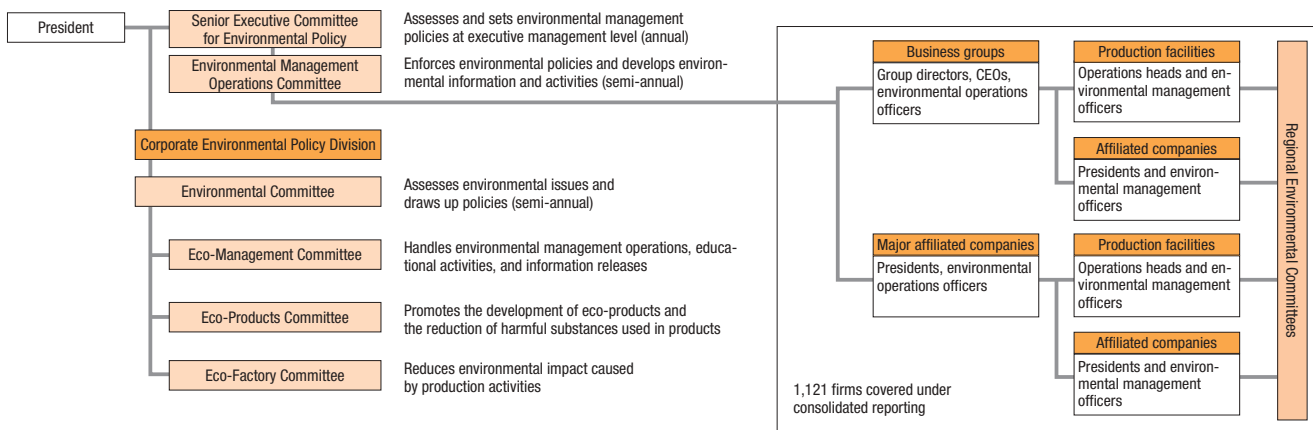
GREEN 21 (Version 2) Evaluation Criteria

To assure continuous improvements in our environmental management activities and the reduction of environmental risks, Hitachi utilizes the GREEN 21 (Version 2) evaluation system, which employs numerical scores to measure progress. This approach assists with the management of environmental activities within each operations unit, by providing ratings of progress towards future targets; of the detailed goals established for each target; and of the procedures put in place to achieve our

environmental goals.

To accurately judge the overall impacts of Hitachi's diverse operations on a consolidated basis, the GREEN 21 system evaluates 53 distinct items in eight categories: Environmental Management, Risk Management, Eco-Mind, Eco-Products, Prevention of Global Warming (Eco-Factories), Resource Recycling (Eco-Factories), Worldwide Stakeholder Collaboration, and Sustainable Business Models. The period covered is fiscal 2002 to 2005. Progress is rated on a scale of 0 to 5; a rating of 2 is given for an average level of achievement, 4 for meeting the goal, and 5 for surpassing the goal. The ratings are then multiplied by weights, based on each item's relative importance. The maximum within each category is 100 "Green Points" (GPs), giving a maximum possible rating of 800 for all 8 categories. Adjustments are made in cases where certain items may not be applicable in a

Environmental Management System



GREEN 21 Version 2

- Activity period: FY2002 to FY2005
- Evaluation method: absolute points
- Target

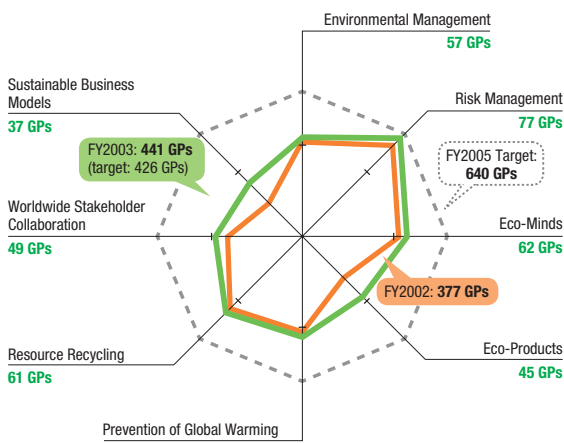
*1 Performance results for FY2002.

Year	FY2002	FY2003	FY2004	FY2005
GPs (Green Points)	377*1	426	533	640


- Evaluation Criteria (8 categories/53 performance indicators)

No	Category	Principal performance indicators
1	Eco-Management	Environmental management, action plan, environmental accounting
2	Eco-Management—Risk Management	Compliance with laws and regulations, setting of independent standards
3	Eco-Minds	Employee training and education
4	Eco-Products	Implementation of product and service assessment, green procurement, distribution
5	Eco-Factories—Prevention of Global Warming	Energy saving at operation sites
6	Eco-Factories—Resource Recycling	Waste reduction, chemical substance management
7	Worldwide Stakeholder Collaboration	Information disclosure, communication and community activities
8	Sustainable Business Models	Management systems, planning, product recycling, environmental restoration activities

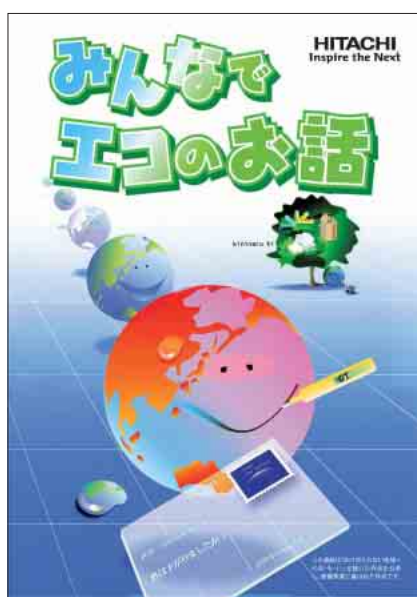
- Green Point Average: Results and Targets



given business unit.

Starting in fiscal 2002, the Green Point scores were added as one of the criteria for evaluating business performance in the Hitachi Group. The results are used in evaluating appropriate performance for each business group, thus serving as an incentive for enhancing environmental activities, in addition to improving social contributions and profitability. Based on this system, the management team within each business group is able to check how it is doing, and this leads to further improvements and greater efforts to achieve the environmental targets. A score of 441 GP was achieved in fiscal 2003, which exceeded by 15 GP the target of 426 GP that had been set for the year. In particular, the categories of Eco-Products and Sustainable Business Models saw a 18% improvement over the past year, thanks to an expansion of environmentally friendly product sales. With respect to Eco-Products, greater efforts will be needed in the future, due in part to the need to completely phase out the use of hazardous chemicals in products covered by the European Union's RoHS directive .

"Eco Stories for Everyone" Booklet for Households of Hitachi Employees



<http://greenweb.hitachi.co.jp/pdf/eco.pdf>

Environmental Education and Training

The Hitachi Group is providing general education to raise the overall environmental knowledge and awareness of all employees. It also offers trainings in specialized fields so that our employees learn about environmental technologies and put them into practice.

In terms of general education, management-level personnel are given more learning opportunities than in the past, giving them a keen appreciation of the importance of environmental management, and this is being reflected in our management policies. Training of general employees is being promoted through the Internet, with some 22,000 employees having completed training courses as of March 2004. Specialized education is being offered to train environmental management system auditors, as well as design and manufacturing personnel, in areas useful for the development of Eco-Products. Training based on ISO 14001 is also offered in order to promote environmental activities and to reduce the use of resources and energy at our facilities. Specialized trainings and emergency drills are also conducted for employees

working in operations that have significant environmental impacts.

In March 2004, we distributed "Eco Stories for Everyone" to the 200,000 households of Hitachi Group employees in Japan. This illustrated booklet explains environmental activities in a way that is easy for readers of all ages to understand. It shows that employees and their families can make a big difference if they are aware of the environmental impacts of their actions. In the hopes that more people will take the opportunity to act, we have also made the booklet available on Hitachi's Web site.

Environmental Management System Based on ISO 14001

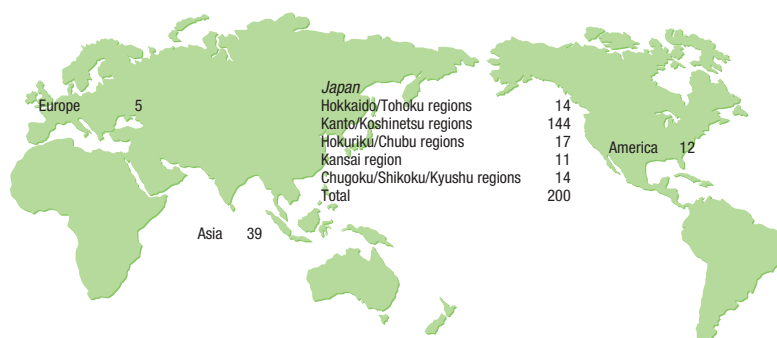
The Hitachi Group addresses environmental issues through its environmental management system, which is based on the internationally-recognized ISO 14001 standards. The first ISO 14001 certification in the Hitachi Group was acquired in July 1995, and the current status of certification is shown below. Our manufacturing operations were all certified by the end of fiscal 1999, and our non-manufacturing operations, such as software and service companies, all received their certification

Environmental Education and Training System

	General employees	Administration	Executive management level
Group training	Specialized education Auditor training Eco-Products development training	Head auditor training	
General education	Eco-mind education (via the Internet)		Education about environmental management
Training based on ISO 14001	Specialized education General education	Training for employees working in certain operations Eco-mind education for each company/site	

Status of ISO 14001 Certification

	Japan		Overseas		Total
	Production Sites	Non-production Sites	Production Sites	Non-production Sites	
No. of Certified Sites	148	52	54	2	256



by the end of fiscal 2002. Because of changes in the companies covered under consolidated reporting and in activities covered, the number of ISO 14001-certified sites currently totals 256.

Each site pursues continual improvements, undergoing internal audits to assess progress, and also receiving regular inspections by external certification bodies. Internal audits are conducted by approximately 2,000 accredited auditors who have undergone specialized training. Since 1973, environmental audits have continually been included as a part of management auditing of business operations.

Integrated Environmental Management System

The Hitachi Group introduced an information technology-based Integrated Environmental Management System in 1999, to handle the expanded environmental management activities (i.e., covering the consolidated reporting of the entire group), and to reflect the growing diversity and extent of those activities.

In the ensuing years, we have augmented this system by developing a Green Procurement System and a Waste Contractor System (in 2001) and an Environmental Performance Data Evaluation

System (since 2000), in order to provide an even wider range of environmental management information.

Utilizing these systems, we are now able to carry out our environmental management activities in a timely, effective and reliable manner, share information effectively in-house, and also release accurate environmental information externally. This system has been highly evaluated in the business world, and other companies having purchased versions of our system for their own use; it has in fact become a leading product in the environmental solutions business.

In fiscal 2003, we developed the Chemical Substance Management System, which links our Green Procurement System and product design information. With this system it has become possible to act quickly to reduce the quantities of chemicals used in our products or to find alternatives.

Our Approach to Environmental Accounting

To promote greater effectiveness and continual improvements in our environmental investments and activities, Hitachi introduced an environmental accounting system in 1999. Its purpose is to help people understand our corporate approach to the

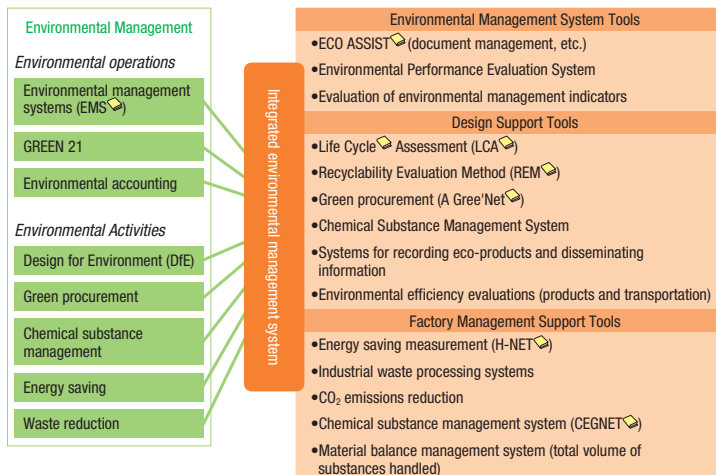
environment, by providing information on how we allocate management resources for environmental activities, and on the value created through environmental technologies and Eco-Products.

In addition to investments in plant and equipment for environmental purposes, which we have been reporting since fiscal 1997, the costs covered in our environmental accounting also include ordinary expenditures, such as for research and development, as well as the costs of operating and managing environmental equipment and facilities. Our activities can be understood both in terms of economic benefits, which can be evaluated in monetary terms, and material benefits, which can be evaluated based on the degree to which burdens on the environment are controlled. Economic benefits are calculated based on tangible data. Material benefits—which result from Hitachi’s fundamental principle of contribution to society by developing superior technologies—are evaluated based not only on the lower environmental impacts during the manufacturing process but also during the use of our products. We strive for efficiency in reducing environmental impacts, using an “environmental burden reduction ratio” to evaluate the extent to which each type of environmental burden is reduced per unit of expenditure.

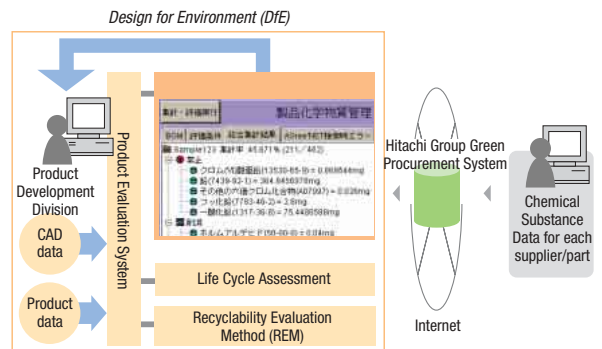
Environmental Audit System

Types of Environmental Audit	Frequency	Auditors	Content
Environmental Policy Office audits (performance audits)	Once every 3 years	Auditors from Corporate Environmental Policy Division	Prevention of environmental problems Environmental management from a managerial standpoint
ISO14001 environmental audits	At least once a year	Auditors from the facility to be audited	Efficacy of environmental management systems at the departmental level Compliance with laws and regulations Establishment of independent environmental objectives and targets
Audits that meet ISO 14001 standards	Once a year	Auditors from an accredited facility other than the one to be audited	Suitability as well as appropriate implementation and maintenance of environmental management systems

Integrated Environmental Management System



Chemical Substance Management System



Due to changes in the coverage of environmental accounting caused by organizational restructuring, both the costs and the economic benefits of our activities decreased by roughly one-tenth in fiscal 2003. Research and development costs

(including design costs) aimed at reducing the environmental burdens of our products accounted for 41% of environment-related costs, while at the same time we succeeded in reducing the energy consumed during the use of our products by ap-

proximately 500 million kilowatt-hours. We will continue striving to contribute to society not only by reducing the direct environmental burdens of our facilities, but also through these kinds of improvements in our products.

Cost

(Unit: billion yen)

Item	Costs				Overview
	FY2000	FY2001	FY2002	FY2003	
1. Business area costs	35.96	38.21	35.00	29.02	Maintenance of equipment with low environmental impact, depreciation, etc.
2. Upstream/downstream costs	3.58	3.27	2.40	2.76	Green procurement expenses, recovery and recycling of products and packaging, recycling expenses
3. Management activity costs	8.35	11.09	10.41	12.29	Labor costs of environmental management, implementation and maintenance of environmental management system
4. Research & development costs	30.03	34.36	38.21	35.48	R&D for the reduction of environmental loads caused by products and production processes, product design expenses
5. Social activity costs	3.23	0.53	0.52	0.37	Environmental improvements such as afforestation and beautification, PR and publicity expenses
6. Environmental damage costs	0.93	0.82	0.86	0.51	Environment-related measures, contributions and levies
Total expenditure	82.08	88.28	87.40	80.43	
Total investment	21.25	18.01	14.97	10.17	Investment in energy-saving equipment and equipment that directly reduces environmental loads

Effect

• Economic Effect^{*1}

(Unit: billion yen)

Item	Expenses				Overview
	FY2000	FY2001	FY2002	FY2003	
Net income effect	5.58	5.09	6.08	4.06	Profit on sales of recycled waste
Reduced expenses effect	12.03	13.56	12.11	11.67	Reduction in material costs due to resource saving, reduction in waste treatment costs due to reduced waste, reduction in power expenses due to energy savings
Total	17.61	18.65	18.19	15.73	

• Physical Effect

Item	Expenses				Overview
	FY2000	FY2001	FY2002	FY2003	
1. Reduction in the amount of energy used during production	169 million kWh 49,000 households	331 million kWh 95,000 households	189 million kWh 55,000 households	127 million kWh 37,000 households	Decrease in amount of energy used due to installation of energy-saving equipment
2. Reduction in the final amount of waste disposal	6,051 t 20,000 households	7,369 t 25,000 households	5,210 t 18,000 households	5,612 t 19,000 households	Decrease in final waste output volumes due to separation and recycling activities
3. Reduction in the amount of energy consumed during product usage	844 million kWh 243,000 households	552 million kWh 159,000 households	742 million kWh 214,000 households	507 million kWh 146,000 households	Decrease in energy requirements of Hitachi products

Benefits of capital investment are calculated using a five-year constant rate, as with cost.

*1. Economic Effect includes the following items.

1. Net income effect: Benefits for which there is real income, including the sale of resalable material and income from environmental technology patents.

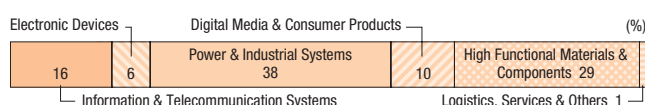
2. Reduced expenses effect: Reduction in electricity and waste treatment expenses arising from environmental impact reduction activities.

Efficiency of Environmental Impact Reduction

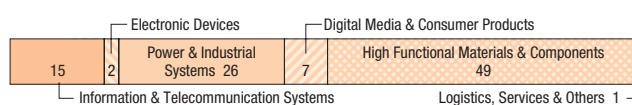
	FY2000	FY2001	FY2002	FY2003
Reduction in energy used during production	41 million kWh/billions of yen	66 million kWh/billions of yen	53 million kWh/billions of yen	44 million kWh/billions of yen
Reduction in amount of waste for final disposal	1,170 t/billions of yen	1,750 t/billions of yen	1,200 t/billions of yen	1,690 t/billions of yen

This is an indicator of the efficiency of environmental impact reduction, calculated as the amount of environmental impact reduction divided by expenses needed for the reduction.

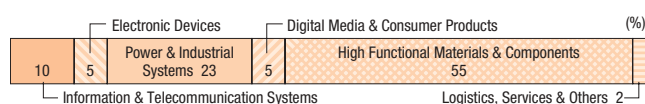
Cost Breakdown Ratio by Industry Segment



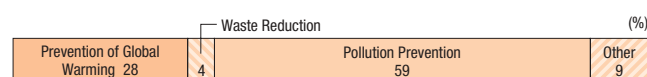
Economic Effect Breakdown Ratio by Industry Segment



Investment Breakdown Ratio by Industry Segment



Investment Breakdown Ratio by Countermeasure



Nature-friendly Products & Eco-factories

Hitachi designs and manufactures products with the environment in mind.

Life Cycle Assessment System

To minimize the environmental burden at each stage of a product's life cycle, the Hitachi Group develops products based on our Design for Environment Assessment System. This is an evaluation system we have applied since 1999 that incorporates concepts embodied in the Design for Environment (DfE) concept. Products are assessed with respect to eight criteria, namely resource reduction, product longevity, resource recycling, ease of disassembly, ease of processing, environmental safety, energy conservation and provision of information. We define as "Eco-Products" those products that achieve at least 2 on a scale of 0 to 5 for each of these eight criteria, as well as an average score of 3 or higher. *1

As of March 2004, 761 products (2,864 different model types) qualified as Eco-Products, accounting for 66% of our overall sales volume, and exceeding the

goal of 60% that had been set for fiscal 2003. We are aiming to boost these ratios for some categories, including consumer items, to 80% in 2006 and 100% in 2010. As a result of these efforts, 957 Hitachi products in 14 categories were certified under Japan's Law on Promoting Green Purchasing as of March 2004.

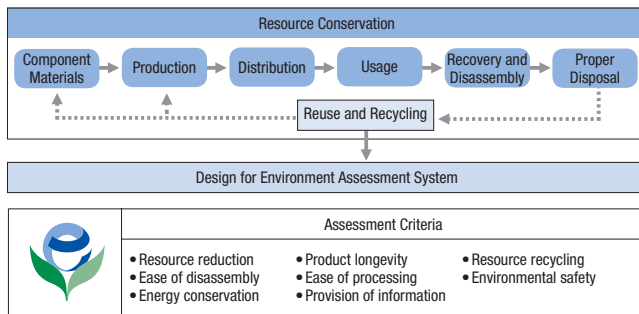
*1. We provide information about products that qualify as "Eco-Products" by using data sheets and an Eco-Product symbol in our brochures and on our Web site.

An Assessment System that Considers Product Functions

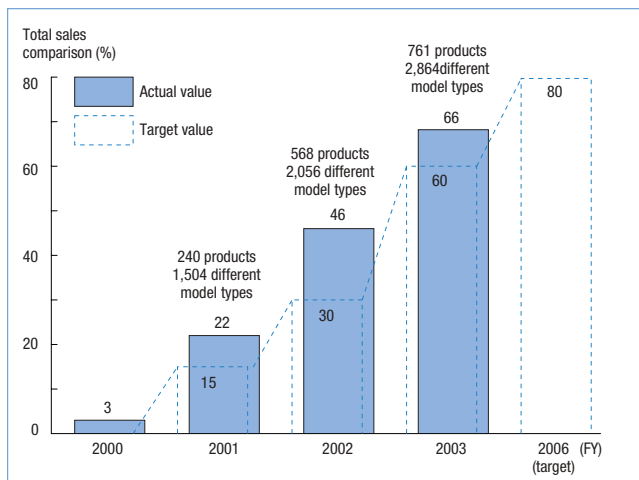
To utilize resources more effectively, we have developed an "Environmental Efficiency" index that shows the value created while controlling environmental impacts and resource consumption. This index evaluates products by calculating two measures of efficiency with respect to a product's value in terms of its function-

ing and lifespan. The first measure is the ratio of the product's value to the amount of greenhouse gases released during the life cycle of the product (Prevention of Global Warming Efficiency); the second is the ratio of the product's value to the sum of the amount of new resources that are extracted from the Earth for its production and the amount of waste remaining when the product is disposed of (the Resource Efficiency). We also track product efficiency improvements, defining two "factors"—the "Prevention of Global Warming Factor" and the "Resource Factor"—that measure improvements in efficiencies with respect to a reference year. In fiscal 2003, six products were evaluated in this way. In fiscal 2004, this evaluation will be extended to cover representative products from each of our product lines.

Approach to Complete Life Cycle Product Design



Eco-Product Registration Trends



Definition of Environmental Efficiency

Prevention of global warming efficiency =

$$\frac{\text{Product life span}^{*1} \times \text{Product function}}{\text{Volume of greenhouse gas emissions throughout the lifecycle of a product}}$$

Resource efficiency =

$$\frac{\text{Product life span} \times \text{Product function}}{\sum \text{Each resource value coefficient} \times (\text{Volume of new resources used in a product's lifecycle}^{*2} + \text{Volume of resources discarded as waste}^{*3})}$$

Definition of Factors

Prevention of global warming factor =

$$\frac{\text{Prevention of global warming efficiency for the product being evaluated}}{\text{Prevention of global warming efficiency for reference product}}$$

Resource factor =

$$\frac{\text{Resource efficiency of the product being evaluated}}{\text{Resource efficiency of reference product}}$$

*1. The specified usage period for a product.

*2. The volume of resources used to manufacture a product - the volume of resources reused or recycled.

*3. The volume of resources used to manufacture a product - the volume of resources with the potential for reuse or recycling.

Evaluation of Factors

Product	Prevention of Global Warming Factor	Resource Factor
Washing machine	5.0	2.3
Refrigerator	4.4	1.2
Air conditioner	4.6	2.3
Plasma television	5.2	4.8
Gigabit router	26	32

The RoHS Directive and the Phase-Out of Lead Solder and HCFCs

In line with the European Union's RoHS Directive (on the restriction of the use of certain hazardous substances in electrical and electronic equipment), the Hitachi Group is working to completely eliminate six chemical substances from approximately 70 products by the end of fiscal 2004. The development of alternative technologies has been completed for about half of the affected products. We have developed three models of RoHS-compliant straight fluorescent tube lamps (from Hitachi Lighting, Ltd.), and have begun selling them in Europe, the United States, Asia and Japan. We will accelerate our efforts in the future to develop alternative components and products.

We achieved our goal of eliminating all lead solder, and instead using non-lead solder by the end of fiscal 2003 for all of our production in Japan. Our challenge

was to find suitable material for assembling components with low heat resistance onto circuit boards. By adding indium (In) to solder made from tin, silver and copper (Sn-Ag-Cu), we were able to improve reliability and workability, while completely phasing out lead solder. In fiscal 2003, we were also able to completely phase out the use of HCFCs, substances that deplete the ozone layer and have been used as refrigerants for refrigerators and air conditioners.

Using Information Technologies for Green Procurement

To deliver environmentally sound products to our customers, Hitachi is promoting "green procurement," which allows us to procure materials and components that have reduced impacts on the environment.

In addition to posting our "Green Procurement Guidelines" (revised March 2004)*1 on our Web site, we also request

suppliers to provide information through our Web-based "A Gree'Net" green procurement system. This system provides information on some 31,000 products from 4,800 supplier sites.

This information is linked to our design support and materials supply systems, and is used in the development of our environmentally friendly products. In cooperation with suppliers, we also promote information sharing and the use of environmentally friendly products through the "Green Procurement Component News," which provides regular updates on components with reduced environmental impacts, and by hosting our own "Green Procurement Component Exhibition." The exhibition in 2003 featured products that comply with the EU's RoHS Directive, with exhibits from 60 suppliers.

*1. <http://greenweb.hitachi.co.jp/en/pdf/greenpg.pdf>

Calculation Examples for "Environmental Efficiency" and "Factors" Indicators

Product	Factor	Calculation Figure (based on the standard year)	
		Prevention of Global Warming	Resources
DVD Video Camera		2.3	3.5



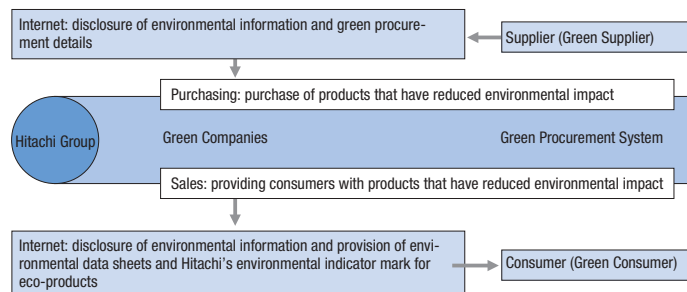
Base model
DZ-MV100



Evaluation model
DZ-MV580

Item/Product	Base	Current Evaluation	
Year of manufacture	2000	2003	
Model number	DZ-MV100	DZ-MV580	
Product lifespan (set usage period (years))	8	8	
Product function	Pixels	1.10 million	1.02 million
	Volume (cm ³)	7.8×10.8×16.6	6.4×8.9×14.6
	Recording time (minutes)	60	60
Greenhouse gas emissions (kg/unit)	3.89	2.66	
Prevention of Global Warming Efficiency	97.2	221	
Resource value coefficient	1	1	
New resources used (kg)	1.19	0.61	
Resources discarded as waste (kg)	0.72	0.24	
Resource efficiency	198	695	

Green Procurement Activities



Green Procurement System "A Gree' Net"



Sharing Information on Green Components



"Green Procurement Component News"

Eco-Products and Customer Input - Your “Best Solutions Partner”

We selected six products from each business unit in the Hitachi Group to show how we incorporate environmental factors into design and production. [▶P2](#)

For this year’s report, we selected six Eco-Products [▶P18](#) representative of Hitachi’s business units—Information and Telecommunications Systems, Electronic Devices, Power & Industrial Systems, Digital Media & Consumer Products, and High Functional Materials & Components. We explained to customers the key environmental considerations and the developers’ thinking involved in the design of each product. Then we asked what aspects they evaluated positively, and what improvements they would like to see in the future.

For products that are used widely by consumers—hard disk drives, automotive millimeter wave radar, plasma televisions and air conditioners—we requested feedback from Japan for Sustainability, an environmental non-governmental organization (NGO). For the items produced for specialized customers—optical topography devices and ultra fine-grained hard metals—we sought the opinions of the actual users.



1. Travelstar 4K80 Series 2.5-inch Hard Disk Drive



This is a hard disk drive used in notebook computers and mobile computing devices. Recently, much of the demand for hard disk drives has shifted from general computing to visual media and other applications, requiring improved storage capacity. This product has 30% more storage than earlier models.



Hitashi Toyama,
Hitachi Global Storage Technologies

Key Environmental Features

Despite the increase in storage capacity, this device is 26% more energy efficient than previous models; it uses only one-twentieth of target energy consumption for such devices under Japan’s Energy Efficiency Law (0.0081 W/GB). Batteries last longer and the unit uses less energy. For environmental reasons, the circuit board connections are made with lead-free solder and electrodeposition surface coatings are also free of lead and hexavalent chromium. To reduce the consumption of resources, recycled resin is used for multiple packaging.

Developer’s Comment

To increase storage capacity of a hard disk drive, it is essential to spin the head disk at a very high speed, but we were careful to do this without increasing electrical consumption. As a result, we were able to improve energy efficiency. People say that we have reached the theoretical upper limit for disk capacity. We really had to hard work to figure out how to consider environmental aspects like going lead free and boosting energy efficiency, at the same time as increasing storage capacity—all in a very short development time.

Customer’s Comment

“People would generally assume that the product’s unit energy consumption you mentioned increases directly with any increase in the product’s value-added, but that was not the case here. We can see that the benefit of increased hard disk drive capacity is not just greater storage capacity for computers. It also opens up future possibilities, such as new services like image transmission. This product is an example of how technological improvements will help shape the future of our society, and the types of benefits such advances can bring. I look forward to hearing more about how technology can turn dreams into reality.”

2. 76 GHz Millimeter Wave Radar (A sensor device for collision avoidance / mitigation system)



This is a small, lightweight radar device for automobiles. By transmitting radio waves ahead of moving automobiles and detecting the waves reflected back, it is able to measure the distance to the car ahead, as well as the relative speed and angle. It was developed to promote safety and ease of driving, by warning the driver when the distance between cars becomes too small. This device has better tolerances to weather condition than those using earlier technologies, such as laser radar, since it uses millimeter wave. This device can measure the distance from one meter to one hundred meters or more continuously.



Kazuto Nakamura,
Automotive Systems, Hitachi, Ltd.

Key Environmental Features

Because this is a product intended to improve the safety and ease of driving in a world that depends so much on the automobile, we were aware that it would not be appropriate if it had a major environmental impact, and made an effort to improve it from an environmental viewpoint. We chose lightweight materials and streamlined the design, and as a result, the weight and volume are 72% less than the previous model. Also, we have achieved 50% less electricity consumption. Thanks to its reduced weight, it also contributes to improved fuel efficiency. Because it utilizes an angular position processing that can simultaneously measure wide angle, there is no need to actuate the antenna mechanically, and so it will also have a longer lifespan than other products.

Developer’s Comment

“We made efforts to make this product small, but I think that it will be necessary to make future models even smaller. Japan’s Ministry of Land, Infrastructure and Transportation is promoting the Advanced Safety Vehicles (ASV) project, to encourage the use of vehicles that incorporate high frequency radar and other technology to reduce the number of accidents. Ultimately, driving is the driver’s responsibility. But I think that this technology will move toward omni-directional radars, which could be linked to rapidly-opening airbags and braking in the event when immediate danger is detected.”

Customer’s Comment

“Learning about this product, I sensed how corporations have the potential to make positive contributions to society through new technologies. As you explain, when developing products that are intended to benefit society, it is important to also consider their environmental aspects right from the beginning. The automobile can be a dangerous thing, and traffic accident is a serious issue for any society. We really need to think about how improved safety through technological development can transform our relationship with the automobile. I hope that you can really reach consumers with your vision for a future where technological developments can bring about a better society.”

3. Wooo Series Plasma Television




This is a high-definition plasma television that transforms a living room into a movie theater. It comes in sizes ranging from 32 to 54 inches. The thin design gives it a stylish look. Its high picture quality, long life, and improved energy efficiency, have given it the top market share in Japan.



Chikara Sato,
Hitachi, Ltd. Digital Media Division

Key Environmental Features

The Wooo Series incorporates further improvements of the Alternate Lighting of Surfaces Method (ALIS) , which reduces phosphor wear compared to other flat-panel screens. These displays need only half as much light output to give the same picture brightness as conventional flat-panel screens, which gives them a longer lifespan. The estimated lifespan, which is when the panel brightness declines to 40% of maximum, is 60,000 hours. They achieve greater efficiency in light output as well as greater energy efficiency. Televisions in a typical household are actually in standby mode for about 80% of the day. We succeeded in decreasing standby energy consumption to less than one watt. Also, by using lead-free solder and hexavalent chromium compounds-free steel plate and plating, we have reduced the use of hazardous substances.

Developer's Comment

"The television and broadcasting industries are moving into the future, such as with the launch of high-definition broadcasts, and the phase-out of analog terrestrial broadcasting by 2011 in Japan. We thought about how to impress viewers with the Wooo Series as a next-generation television, and how to improve quality, lifespan and environmental aspects. Reducing the energy consumption of televisions is the main environmental concern, but we also worked to reduce energy use in the manufacturing process. In the future, we will also pay more attention to recycling of used displays."

Customer's Comment

"From your explanation, I learned that with these new plasma televisions, you have reduced the energy consumption during the standby mode, increased the lifespan, selected materials based on environmental considerations, and that you are working to make environmental information available through the product literature. I also learned that this technology is superior to cathode ray tubes and liquid crystal displays. Most households still have conventional televisions, but many people will probably need to replace them in the coming years, due to the switchover to digital broadcasting in Japan and other countries. It is therefore all the more important to have manufacturers work to reduce the environmental impacts, and also to provide the information for consumers to be able to choose environmentally friendly models that meet their needs."

4. "Fresh Kyu-Hai Shirokumakun" Room Air Conditioner




This air conditioner utilizes pulse amplitude modulation (PAM), and is the first in the world with a system for controlling the air supply and exhaust airflow, allowing it to exchange the air in a room and keep it fresh. It also introduces a twin airflow system, with vents on the top and bottom, to ensure a comfortable air temperature throughout the room.



Hitachi Home & Life Solutions (Inc.)
Atsushi Otsuka


Key Environmental Features

The PAM system allows for greater energy efficiency than normal inverter-controlled systems . This product also uses a high-efficiency motor that provides improved energy efficiency, with less than half the annual energy cost than air conditioners made a decade ago. To promote even greater energy savings through good maintenance, the unit is designed with removable louvers so that the fan can also be cleaned. The electrical control circuit boards use lead-free solder, and the rear of the in-room unit is also made of recycled plastic. We are also cooperating with Kanto Eco-Recycle Co. to make future improvements in the ease of disassembly and recycling.

Developer's Comment

"The greatest environmental impact of air conditioners is due to the electrical power consumption during use. With about one-quarter of household energy consumption used for air conditioning in Japan, energy efficiency is now a high priority when consumers purchase air conditioners. We made better energy efficiency our main goal during product development."

Customer's Comment

"We can see that due to technological developments, the environmental impact of air conditioners has been reduced. Life cycle  assessments indicate that since the energy efficiency of a unit is the main determinant of its environmental impact, it can actually be environmentally beneficial to replace existing air conditioners, even when taking into account the environmental impact of disposing of the older ones. It would be very useful if consumers could be given tools that could help them determine the lifetime environmental impact of their appliances based on their own specific household situation. I also hope that we will see new business models in the future that allow people to benefit not from things, but rather from the services they provide, such as through leasing programs."

Follow-up Comments

"First of all, I think it's very good that Hitachi creates opportunities for product developers to meet directly with consumers to explain products and promote dialogue. To increase the transparency of corporate activities, it is useful to involve stakeholders and to create a dialogue with them. Also, once consumers understand the issues and difficulties involved in the development of products, they can feel closer to a company, and develop a better appreciation of its products. The explanations I received gave me the impression that Hitachi is technologically very strong. But some points may be hard for consumers to understand, and there are aspects of people's lifestyles relating to the use of environmentally friendly products that have not been fully considered from the larger context of regional, national and global issues. I hope that Hitachi will continue to work on the environmental aspects and to build on the trust people place in it, and that you will continue to involve stakeholders and consider environmental improvements in the broadest sense."



Riichiro Oda,
Senior Manager,
Japan for
Sustainability (JFS)

Japan for Sustainability is a non-profit communications platform established in August 2002 to share environmental information about Japan, in the English language, around the world. A major mission of JFS is to move Japan and the world in a sustainable direction, through communicating information about Japanese advances in the field of environment, and by providing venues for creating visions of "a sustainable Japan."

5. ETG-7000 Optical Topography System



Regional brain blood volume changes when the brain activates. The optical topography system is a device to measure the changes in blood volume in the cerebral cortex, using safe and highly penetrating near-infrared light. The ETG-7000 system has been developed by Hitachi Medical Corporation who commercialized the optical topography system for the first time in the world. This device is expected to open up new possibilities in brain research and examination, as the ETG-7000 system is able to measure most of the cerebral cortex.



Prof. Shigeru Watanabe (left),
Mr. Kotaro Saito (right)



Discussing the measurement data. Standing is product developer, Tsuneaki Kawaguchi of Hitachi Medical Corporation.

Key Environmental-conscious Features

In addition to improved features, we have successfully reduced the adverse impact of this equipment on environment compared to the previous models by saving resources. Also, we have reduced the adverse environmental effects in the manufacturing process. Previous devices measured brain activity in only one region of the brain; however, the ETG-7000 system can simultaneously measure 120 points in five regions of the brain (the frontal lobe, the left and right temporal lobes, the occipital lobe, and the parietal lobe). As this single unit is able to gather the same amount of information as the five previous models combined, we were able to reduce significantly the amount of energy used during manufacturing and the amount of waste such as circuit boards and cases. Also, the system consumes less power during operation as we downsized the system.

Developer's Comment

Functional magnetic resonance imaging (fMRI) is used in laboratories and hospitals to image brain activity, however, the dimensions of the device are extremely large and special installation work is required. We developed the optical topography system to meet customers' demands of imaging various brain activity anytime and anywhere. We made the system highly mobile by encasing the technology in a compact and light unit. It is now possible to image brain activity not only in a laboratory but also in an office, outdoors or in a vehicle. The low running cost is also an advantage of the system. We hope that the system will be helpful in advancing studies in brain activity.

User's Comment

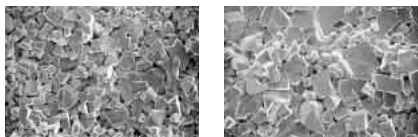
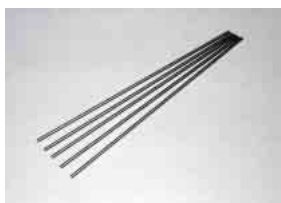
I use the optical topography system in psychology experiments to understand how the brain functions. Since the device operates quietly, we no longer need a special room for experiments. I think it can be used in many situations. The probe holder with a set of optical fibers, which looks like a net, is attached on the head when we conduct measurement. One drawback of this system is that it can be difficult to evaluate data when the subject moves, since the system imposes less restraint on the movements of the patient being examined. However, I think we can say that burden on a subject when using the optical topography system is far less than that of when using large devices. It is important to conduct measurements with less patient-restraint when studying and testing people. I think that this device could even be used to study newborn babies. Another advantage of the system is that since the optical topography system measures and provides real-time images of changing brain activity; we can discuss the results of the data immediately after the measurement and utilize the results to modify the measurement right away.

Product User

Prof. Shigeru Watanabe, Department of Psychology, Keio University

Prof. Watanabe's experimental psychology research into the nature of human consciousness is part of the initiative "Toward an Integrated Methodology for the Study of the Mind" at Keio University's Centre for Integrated Research on the Mind, a part of the 21st Century Centers of Excellence program sponsored by Japan's Ministry of Education to develop leading global centers for research and education. A graduate student, Kotaro Saito, has published papers based on his human cognition experiments using the optical topography system.

6. Ultra Fine-Grained Hard Metals



Microstructure surfaces of ultra fine grained hard metal (left)
and hard metal (right)

Ultra fine grained hard metals, which can be made thinner than a human hair, make up a new type of materials jointly developed by Hitachi Tool Engineering, Ltd. and UNION TOOL CO. for use in drill bits only 0.075 millimeters thick. The main raw materials used in their manufacture are tungsten carbide and cobalt. Decreasing the cobalt content strengthens the material, but also makes it pliable. We succeeded in fine-tuning the ratio of the components to produce a thin yet strong material for drilling.



Mr. Takeshi Miyamoto, managing director (left), and the product developer, Yutaka Kubo (right), of Hitachi Tool Engineering, Ltd.

Key Environmental Features

As more and more functions are packed into electronic devices, an increasing number of layers are being designed into circuit boards. The carbide drills used for making holes in such circuit boards require drill bits that are thinner than a hair but hard to break and also have a long drill depth and usage life. Meeting these demands requires better quality, which results in less waste. In the development of ultra fine grained hard metals, it is essential to prevent grain growth during the heating of the carbide particles. We redesigned the manufacturing process, reducing a two-step heating process that used vacuum sintering and pressure sintering into a one-step process. This also made it possible to reduce the consumption of energy in the manufacturing process.

Developer's Comment

"There are approximately 1,000 holes drilled into the circuit board in a typical mobile telephone. Smaller holes allow thinner wiring—and this gives the phone more possible functions. Carbide drills are needed that can make ultra-fine holes. To develop the needed material, we asked for advice from a customer, UNION TOOL CO., and developed this product together. Our achievement was recognized as one of the top ten new products for 2003 by the Nikkan Kogyo Shimbun, a leading industrial newspaper in Japan."

User's Comment

"Carbide drills are used in factories to drill an enormous number of holes in the manufacture of circuit boards. Even one drill bit failure can have a huge impact on the manufacturing process, so we make our drill bits to the strictest standards. And good materials are essential to make good drill bits. Each of our newly developed carbide drill bits is able to drill about ten thousand holes, and their useful life is five times longer than earlier drill bits. We have even made prototype drill bits as thin as 0.05 millimeters."

Product User

Takeshi Miyamoto

Mr. Miyamoto is managing director of UNION TOOL CO., which was established in 1960 and has its headquarters in Tokyo. It is one of the leading manufacturers of carbide drills for printed circuit boards. Their 2004 production target is for a monthly output of 17.5 million drills.



A carbide drill bit



Mobile phone circuit board and carbide drill bits

Environment-Friendly Design and Returnable Packaging

The challenge in designing packaging is to create materials with the strength needed to protect products, while at the same time increasing transportation efficiency by making packaging smaller and lighter. Hitachi, Ltd., in cooperation with Hitachi Transport System, Ltd., redesigned the packaging for our laptop computers. After evaluating different options for materials, functionality, and ways of removing the product from the package, we shifted from a design in which boxes were stood on end and the computer removed from the top, to a design that still had it standing on end, but the box is now laid flat to remove the computer. This award-winning design reduces packaging volume by 35%, weight by 20%, and truck transport by 30% (thus reducing CO₂ emissions).^{*1}

We are also working to make shipping containers "returnable" so they can be re-used many times. We designed special purpose-built holders for liquid crystal display panels that can be used repeatedly for shipments to and from our assembly facilities in China, helping us reduce the amount of packaging materials used.

The Hitachi Group has been able to

reduce its total subcontracted costs for packaging by 28% from fiscal 1998 to 2003, and is working to promote even greater efficiencies and re-use of packaging materials.

* 1. This innovation received the Good Packaging Award (for electronics and equipment) in the Japan Packaging Contest sponsored by the Japan Packaging Institute.

CO₂ Emissions from Transportation

In fiscal 2003, our CO₂ emissions from transportation rose to 425,000 tonnes due to the acquisition of a hard disk drive business overseas and the expansion of our automotive equipment business in Japan. In addition, preliminary calculations conducted for our Japanese operations indicate that we improved our transportation efficiency (Transportation Factor) in fiscal 2003 by 10% over the previous year. We are conducting further analyses of these findings and working to effectively utilize the Transportation Factor as an indicator for improving our operations.



Initiatives to Promote Modal Shifting

To reduce environmental impacts and traffic congestion, and also to achieve transportation efficiencies, Hitachi Transport Systems, Ltd. is working to realize a "modal shift," through the combined use of the railway and truck transport modes. We did this in 2003 for medium-range and in January 2004 for long-range shipping, and the latter initiative has been recognized by Japan's Ministry of Transportation, Land and Infrastructure as a Modal Shift Demonstration Project.^{*1}

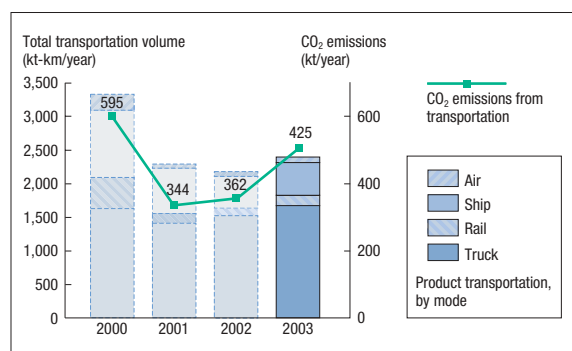
As a result of these efforts, we project yearly CO₂ emissions reductions of 1,600 tonnes.

Rail transport emits between one-sixth and one-eighth the CO₂ emissions of truck transport. But a modal shift toward rail has certain drawbacks, since schedules must be adjusted to match train timetables. Costs may also rise, since trucks are still needed to carry shipments from railway stations to their final destinations. We found a way to use trucks (available after their main deliveries) in collection and delivery for railway stations. We also developed new racks to accommodate railway containers onto trucks designed to

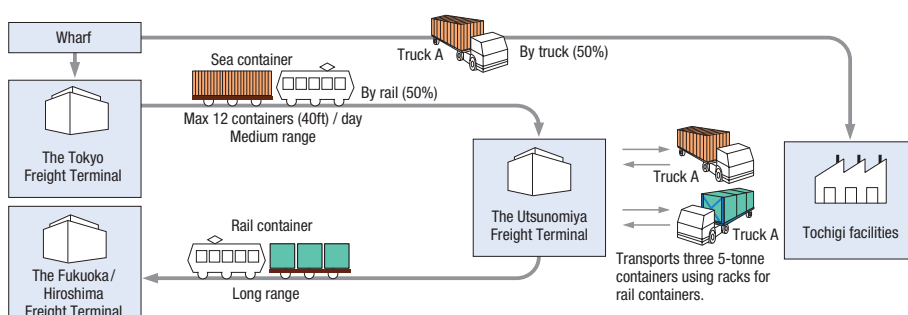
Packaging Improvements for Laptop Computers

Packing method	Conventional Opening/closing from the top	New Opening/closing from the side
		
Carton dimensions (width)	405 mm	402 mm
(depth)	220 mm	156 mm
(height)	358 mm	332 mm
Carton volume (relative)	100	65
Carton weight (relative)	100	80

CO₂ Emissions from Transportation



Example of Modal Shift



Trucks that can Carry both Sea and Rail Containers



Newly-developed racks allow our trucks to carry both sea and rail containers.

carry marine shipping containers. By expanding the distribution activities at railway stations, we have been able to make a shift from truck to rail for our shipments to Fukuoka and Hiroshima, several hundred kilometers southwest of Tokyo.

To shift transportation modes, we must develop solutions in the context of the total transportation network. We will continue to promote modal shifting, such as by developing new transportation routes and improving how we handle the cushioning materials used for transport by rail container.

*1. Hitachi Home & Life Solutions, Inc., from their Tochigi site to Fukuoka and Hiroshima.

Global Warming Prevention: Targets and Results

The Hitachi Group has set 2010 as the year to achieve two targets (compared to 1990 levels) for reducing emissions of CO₂, the main factor in global warming:

1. CO₂ emissions per unit of manufacturing output: 25% reduction (in Japan)
2. Overall CO₂ emissions: 7% reduction (in Japan)

To raise awareness inside the Hitachi Group, we conduct various activities through the managers responsible for energy efficiency throughout the Group, such as seminars and reporting on cutting-edge practices. We have also introduced efficient equipment and control systems for the air conditioning systems at all of our facilities. Energy efficiency investments of 4.7 billion yen*1 by the entire Hitachi Group in fiscal 2003 helped to reduce annual energy consumption by 40,000 kiloliters (crude oil equivalent). As a result, in fiscal 2003, CO₂ emissions per unit of manufacturing output dropped by 7% (below 1990 levels), and CO₂ emissions fell by 20% (in Japan).

*1. Costs of control equipment for conversion to inverters for pumps and fans, and for increasing the number of such units, as well as for installing optimal control systems to monitor electric power and air conditioning, etc.

Launch of Hitachi's CO₂ Emissions Reduction System

The Hitachi Group launched a new CO₂ Emissions Reduction Program in fiscal 2004. Under this program, we calculate

the amount of CO₂ generated as a result of energy usage (both electricity and fuels) for each of our facilities, and then compare emissions reductions by each facility based on annual targets and actual results. 77% of our facilities achieved their CO₂ emissions targets for fiscal 2003. These results were reported to management and shared within the Hitachi Group. Using this system, we will take additional specific steps to reduce CO₂ emissions efficiently.

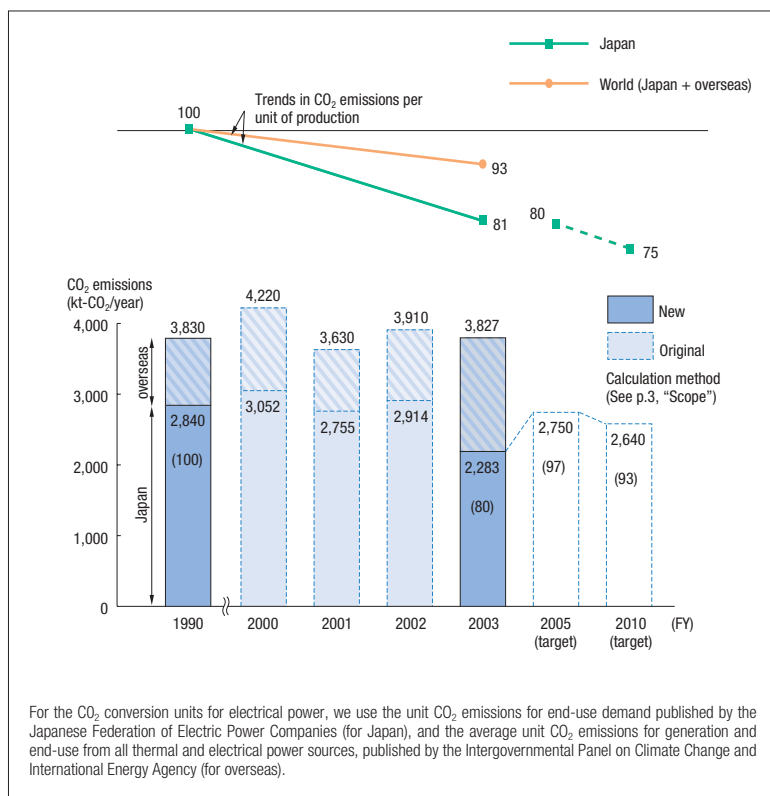
Greenhouse Gas Emissions Reductions and New Energy

Six major types of greenhouse gases are known to contribute to global warming, including CO₂ mentioned above, and CFC substitutes.

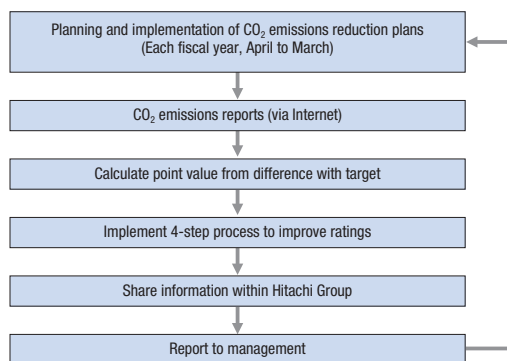
Emissions of the greenhouse gases other than CO₂ in fiscal 2003 by the Hitachi Group amounted to 420,000 tonnes (global warming potential), a reduction of 40% from the preceding year. This reduction was accomplished by installing equipment to detoxify releases of these chemicals, as well as by converting to alternatives that have lower environmental impacts.

The amount of renewable energy (such as photovoltaic) used by the Hitachi Group

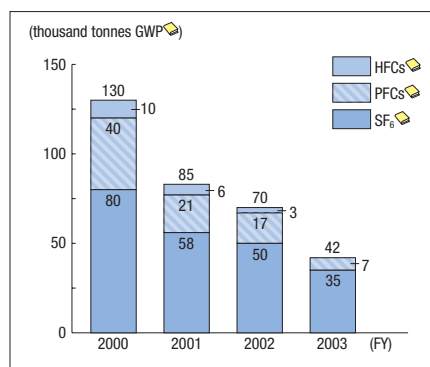
Trends in CO₂ Emissions Per Unit of Production, and Total CO₂ Emissions



Structure of CO₂ Emissions Reduction System



Other Greenhouse Gas Emissions



in fiscal 2003 was 9.06 million kiloliters (crude oil equivalent) for heating, and 74 million kilowatt-hours for electricity (50% over the proceeding year). These accounted for 3% of total power consumed for heating and 1.8% of total electricity consumption; electricity generated through alternative sources has been increasing, due to the installation of cogeneration systems using natural gas. We also purchased electricity generated from wind power, and as a result received certificates for 850,000 kilowatt-hours of "green" electricity,*1 an amount equivalent to the annual consumption of 220 average households.

*1. We utilize the system operated by Japan Natural Energy Company, Ltd., through which we receive "Green Electricity Certificates" in exchange for paying fees to contract with wind power generators to provide electricity.

Conserving Energy in the Clean Room

"Clean room" facilities are indispensable for production of semiconductors. Generally, they require a large amount of energy to maintain proper temperature and humidity levels. In addition, a considerable amount of CO₂ is emitted by the oil-

fired boilers that provide heating energy. Our efforts, so far, to improve energy consumption efficiency have focused mainly on air-conditioning equipment, but these efforts have been reaching their limits in recent years.

The Production Environment Team of Hitachi Cable Ltd. has tackled these energy efficiency improvement challenges. By analyzing all the energy-consuming processes in the plant and considering each separate processes' relation altogether, they have achieved much better efficiency through finding ways to mutually utilize the excess energy that in the past was not only unutilized but even cost money to dissipate.

They use the heating energy carried by the "process cooling water," which comes out of the cooling pipes installed on electrical furnaces. The "low-grade" heat is used as a source of heating energy for air-conditioning and utility equipment, such as pure-water plants. This engineering approach has been evaluated in academic societies as an excellent application of basic thermodynamics principles. With the cooperation of process engineers and air-conditioning experts, the need for oil-fired boilers has been eliminated by the better

use of heat exchangers and by moderating air quality guidelines in the production area. Based on this, Hitachi Cable Ltd. received the 2003 Director General's Award from the Japanese Natural Energy Resource Agency for excellent achievement in energy efficiency. A patent has been obtained on this new technology.

So far, similar technologies have already been put into operation in conjunction with these basic improvements in five other Hitachi Group plants.*1

The Hitachi Group will continue to develop such energy efficiency technologies, for use both inside and outside the Group.

*1. In cooperation with Hitachi's MONOZUKURI Engineering Division.

Installing Amorphous Transformers

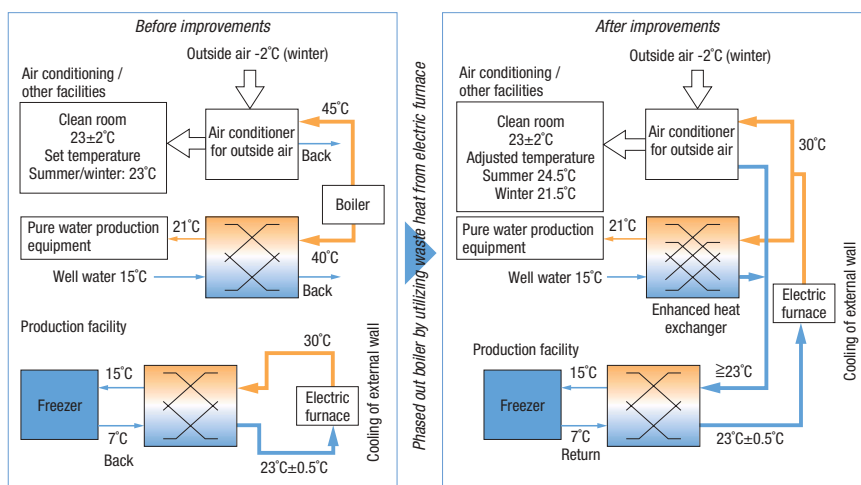
The Power Systems group of Hitachi, Ltd. has introduced high-efficiency transformers that use amorphous transformers,*1 reducing voltage conversion losses by one-third at office facilities.

By installing new electricity monitoring systems, providing data about our energy consumption, and using information posters and notice boards, we have been able to raise employee awareness about energy efficiency, leading to an annual reduction of some 430 tonnes in CO₂ emissions. This achievement has been recognized with the fiscal 2003 Natural Resources and Energy Agency's Director General's Award for Superior Facility Energy Management.*2

*1. Hitachi's Power Systems group has worked with Hitachi Industrial Equipment Systems Co., Ltd to install fourteen "Super amorphous transformers."

*2. In recognition of outstanding achievements in energy management over the previous three years.

Energy Conservation in the Clean Room
(Effective utilization of waste heat between multiple processes — An initiative by Hitachi Cable, Ltd.)



Initiatives of Power & Industrial Systems Division

Major items for energy conservation	CO ₂ emission reduction (kt/year)
• Introduce of amorphous transformers and clustering of transformers (31 → 14) (Zero load loss / reduction of voltage conversion loss: 62%)	95
• Introduce monitoring system to better determine power use status - Attach condensers to large motors to improve power factor - Adjust capacity of building power supply transformers	335
Total	430

Enhancing the Risk Management System for Chemical Substances

Chemical substances must be managed efficiently and in an integrated manner if we are to ensure their safe handling and reduce their impact on the environment. The Hitachi Group strives to comply with laws and regulations, to systematically promote additional voluntary initiatives, and to enhance a variety of programs to these ends. In an effort to improve our chemical risk management, during 1998 we introduced a computer network-based system in Japan that we call CEGNET (Chemical Environmental Global Network), and now use it to quickly and efficiently research and verify the hazardous properties of chemical substances, as well as trends in laws and regulations, etc. During 2004, this system will be expanded for use in our overseas operations as we make another step toward global management.

Risk Management for New Chemical Substances

When introducing a new chemical substance, to ensure proper risk management it is important to first have an assessment of that substance. We have a system in which we collect information about hazardous properties, laws and regulations, etc., and then evaluations are made by the Special Committee for Chemical Substances, etc., on the pros and cons of using the substance. In addition, in order to avoid introducing any hazardous chemical substance that is controlled by laws and regulations without first making the proper preparations, we work closely with the related departments at each facility, including those in charge of design, manufacturing, and purchasing.

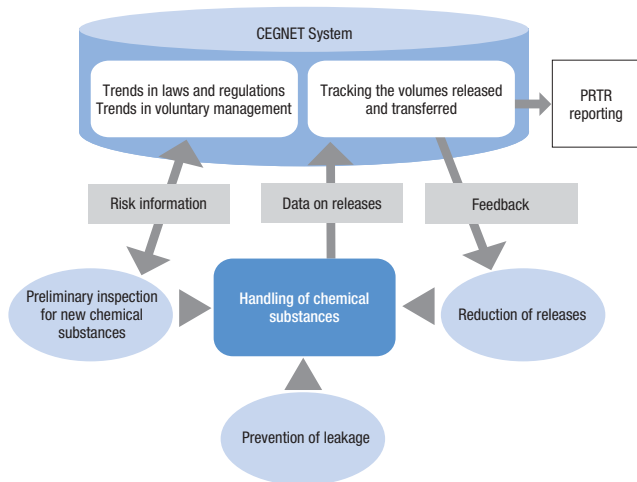
Survey of Substances Under the PRTR Law

The Hitachi Group collects data on all

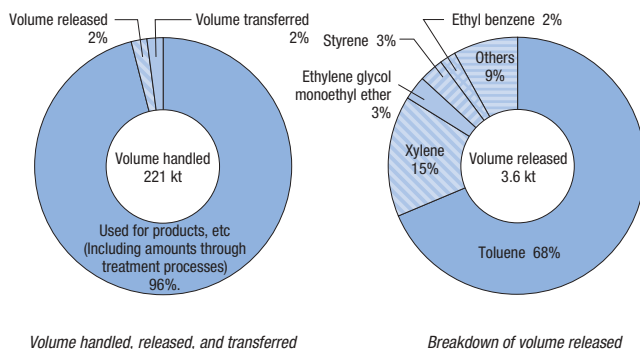
substances that it handles in amounts of 10 kilograms or more per year, even if the amount is below the minimum for mandatory reporting under Japan's "Pollutant Release and Transfer Registers Law" (formally known as the Law Concerning Reporting, etc., of Release of Specific Chemical Substances to the Environment and Promotion of Improvement of Their Management), which entered into force in April 2001. We are monitoring discharges to the atmosphere and public waters, as well as transfers such as removals in the form of waste from facilities, and as effluent into sewerage systems. During fiscal 2003, we used a total volume of 220,000 tonnes, comprised of 134 of the 354 groups of substances subject to the Law. Among them, the amounts of releases and transfers was 2% of the total amount handled, and the top three substances in terms of emissions were toluene and xylene (components of paints), and ethylene glycol monoethyl ether (used as a plastic solvent).

In addition, 112 facilities submitted

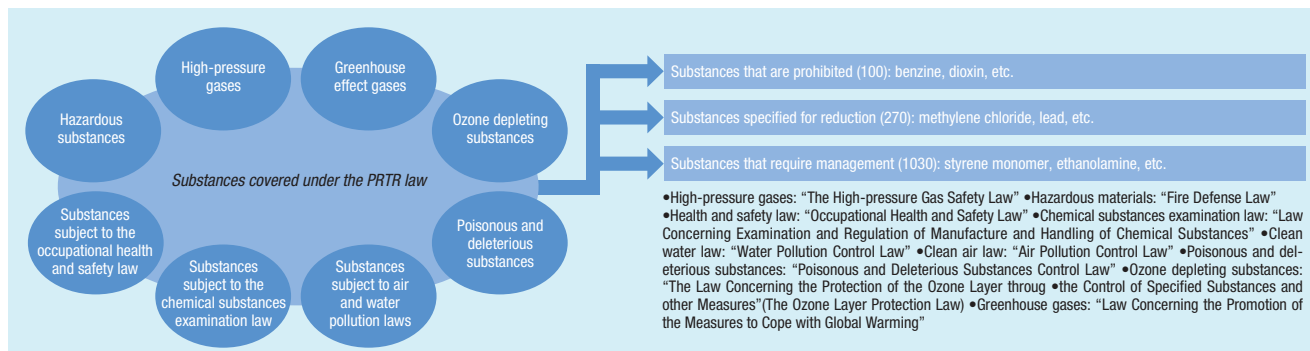
Outline of Chemical Substance Risk Management



Survey Results for Substances Covered Under Japan's PRTR Law (Volume of releases and transfers in FY2003)



Voluntary Substance Management



reports to local governments as required under the PRTR Law.

Voluntary Controls to Reduce Environmental Impacts

To reduce the impacts of chemical substances on the environment, we control the releases and transfers of not only substances subject to the PRTR Law. We also voluntarily control 1,400 substances, classifying them as substances to “prohibit,” “reduce,” or “control.” This we do in an effort to cut emissions into the environment, including the atmosphere and water bodies. We have set a target of reducing the total releases of the substances in the “reduce” category by 70% in fiscal 2005 compared to fiscal 2000, and are working to achieve this target.

Hitachi Chemical Co., Ltd. installed equipment that can continuously recover and reprocess the solvents*1 used in producing the wiring for printed circuit boards,

even if they are in the form of rarified gases. As a result, it has become possible to reuse 80% of the solvent. In the future, we will work to reduce the releases into the atmosphere and water bodies, by cutting the actual amounts used, by converting to alternative substances, and by promoting more recovery of used substances. As for releases to rivers, we have set our own independent standards that are stricter than those under laws and regulations, and we are working to reduce environmental impacts, with a future aim of chemical-free wastewater discharge.

*1. Ethylene glycol monoethyl ether, methyl ethyl ketone, etc.

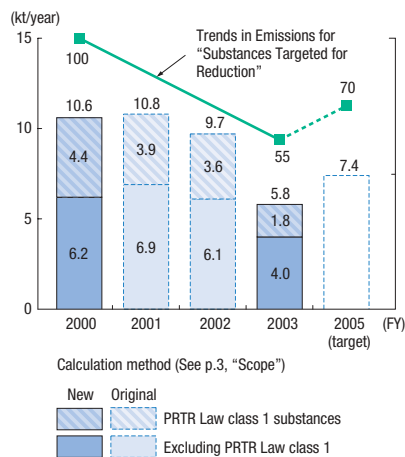
Preventing Pollution of Soil and Groundwater

To protect soil and groundwater from pollution by hazardous substances, we are working to improve controls to prevent the leakage of chemical substances. These

efforts include converting underground piping, pits and tanks to above-ground facilities, and conducting thorough inspections. For underground tanks that have still not been moved above-ground, we work to prevent leakage by performing thorough inspections, including ultrasonic tests and measures to prevent corrosion.

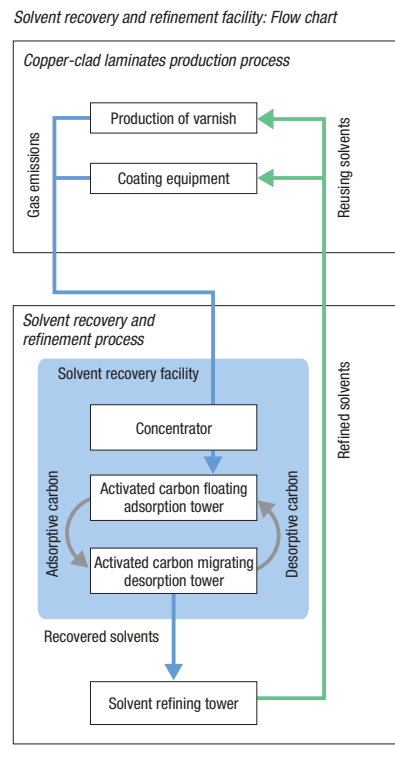
The Hitachi Group conducts surveys of soil and groundwater in accordance with the law, and works to respond rapidly in the event of contamination being detected at any part of a site. At about 90% of the approximately 200 sites that have been prohibited from use due to contamination, either clean-up operations have been completed or we have confirmed that no problems remain. At the remaining sites, we are continuing with clean-up measures. At sites where clean-ups have been completed, we are continuing to monitor the groundwater quality.

Trends in Emissions for Substances Targeted for Reduction



Total emissions volumes include emissions that are directly discharged into the atmosphere and public waterways as well as emissions eventually discharged into the environment through waste, etc.

Example: Hitachi Chemical Co., Ltd.



Solvent recovery facility



Waste Reduction: Hitachi Group Targets and Results

Many types of waste are generated from business activities. Japan is in a serious state of affairs, with little remaining space in landfills. According to calculations, landfill sites in the Tokyo metropolitan area will be full in 1.1 years, and nationally, in 4.3 years.*1

The Hitachi Group is working to reduce the amount of waste going to the final landfill, by promoting the "three-Rs" of reduce, re-use and recycle. Our previous reduction targets were to reduce waste volume to below 80% of fiscal 1998 levels by the end of fiscal 2005, and below 70% by the end of fiscal 2010. In fiscal 2003, we achieved a reduction to 69%. The key factors that helped us realize our plan included, among other things, reducing the amount of packing materials used by simplifying our packing, reusing cleaning cloths of machine parts in the manufacturing process by washing, and recycling effluent treatment sludge and incineration ashes by using them as raw material for making cement.

The Hitachi Group defines "zero emissions" as having "1% or less of the total

waste generated in a given fiscal year going to final disposal sites, and the volume going to final disposal of less than 5 tonnes per year," and is working to achieve this objective. During fiscal 2003, the number of facilities achieving zero emissions rose by 23, making a total of 42 overall.

We are tackling a number of extensive initiatives in this regard. Examples of new improvements include reducing computer printing by using electronic data procedures more; improving the rate of reusing of resources by fusing incineration ash and using it as base material for road building and river bank reinforcement; and developing new routes to handle recycling by more thoroughly separating waste and by rethinking conventional methods of handling recyclable materials.

*1. From research by the Japan Ministry of the Environment implemented in 2004 (from analysis of fiscal 2001 data).

Supervision of Proper Disposal

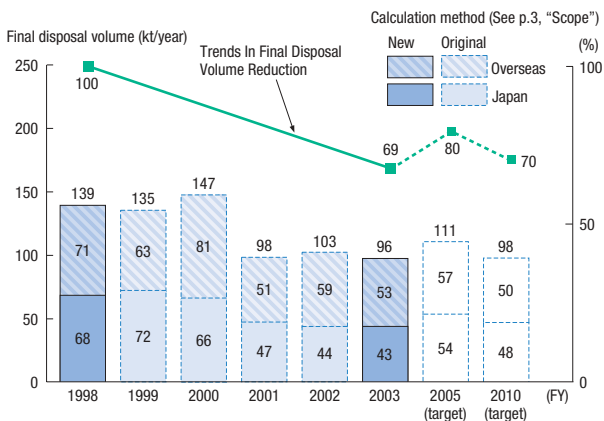
The Hitachi Group called together key personnel from sales departments and held

practical seminars on waste disposal. Participants conducted case studies of waste disposal situations, with the aim of gaining an understanding the relevant legislation. By having the key personnel who work at the front line and who deal directly with the customer deepen their understanding about the handling of waste, which is the final stage of a product or service, the Hitachi Group is not only making an effort to be thorough in controlling waste within the Group; these efforts also make it possible to promote the proper disposal of waste through cooperation with customers.

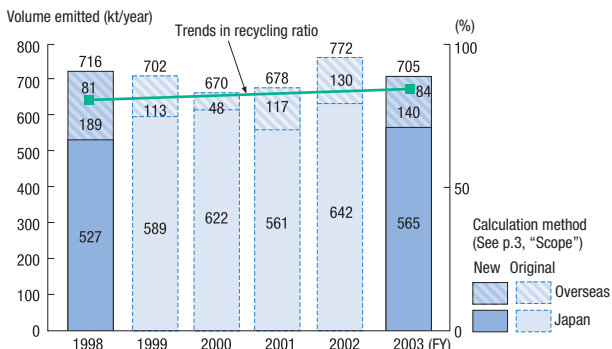
Efficient Use of Water Resources

We are making an effort to reduce the amount of industrial water used, such as by recycling of cooling water and improving production efficiency. In particular, Hitachi Displays, Ltd. has introduced equipment of ion exchange, reverse osmosis membranes, and ultrafiltration. Through such initiatives, the water use volume of the Hitachi Group in fiscal 2003 was reduced to 76% (compared to fiscal 2001).

Trends in Final Disposal Volume Reduction



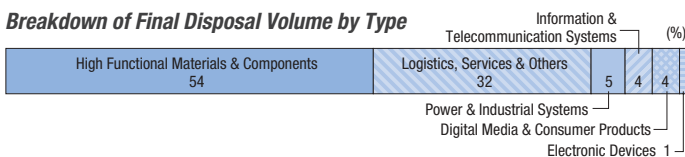
Trends in Waste Emissions



Breakdown of Recycling Methods



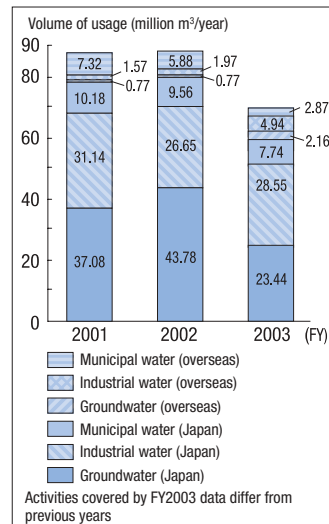
Breakdown of Final Disposal Volume by Type



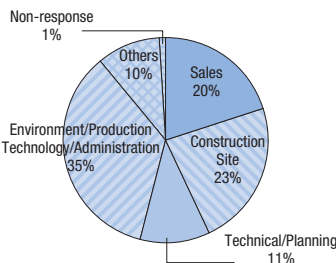
Waste Management Practice Seminar



Trends in Volume of Water Usage



Breakdown of Participants



Worldwide Stakeholder Collaboration

The Hitachi Group is committed to communication with all its stakeholders in order to develop a shared sense of values, and to identify the synergies that will help create a sustainable society.

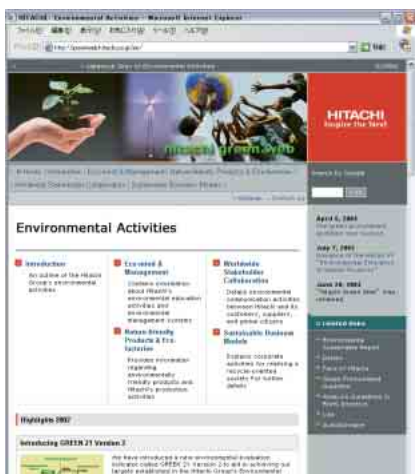
Environmental Communication

At Hitachi, we are committed to environmental communication with our stakeholders through the dissemination of information and mutual dialogue, so that the mutual understanding gained and the opinions received from stakeholders can help us to improve our environment-related efforts and contribute toward the goal of sustainable society.

Communicating through Environmental Sustainability Report and Hitachi's Internet Web Site

We have published an Environmental Sustainability Report since 1998. In fiscal 2003 we published a combined total of 25,000 copies in English and Japanese. In addition, Hitachi's Internet web site is continually updated with specific data and the latest information.

Hitachi Group Environmental Activities Website



<http://greenweb.hitachi.co.jp/en/>

Highlight of Environmental Communication Activities (FY2003)

Activities	Number of times
Environmental Sustainability Reports	approx. 30,000 copies issued
News releases	9
Media correspondence	23
Questionnaire correspondence	31
"Environmental town meetings"	1
Lectures	4
Contribution of articles	6

Exhibiting at "Eco-Products 2003 Exhibition"

We were happy to put 32 of our newest technologies and products on display at the Eco-Products 2003 Exhibition,*1 Japan's largest environmental exhibition. The title of our exhibit was "Next Eco-Together with Hitachi Towards an Ecological Future." Our exhibit featured portable solar cells, dye sensitized solar cells and other new products and technology, and was quite a popular site among visitors.

*1. Eco-Products 2003 was sponsored by the New Energy and Industrial Technology Development Organization (NEDO), the Japan Environmental Management Association for Industry, and Nihon Keizai Shimbun, Inc., and was held December 11 through December 13 at Tokyo Big Site.

Running Eco-Poster Contest

The Hitachi Group holds an annual eco-poster contest as part of our overall effort to communicate with the public about environmental issues. In 2003 the contest theme was "Dear Earth Eco-Posters," and we received 247 entries depicting thoughts about our irreplaceable earth. The 30 posters that passed the initial

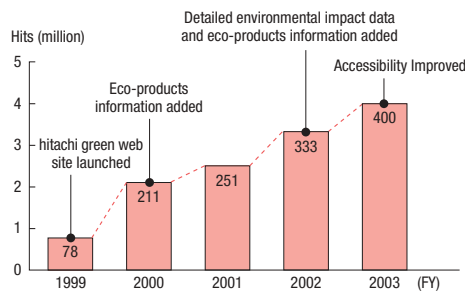
review were displayed at our booth at the Eco Products 2003 Exhibition, and were then voted on by the 4,770 visitors who came to our booth during the exhibition. We then selected winners based on visitors' votes and an evaluation of each poster's message and creativity. The winning posters are on the covers of this report as well as the Hitachi booklet titled "Eco Stories for Everyone." 

*1. The call for posters was announced from September 19 through November 21, 2003 on Hitachi's Web site, in newspapers, on environmental portal Web sites, and at schools.

Interacting with Government and Universities

In fiscal 2003, we held discussions about environmental issues at a training session for City of Yokohama municipal employees and at lectures at both Sophia University and Kanto Gakuin University. The discussions included our Environmental Sustainability Report and other materials. We plan to incorporate the participants' opinions and impressions in future environmental activities.

Web Site Access



Environmental Reports Published, by Site

	FY2001	FY2002	FY2003
Published on behalf of individual companies and company groups	12	19	19
Published by designated sites	4	6	9

Information disclosure via the Internet, by Site

	FY2001	FY2002	FY2003
Published on behalf of individual companies and company groups	27	41	38
Published by designated sites	5	4	4

* Companies covered by FY2003 data differ from previous years due to recent changes in organizational structure.

Eco-Products 2003 Exhibition



The Hitachi Group booth



Voting Corner of "Dear Earth Eco-Posters"

A Training for Yokohama Municipal Employees



Environmental Town Meetings

Since 2001 the Hitachi Group has held what we call “environmental town meetings” for stakeholders. These meetings involve direct dialogue with our stakeholders, and not only give them a chance to better understand our environmental efforts, but also provide us with an opportunity to receive valuable feedback to then use in formulating the Hitachi Group’s environmental program. The 2003 environmental town meeting was jointly held with the popular environmental information Internet portal site “Kankyo goo” on September 11, 2003, and included 27 of the site’s users with Hideto Kawakita, representing the organization IHOE, serving as moderator. At the meeting we were able to hear participants’ opinions and impressions about our previous year’s Environmental Sustainability Report and discuss Hitachi’s core environmental activities (GREEN 21, eco-products, and environmental solutions). Participants then wrote down their opinions and overall ratings of the activities. This was followed by responses from Hitachi representatives, and further discussion.

Participants later commented that the meeting gave them a better understanding of Hitachi’s environmental stance and that they appreciated the two-way nature of the meeting. Some participants also suggested we hold similar meetings both in different regions of Japan and for users of other Internet sites. We will use this valuable feedback to improve our environmental activities and communication. Going forward, we will augment our Environmental Sustainability Report by utilizing the Internet as a medium to provide the public with accurate information.

<http://eco.goo.ne.jp/hitachi/meeting/> (Only in Japanese)

Post-Meeting Comments by Facilitator

I suggest the following three steps for making the Environmental Sustainability Report more effective in communicating Hitachi’s environmental stance to the public. First, the report could be structured differently. Compliance with guidelines is great if achieved, but you should try to organize the report in a way that makes it easier for readers to understand. Next, you should include comments from employees actually working on the issues presented in the report. If you show the actual people in charge, this leads to a better sense of product quality. Finally, in addition to company headquarters, meetings should be held at both regional offices and affiliated companies. Having the head office do everything makes ordinary people feel like the company is disconnected from civil society.



Hideto Kawakita

Representative of IHOE (Research Institute for People, Organizations, and the Earth)

Response from Hitachi Corporate Environmental Policy Division

Concerning the first suggestion, annotations and a glossary were added to this year’s Environmental Sustainability Report to make it easier to understand. We also tried to make the report more objective by including comments from our customers.

Regarding the second suggestion, we have added information obtained through direct interviews with product designers those Hitachi employees involved in launching the businesses. Going forward, we will add features about employees involved in our environmental activities on the Hitachi Web site and elsewhere.

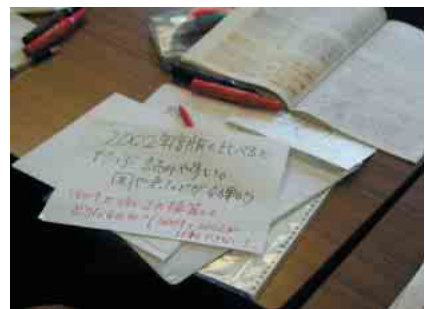
Concerning the final suggestion, we are considering the idea of holding future meetings at our production facilities and other locations, and asking for input on more specific topics.



Participants grading the Environmental Sustainability Report



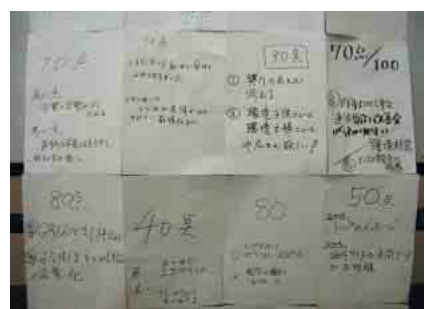
Attendees asking many straight questions



An opportunity for Q&A and exchange of opinion



Participants stating their expectations and opinions



Post-meeting, participants gave scores and comments

Sustainable Business Models

The Hitachi Group is working to contribute to sustainable society through various efforts, such as products and services that incorporate sound material cycles; programs that support recycling industries; and systems that provide energy cycles.

Resource Recycling The Inspiration to Achieve Zero Emissions

Japan's Home Appliance Recycling Law was enacted with the goal of encouraging the efficient use of resources. Tokyo Eco Recycle Co., Ltd.*1 handles about one-quarter of the volume of four categories of items covered under the Law (air conditioners, televisions, refrigerators, washing machines). The company handles about 300,000 items per year in Tokyo, and in 2003 sent only 0.1% of the total to landfill, meaning that in effect it achieved "zero emissions" of waste.

The disposed appliances brought to this handling facility are first disassembled on the principle that "if it's mixed, it's garbage, if it's separated, it's a resource." Because there are many makers and models, this work must be done by hand. While keeping in mind the cost of selling the disassembled parts, the greatest effort is made to be efficient in the process in order to take as much apart as possible. In addition, the company also makes recommendations on methods to utilize the

materials that arise from this work. Waste plastics, which in the past were mostly incinerated as waste, are now handled by the Neomaterial Center of Hitachi Taga Electronics Co., which forms them into pellets, which are then used as bases for washing machines. The flame-resistant properties of television cabinets are exploited as distribution boxes for railway. Thus, by thinking in new ways about how to use materials, these companies are turning what was once waste into new resources.

*1. Established in 1999 with 51% of capital contributed by the Hitachi Group.

Recycling and Re-Using PCs

Depending on how many years they have been in use, old computers are treated as either "used" (for re-sale) or are recycled to generate new resources. But because each handling route entails different costs, labor and costs, there was always the risk of used computers being dumped illegal. Tokyo Eco Recycle Co. started a service in which it collects used computers from corporations. Then, it dismantles some

of them the same way as with appliances and recovers their resources, and it turns the reusable ones over to the used-products market for sale. By handling both recycling and reuse together, this company has made it possible for corporations to reduce disposal costs by about two-thirds.

Recycling Storage Products from Europe

In the European market, the Directive on Waste Electrical and Electronic Equipment (the WEEE Directive) will make the collection and recycling of this equipment mandatory before August 2005. For storage products (external memory devices) sold in the European Union by the Disk Array Systems Division of Hitachi, Ltd., an all-in-one system is now operating to collect, re-use and recycle at a logistics center in the Netherlands. Equipment for disposal is contracted out for recycling to a company that has been authorized by an industry organization in the Netherlands. We will work to expand such systems to comply with legislation in each EU country.

Tokyo Eco Recycle Co., Ltd.



"I believe this is a significant and pioneering endeavor."
(Kenji Baba, CEO, Tokyo Eco Recycle Co., Ltd.)

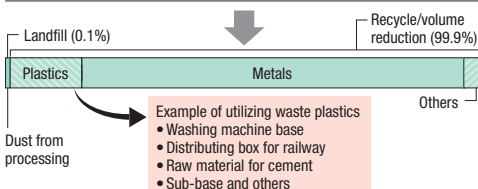
Disassembling by Hand



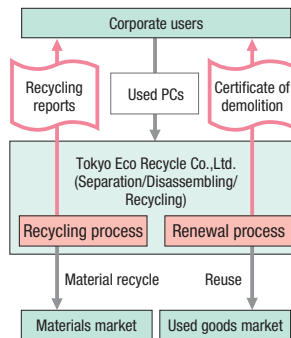
Disassembling of washing machine by hand

Components collected by disassembling by hand

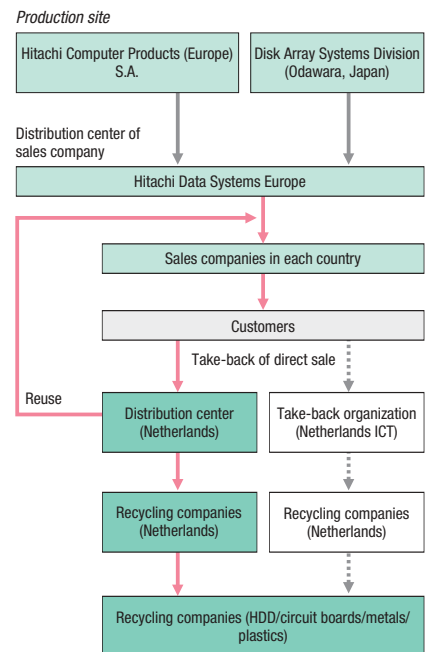
Type of household electric appliances	Number of processes needed for disassembling	Major components collected
Air conditioners	14	CFC refrigerant/Heat exchanger/Compressor/Condenser/Motor/Sound absorption material/Brass valve/Transformer/Indoor equipment cabinet/ Others
TV set	17	CRT/Aperture grill/Circuit board/Speaker/Degaussing coil/Deflection yoke/Sound absorption material/Electron gun/ Others
Refrigerator	12	CFC refrigerant/CFC insulator/Compressor/Refrigerator oil/Glass/Condenser/Vacuum insulator/Packing/Vegetable compartment case
Washing machine	15	Washing tank/Motor/Balancer (salt water)/Impeller blade/Hanging rod/Condenser/Cabinet cover/Cabinet base/ Others



Flow of Processing Used PCs



Flow Chart: Take-Back and Recycling of Storage Products in the Netherlands



Refurbishing and Re-Using Construction Equipment

Equipment such as power shovels and excavators are indispensable in the construction business. They are large and specialized machines, and if one does not respond precisely to contingencies in each situation, it is not possible to build a recycling model. Hitachi Construction Machinery Co., Ltd. is expanding a business based on the proper after-sales maintenance of equipment, and also the collection, refurbishment and sales of used equipment. Meanwhile, to expand the market for used construction equipment, Hitachi Construction Machinery Trading Co., Ltd. has created a database of used equipment, and system for selling it overseas by the Internet. These are businesses that aim to effectively utilize used construction equipment, which has been produced with a large amount of energy.

Recycling Businesses in a Car-Dependent Society

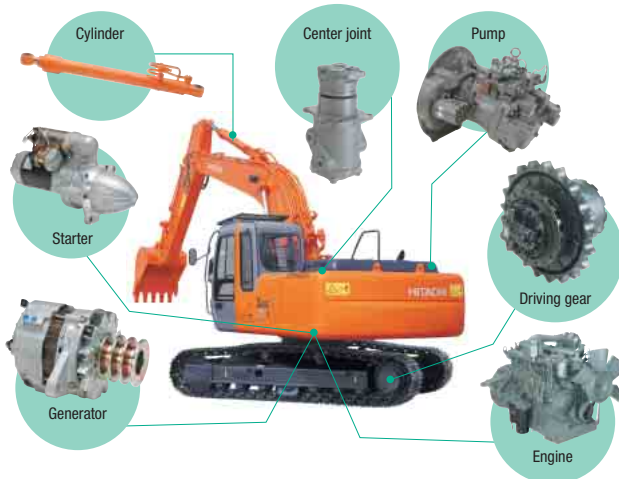
Hitachi Automotive Products (USA), Inc. is promoting a recycling business in which it manufactures and sells automotive parts in the United States. It collects used parts that have been removed from automobiles, such as generators, and starters, etc., then processes them by disassembling, cleaning, cutting and plating, etc. It assembles and adjusts them to the original performance of a new product, and supplies them to the market as refurbished goods. The company has won the trust of customers thanks to its accumulation of refurbishing technology and quality control. Over the years the company has expanded the number of products handled as well as sales (to U.S.\$6 million per month, three times more than in fiscal 1994). The company has also taken proactive steps to cut the amount of waste arising from business activities, and received the Waste Reduction Award from California State in fiscal 2003.*1

*1. Officially known as the Waste Reduction Awards Program. The company was recognized for reducing waste such as through the refurbishing of automotive parts and recycling of cardboard boxes used in those processes, amounting to 1.3 million tonnes per year (worth about U.S.\$1.2 million), and was selected as one of the top ten candidates from among 2,500 companies that applied.

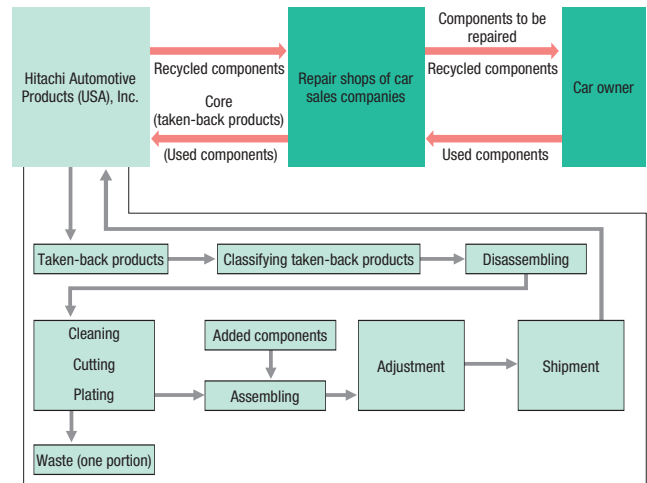
Biodegradable Plastics: The New Focus

Biodegradable plastics are interesting from the view point of sustainable materials, because they can be resolved into water and carbon dioxide in the soil. They can be made either from petroleum or from natural sources, but from the perspective of being "carbon neutral,"*1 bioplastics made from natural sources are attracting considerable interest. Toyota Motor Corp. has developed a polylactic acid derived from agricultural product (sugar cane), and is already applied to bioplastics such as for floor mats of passenger cars. Hitachi, Ltd. possesses high viscosity liquid processing technology, and, combined with Toyota Motor Corp.'s basic process know-how, is

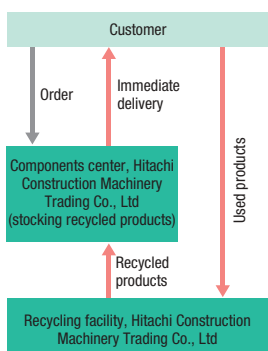
Reusing Parts of Power Shovel Equipment



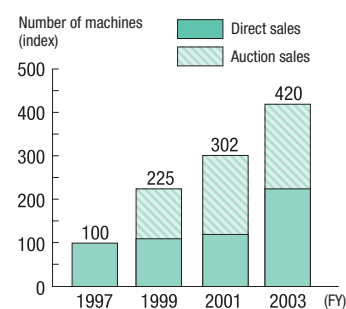
Recycling Automotive Components: Flow Chart



Recycling in Construction: Flow Chart

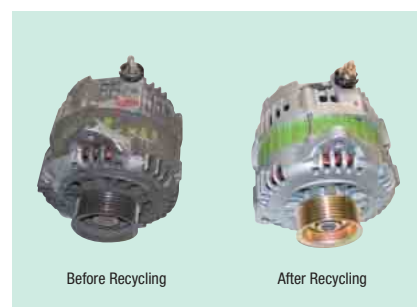


Trends in Sales of Used Construction Equipment



• Source: Hitachi Construction Machinery Trading Co., Ltd.

Taken-back Automotive Components (Generator, Before and After Recycling)



Waste Reduction Award



now constructing a plant that will produce high quality polylactic acid. Because the plastics produced from this plan will be carbon-neutral, it will reportedly have a low environmental impact. Hitachi predicts that in 2015, 5% of plastic in the world will be replaced with biodegradable plastics, and expects an expansion of the business of polylactic acid production.

*1. A substance that has no impact on increase or decrease of carbon dioxide.

The μ -Chip: A Key to Information-Based, Recycling-Oriented Society

To support the world's trend towards information-based societies, Hitachi, Ltd. has developed what it calls the μ -chip ("myu" chip), a 0.4-square-millimeter integrated circuit chip containing an embedded antenna that is among the world's smallest such chips. It is capable of sending 128-bit data (38-digits) to a remote reader. It can be incorporated into bills (such as currency and coupons), and is seen as

a technology that can help to prevent forgery. Its external antenna type has been adopted for use in entrance passes for the 2005 World Exposition to be held in Aichi Prefecture in 2005. With a view for the introduction of the μ -chip in the entrance passes, the chip was assessed using the environmental impact assessment program known as System Integration-Life Cycle Assessment (SI-LCA), which uses System Integration (SI) developed by Hitachi, Ltd. The results showed that compared to conventional entrance passes, the environmental impacts, calculated in CO₂ equivalent, could be reduced by 11%. With the capability to control materials data for each part of a product, the μ -chip has large potential for use in a recycling-oriented society.

Energy Cycles Development of the Energy Cartridge Fuel Cell

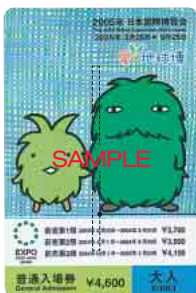
Fuel cells, which operate on the reverse principle of the electrolysis of water, are considered as one of the promising

electricity generating technologies that are clean and sustainable.*1 Hitachi, Ltd. is working to develop a portable fuel cell that generates electricity by supplying a methanol solution and air to electrodes. One of the obstacles was improving the energy output capacity; however cumulative improvements in nanotechnologies made it possible to create a trial concept model that uses a cartridge as a supply system of fuel.*2 Still, a constant challenge is ongoing to apply the technology in practical uses as early as possible, so that it can be a power generation system that will work "anytime, anywhere," for the whole range of portable devices such as mobile computers. (First sales are expected in 2006.)

*1. A reaction of methanol (methyl alcohol) and air emits only water and carbon dioxide.

*2. The cartridge technology is being developed in cooperation with Tokai Corporation.

The 2005 World Exposition Entrance Ticket



" μ -chip" and external antenna

Fuel Cells



PDA concept model with electrode imbedded. The green tube is a cartridge containing methanol solution.



Concept model with electrode attached. It can be used for PCs made by other companies.

Total Circulation

A Proposal for an Environmentally-Friendly City of the Future Light City Tokyo Project

Hitachi Group is tackling the design of urban models for the future, including energy creation and materials circulation systems. As one example, Hitachi, Ltd. created a volunteer project team and conducted research over a period of three years. It created an urban model called the "Light City Tokyo" and won a prize in an international competition in 2003.*1

This model proposes a vision of a city that exists in harmony with the environment and evolves flexibly. In the near future, the Hitachi Group will be working with the aim of providing new technologies, such as to create efficient transport systems and networks, and to optimize the creation and consumption of energy at a regional level.

*1. This was a plan made by a team consisting of volunteers from the Hitachi, Ltd. Design Division, architect Prof. Motomu Uno (Chiba University), and Keizo Ikemura (Phase Associates). They envisioned the future of the Chuo Ward of Tokyo and other areas. Their concept was entered into an international competition on Sustainable Urban Systems Design at the 22nd World Gas Conference Tokyo 2003, and won the Special Jury Award.

Features of the Light City Tokyo urban model

- Sophisticated infrastructure is combined with buildings that are light and can be modified as lifestyles change.
- Uses information technology to reduce environmental impacts, while maintaining convenience levels.
- Maintains spiritual and cultural values while maintaining functionality and convenience.
- Creates extra time by locating work and home more closely together, enabling a diversity of lifestyles.



A Vision of "Light City Tokyo"
(Aerial photo credit: Chuo Ward, Tokyo)

An expansive green zone is built up over 100 years in the Hama-Rikyu bayside area of Tokyo. Urban greenery is cared for by the citizens, and the living environment is resplendent in greenery as it was hundreds of years ago in Edo (what is now Tokyo).

The Hitachi Group has a five-part program in place as part of its overall goal of contributing to society as a "Best Solution Partner." In this section we report on the key activities of fiscal 2003.

Contributing to Society through Business Activities

Social Contribution through Technological Innovation

The Hitachi Group aims at contributing to the growth and prosperity of the next generation. To this end, our research teams are constantly involved in cutting-edge research and development (R&D) in a wide range of fields including electronics, nanotechnology, medicine, and biotechnology. These technologies are used in ALS (amyotrophic lateral sclerosis) patient communication equipment and other nursing care devices as well as applied in human genome analysis and other medical and life science fields.

We are also making progress in other technologies in completely new disciplines that will provide people with more convenience and peace of mind in the near future. These include security technology based on a biometric authentication system using finger vein patterns, portable fuel cells and other energy-creating technologies, as well as nanoimprint which will make mass production of microfabrics possible.

 Hitachi Kokodemo Hakken!
<http://www.hitachi.co.jp/inspire/hakken/index.html>
 (Only in Japanese)

Promoting Universal Design

Universal design refers to designing products that can be easily used by all people, regardless of age, gender, or physical abilities. As Japan becomes an increasingly older society, basic R&D in this area underscores our commitment to provide goods and services that are truly beneficial to our customers.

For example, in the process of developing elevators, we invited a wide range of users, including individuals with disabilities, to assist us in performing a detailed usage study and to evaluate new prototypes. With these individuals' help, we assessed the effectiveness of proposals by identifying places that needed improvement and other potential needs. As a result, we were successful in developing an elevator accessible to a wider range of people. We have also applied universal design in designing home appliances and information devices.

Participation in the International Association for Universal Design

In November 2003, the International Association for Universal Design was established as a body working across various sectors and types of organizations to promote the use of universal design. Hitachi has taken a role as a leading company in this organization, serving as a member of the board in addition to being chair. Through active participation as a company leading the promotion of universal design in the public and IT sectors, Hitachi aims to build a platform whereby contributions to society can be made through the sharing of both technology and experience.

Quality Assurance Initiatives

"Quality First" is the Hitachi Group's fundamental stance on quality assurance. Hitachi believes that quality control in upstream processes is important. To this end, all aspects of production, from the initial planning stage, are carried out with quality, usability, safety, and environmental-

ALS Patient's Communication Equipment



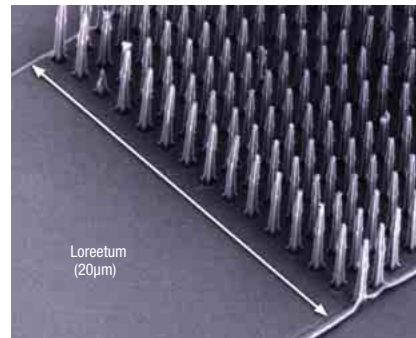
This device assists amyotrophic lateral sclerosis (ALS) patients in writing and using PCs.

Biometric Authentication System using Finger Vein Patterns



This system realizes higher security by using authentication method to read finger vein patterns.

Nanoimprint



Nanoimprint technology is a new technique to fabricate nano-scale patterns on biochips and LSI integrated circuit, etc. We plan to expand this technology to the fields of medicine, biotech, and more.

User Examination



Implemented a trial using test refrigerator model for wheel chair user.

Example of Universal Design



"New Urban Ace" is an elevator with high design quality and high usability for everyone.

Symbol of the International Association for Universal Design



friendliness in mind. Quality is further assured using our interactive, total quality assurance system in which post-sale information and knowledge gained from field data and after-service activities are used in the development of new products.

Boosting Customer Satisfaction

The Hitachi Group is working to realize management practices from the viewpoint of its customers. The Hitachi Customer Satisfaction Improvement Committee, composed of managerial level staff from the president down, holds periodic meetings to devise ways of working in conjunction with the Hitachi Group's various business areas while simultaneously supporting activities in each of these areas. The committee has adopted the objective approach called for under Japan Quality Awards (JQA)*1 as a concrete measure for promoting innovation in business operations.

The Hitachi Group has also established Call Centers across the organization. These Call Centers play an important role in enabling us to respond to questions, requests,

and emergency needs of customers.

*1. Established in 1995 by the Japan Quality Award Council, sponsored under the auspices of the Japan Productivity Center for Socio-Economic Development to recognize management innovation made with customers in mind.

Recognition and Awards

At the 37th WorldSkills Competition (June 2003),*1 the Hitachi Group's team of five employees competed with skilled technicians from 37 other countries, demonstrating their skill as they won one gold medal (electrical assembling) and one silver medal (construction steelwork).

As for technological innovation, Hitachi, Ltd. fellow Hideki Kanbara won the 2003 Asahi Award*2 for his work in developing a high-throughput DNA sequencer. Also, Hitachi's work with μ -chips (pronounced as "myu" chips) was recognized for its innovative business aspects, winning it the Nihon Keizai Shimbun Award (The Best Product Award) presented by the Nihon Keizai Shimbun, Inc.

Hitachi's overall sustainability efforts were recognized by being selected as one

of the components in the 2003 Dow Jones Sustainability Index,*3 which evaluates corporate activities from the perspective of sustainability.

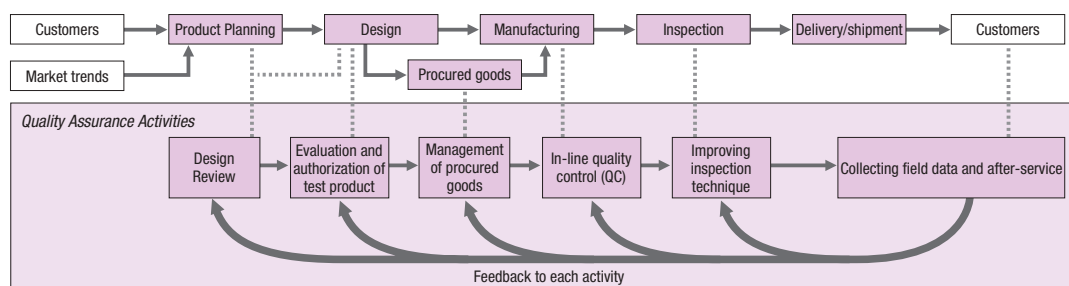
*1. Held bi-annually, and formerly known as the "Skill Olympics," this is a competition where hundreds of young people gather to compete and test their skills in various trades.

*2. Sponsored by the Asahi Shimbun Foundation. Awarded to individuals and groups prominent in academics and the fine arts. Other 2003 award recipients included Ikuo Hirayama (President, Tokyo National University of Fine Arts and Music), Saichi Maruya (writer), and Yasushi Miyashita (Professor, University of Tokyo Graduate School of Medicine).

*3. Officially known as the Dow Jones Sustainability World Index. This index measures efforts towards sustainability. It was co-developed by Dow Jones Indexes (U.S. company that computes stock indexes) and SAM Sustainability Group (Swiss research institution that studies corporate sustainability). 317 companies from across the world (including 35 Japanese companies) were selected in 2003.



Quality Assurance Activities System



Call center

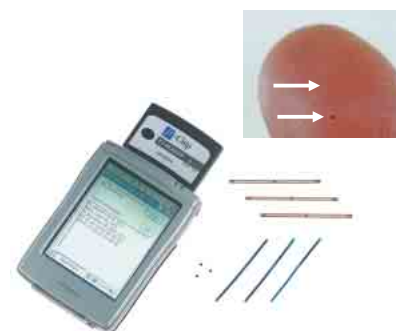


Control center monitors and controls buildings 24 hours a day and responds to emergency calls.

Examples of Awards in FY2003



Hitachi staff in competition at The 37th WorldSkills Competition



The μ -chip won "Nihon Keizai Shimbun Award" (Best Product Award)

Information Disclosure, Ethics and Human Rights

Compliance with Laws and Regulations

While the Hitachi Group was neither fined nor penalized in fiscal 2003, we did receive orders from both Aomori and Iwate prefectures based on the Waste Disposal and Public Cleansing Law. In this incident, 14 cubic meters of plastic scrap were taken by a waste collection service, processed, and then 28 kilograms of the incineration ash were illegally dumped by the company we commissioned to take care of final disposal. We assumed responsibility as the source of the original plastic scrap. We fully accepted the orders to resolve the issue, discussed the matter with both prefectures, and duly fulfilled our obligations in August 2003. We have since taken measures to enhance both employee training and our management and checking systems to prevent this type of incident from happening again.

Other environment-related complaints received in fiscal 2003 included six written and two oral complaints from public authorities, and 15 complaints from the

public about issues including odor and noise. All complaints were dealt with to prevent recurrence.

Raising Ethical and Compliance Standards

The Hitachi Group has long included "activity in accordance with both laws and proper company ethics" and "fair and orderly competition" in its basic corporate philosophy. The Hitachi Group regularly conducts internal audits of environmental disaster prevention, accounting, bidding on public projects, export management, and other relevant operations.

Hitachi, Ltd. established a Compliance Division chaired by the Executive Vice President and Executive Office in February 2002, and introduced an internal whistle-blower system in April 2003. We produced an Ethics Handbook in March 2003 and distributed it to all employees for group study. A supplementary e-learning platform has also been developed. Guest lecturers from outside the company were also invited to speak at seminars designed to raise the ethical awareness of

executives and employees alike.

Security: Handling Risks

The Hitachi Group gives high priority to ensuring the safety of our employees and their families. Hitachi established a Risk Management Department in October 1991 to promote safety awareness.

In fiscal 2003, the war in Iraq and the outbreak of SARS posed safety risks. Regarding Iraq, we kept a close eye on U.N. resolutions and issued "Risk Management Department Alerts" which gave specific instructions on how to keep safe. At the outbreak of SARS in China, Hitachi China reported promptly to the Risk Management Department. We issued warnings in February and were able to work with the divisions concerned to respond quickly. We also rebuilt our satellite communications system in preparation for a possible major earthquakes in Japan.

We will continue to maintain our state of emergency preparedness in order to ensure safety and ensure smooth business operations.

Hitachi Ethics Handbook

Contents

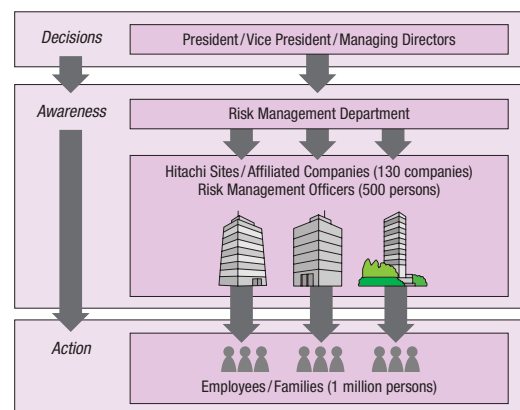
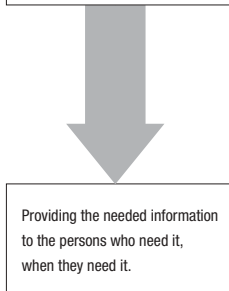
1. Relationship with society
2. Quality assurance and sales activities
3. Handling of other companies' trade secrets
4. Compliance with export related regulations
5. Respecting engineers' ethical standards
6. Relationship with suppliers and business partners
7. Procurement activities
8. Use of privileged information and prevention of insider trading
9. Creation of a good working environment for everyone
10. Handling of Hitachi's internal information
11. Handling of company assets
12. Business gifts and entertainment
13. Full implementation of rules and self-audits



Hitachi Ethics Handbook

Risk Management System

- Centralized control of information
- Simple organizational structure
- Direct line with top management



A Three-Step Process: Decision, Awareness, and Action



Guest lecture on corporate ethics (Nov. 2003)

e-learning Web Site



Harmony with Local Communities

Hitachi Group's Philosophy and Policy on Social Contribution Activities

Hitachi runs programs aiming to benefit society at large, and they also contribute to our continued growth and vitality. Hitachi believes they are an effective way to develop common values throughout Japan and the world, to build strong ties with people and to gain their trust.

Philosophy

The Hitachi Groups strives to demonstrate its corporate citizenship in response to social needs and expectations, while endeavoring to enrich the quality of life and realize a better society.

Policy

The Hitachi Group promotes various social contribution activities to build a vibrant society based on fostering leadership to implement reformation for the next era. This is achieved by making optimal use of our knowledge and information technology in three specific areas, namely, education, the environment, and social welfare.

Hitachi's Social Contribution Philosophy and Examples of Programs

The Hitachi Group's social initiatives include activities by Group companies, employees and six foundations.

Engaging in programs that benefit society at large not only fulfills the Hitachi Group's social responsibility, but it also goes a long way towards raising Hitachi's brand value.

In fiscal 2003, Hitachi donated medical equipment to the Chinese government during its battle with SARS and also received the Emperor Showa Commemorative Blood Donation Promotion Award for its blood donation programs in place since the 1960s.

Hitachi encourages its employees to take part in volunteer activities. By participating in volunteer work and other community programs, Hitachi Group employees strive to improve themselves. Volunteer activities not only provide the community benefit but also serve to generate greater corporate strength. Specifically, we promote the support of

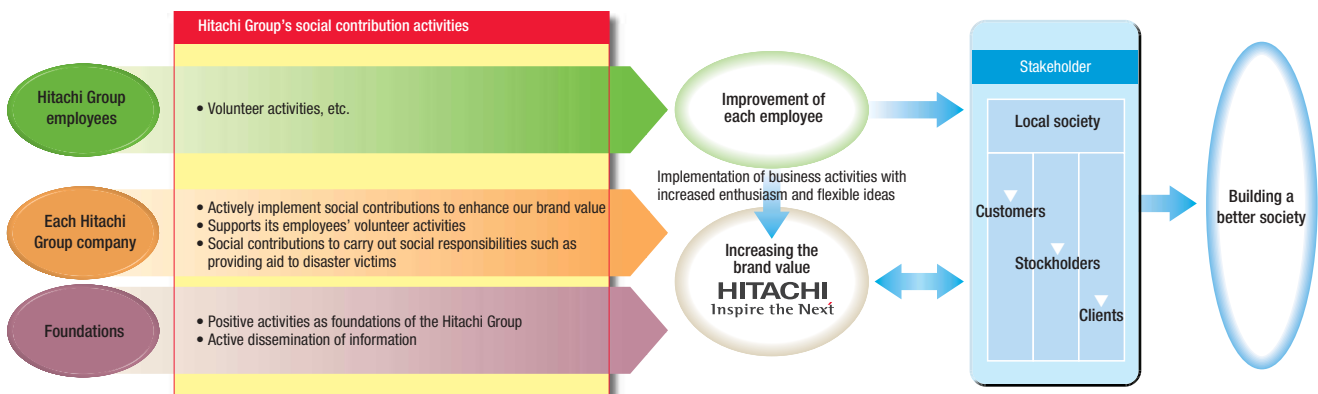
volunteer activities in three ways, namely by providing information, time, and funding. Information about volunteer activities is sent to Group employees over the company intranet and Hitachi holds hands-on "Hitachi Volunteer Seminars" and "Corporate Citizenship Evening Seminars" to give employees ideas about how they might get involved in volunteer work. Hitachi also operates a "Hitachi Volunteer Support Program" that provides donations to projects run by domestic non-profit organizations in which Hitachi employees participate. Hitachi also operates special paid leave system for employees who do volunteer activities.

For more than 30 years, the Hitachi Group's six foundations have also been active in contributing to a better society. Such efforts include childcare support and the promotion of science and technology.

The Hitachi Group's Six Foundations

- The Odaira Memorial Hitachi Education Foundation
- The Kurata Memorial Hitachi Science and Technology Foundation
- The Hitachi Scholarship Foundation
- The Hitachi Environment Foundation
- The Hitachi Mirai Foundation
- The Hitachi Foundation (U.S.A.)

Social Contribution Philosophy



Examples of Social Contribution Activities



Emperor Showa Commemorative Blood Donation Promotion Award

In July 2003, in appreciation of Hitachi's long-standing employee blood donation activities (in place since the 1960s), Hitachi received an award from Japan's Crown Prince Naruhito who serves as an honorary vice president of the Japan Red Cross Society.



Donation of Medical Equipment for SARS

In May 2003, Hitachi donated ten state-of-the-art portable X-ray machines to China. China's deputy health minister presented Hitachi with a certificate of honor.



Hitachi Volunteer Seminars

Four seminars were held during fiscal 2003. At the "Wild Bird Park Clean Up," participants were able to observe the plants and animals that inhabit Tokyo Bay's tidal wetlands.

Overseas Corporate Social Contribution Programs

The Hitachi Group promotes social contribution programs worldwide as part of its aim to be a trusted global corporate citizen.

Hitachi Young Leaders Initiative: Developing the Leaders of Tomorrow

The Hitachi Young Leaders Initiative (HYLI) aims to develop the Asian leaders of tomorrow. Founded in 1996, it selects 24 students from six Asian countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Japan) to participate in a five-day program of public forums, workshops, and local community work. The sixth HYLI was held in Bangkok in December 2003 under the theme "Charting a New Course for Asia," with discussions on economic engines, urbanization, and balance between growth and the environment. Participants also performed voluntary work by helping teach disabled persons in the community.

EU Hitachi Science and Technology Forum

Held annually since 1998, the EU Hitachi Science & Technology Forum invites experts from a wide range of disciplines to meet and discuss how science and technology can contribute to solving Europe's societal problems. In May 2003 the

forum was held in Antwerp on the theme "Energy and its Implications for European Society." The results of the Forum discussions were published in a summary report and distributed widely among European policy makers.

CFR-Hitachi Fellowship Program

Since 1997, Hitachi has been promoting a fellowship program with CFR*¹, an influential US thinktank in the field of foreign relations. In this program, Hitachi invites four or five American leaders of the next generation to Japan each year (a total of 20 participants to date) for research. The 2003 participants included a US government-affiliated thinktank researcher who studied Japan's economy and a US military personnel who examined security issues. Some fellows gave a presentation of their research results to Hitachi employees and others.

*1. Council on Foreign Relations.

Hitachi International School Teachers Exchange Program

In 1987, the Hitachi Group established a teacher exchange program (HISTEP*¹) to promote mutual understanding between Japan, the United States, and Europe in areas such as education, culture, and social issues. Each spring, seven teachers from junior high and high schools in Hitachi City and Hitachinaka City spend

two weeks in Europe or the United States, observing the local education system, teaching classes, and staying with a host family. Likewise, each summer, nine teachers from Europe and the United States spend two weeks in Japan on a similar program. Since its inception, 199 teachers have participated in the program. In 2003, the program was altered due to the war in Iraq, with only four teachers from Europe coming to Japan and no Japanese teachers going abroad.

*1. "HISTEP" stands for the Hitachi International School Teachers Exchange Program.

Recognizing Students: The Hitachi Foundation Community Service Award (Yoshiyama Award)

Each year, Hitachi presents the Yoshiyama Award* to ten high school seniors from across the United States who have demonstrated excellent community service leadership. In 2003, ten new recipients were selected for their wonderful efforts, including work to brighten the lives of children stricken with severe illnesses and participation in programs to help victims of domestic violence.

*1. The Yoshiyama Award was established in 1988 based on a donation from Hirokichi Yoshiyama (Chairman Emeritus, Hitachi, Ltd.) upon his retirement.

Examples of Voluntary Social Contribution Programs Overseas



Open forum of Hitachi Young Leaders Initiatives (Bangkok, Thailand)



2003 Annual meeting of CFR-Hitachi Fellowship Program (Washington D.C., U.S.A.)



Recipients of the Hitachi Foundation Yoshiyama Award (U.S.)



EU Hitachi Science & Technology Forum (Antwerp, Belgium)



School visit during HISTEP (Hitachi City and Hitachinaka City, Japan)

Biannual magazine "the Caring Tree"



"the Caring Tree" features Hitachi Group companies' social contribution activities around the world.

<http://www.hitachicontribution.com/>

Creating a Good Working Environment

Human Resources System: Bringing out our Employees' Best

Hitachi, Ltd. uses a fair and explicit evaluation system to assess each employee's ability and performance as part of the overall goal of receiving maximum contribution from employees. This type of evaluation system was adopted for managerial staff in fiscal 2000 and was applied to all employees beginning fiscal 2004.

This evaluation system measures the extent to which employees have demonstrated the "Hitachi Values," the set of values and action standards shared by all Hitachi employees.

Training our Employees

Since its inception, Hitachi, Ltd. has worked hard to develop employees based on the philosophy that "a company is its employees." All employee training (from new employee training to manager-level education) is done using "on-the-job-training"^{*1} and supplemented with

comprehensive "off-the-job-training."^{*2} The latter involves both on-site training and education at the various training centers specializing in management, technology, globalization, sales, production, and other disciplines.

Hitachi also supports employees' individual efforts to develop their skills. In 2003, the Company launched "Hitachi-Learning Gate," an e-learning system that employees can utilize to enhance their skills.

- *1. On-the-job-training involves developing the skills to perform a job through the process of doing the actual work.
- *2. Off-the-job-training involves comprehensive and systematic acquisition of knowledge and basic skills in specific advanced disciplines.

Hitachi Awarded for Promoting Self-Directed Learning

Hitachi, Ltd. received the fiscal 2003 Award of Excellence for Professional Development presented by the Japan Management Association. This award recog-

nizes outstanding companies that have become stronger as a result of employee development programs. Hitachi was selected based on its establishment of an employee development support system to develop self-sufficient individuals. This system is comprised of "Humanimate 21," a system that utilizes IT infrastructure to allow users to manage their own development on the Web, and an e-learning portal for self-directed studying. Both systems allow employees to actively assess their skills, learn, and develop their abilities as they pursue their desired career path. The JMA found this employee development platform to be particularly innovative.

Supporting Diversity

Hitachi, Ltd. is committed to providing male and female employees with the same professional opportunities and to maintaining a working environment that allows employees to balance work and family life, formally announcing an F. F. Plan^{*1} in March 2003. Also in March 2003, to address the recent problem of

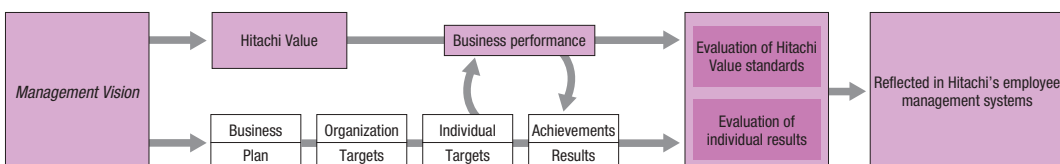
Training System

	Director	Division manager	Section manager	Manager	Planning staff
Management training	Level-based training				
	Executive development course				
	Issue / purpose-based Training				
Technical training	Advanced engineering Education		Professional Engineering Education		Basic engineering course
	Advanced SE Training		Comprehensive Engineering course		Hitachi Technical college
Globalization Training	Pre-departure training for expatriate				
	Training on international business				
	Language training				
Sales training	Sales skills training				
	Marketing training				
	Sales attitude training				
Administrative function-based training	Function-based training (finance/procurement/general affairs)				
Production training	Foreman Training				
	Basic skills training				
	Hitachi Senior Technical Highschool				
	Manager/Team leader				Specialist

Hitachi, Ltd. receives "JMA (Japan Management Association) HRD (Human Resource Development) Excellence Award"



Evaluation System for Managers



insufficient day-care facilities, the Hitachi Workers Union established a day-care center for children of Hitachi Group employees inside the Labor Union Center. This operation is supported by Hitachi Group companies in the vicinity.

The Hitachi Group also actively supports disabled employees. A normalization¹⁾ policy to expand the hiring of disabled individuals and to widen their occupational opportunities has been established, and in conjunction with this a special subsidiary Hitachi You & I program for employing only mentally disabled persons was created.

*1. Stands for Gender Free & Family Friendly Plan.

Health and Safety Knowledge and EAP

Hitachi, Ltd. has a basic policy regarding health and safety in place. It sets health and safety as the top priority, and to this

end Hitachi works to maintain high health and safety standards and to make further improvements in this area.

Hitachi, Ltd. makes good use of its knowledge regarding health and safety issues acquired over many years of promoting accident-prevention activities, including the areas of health and safety management, education, equipment, and the creation of safe work environments. In addition to passing this knowledge on so that it may benefit others, we have introduced our Occupational Health and Safety Management System as support for our systematic health and safety activities.

Hitachi is also proactive in keeping employees healthy. Medical specialists are available for health consultations and industrial health professionals are consulted for assistance as well.

Furthermore, beginning April 2003, an EAP¹⁾ (Employee Assistance Program) consultation system was launched to assist employees with any problems or

worries they may have. In-house EAP Centers were established whereby an in-house EAP professional helps employees solve personal problems and reinvigorate them by either visiting them in person at their workplace or by helping them over the phone or online. Feedback and opinions from the help sessions are then reported to management where they are used to make workplace improvements. This system helps to both rejuvenate individuals and strengthen the organization as a whole.

"Genki Club," a daycare center for children of Hitachi Group employees



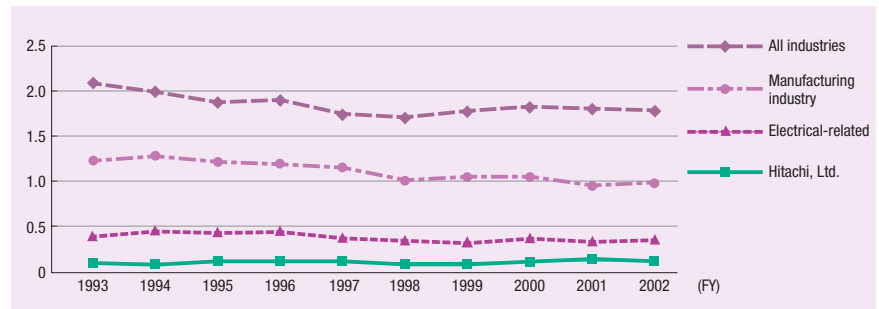
Basic Policy for Occupational Health and Safety

Basic Policy

While respecting human life and acting in accordance with the law, we are strengthening our platform of "continued growth into the 21st Century as a corporation overflowing with vitality" through health and safety activities based on the following universal standard evaluations.

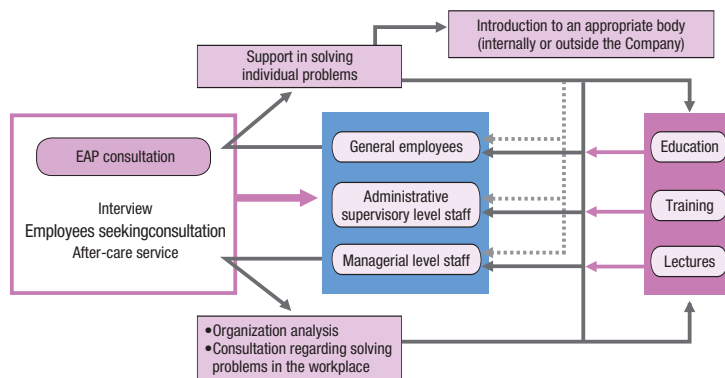
1. Construct a systematic safety management system, and urge managers to set examples for others.
2. Make genuine safety improvements to equipment and production processes.
3. Enhance safety awareness, and establish a workplace with good communication by improving safety education levels.
4. Ensure the physical and mental health of our employees and create a comfortable workplace.
5. Reinforce health and safety management at branch offices and production sites.
6. Strictly enforce countermeasures for dangerous management practices (promote disaster prevention activities against earthquakes, fire, and explosions).

Occupational Accident Rate (per 1 million hours)



An accident in the "all," "manufacturing" and "electrical" categories is counted when it causes worker to miss at least four days of work. For Hitachi, Ltd., the criterion is at least one day of work.

Outline of Employee Assistance Program



Expanding the Circle of Social Responsibility

Working with Suppliers for High Procurement Standards

The Hitachi Group procures a wide variety of raw materials, parts and services from companies worldwide. In doing so we try to ensure transactions are conducted fairly, and that goods and services are obtained properly, in the context of the norms of society, including the relevant national laws and regulations. We also try to consider the environment by promoting green procurement .

The Hitachi Group aims to conduct its procurement activities on an equal footing with the companies with which we do business, and in a way that enhances the corporate activities on both sides of the transaction. We strive to ensure that society is in no way harmed, and that specific individuals do not benefit by exploiting any business transaction.

To ensure fairness we published Guidelines for Procurement and Business Transactions, covering topics such as ensuring impartiality in business opportunities, transactions on an equal footing, fair conditions based on dialogue, and avoiding improper demands that exploit one party's negotiating position.

At the start of business relations, we make a mutual pledge to conduct business fairly and respect and carefully manage commercial and technical information that may be provided to the other party in the course of business.

To gain the highest trust in society and offer products and services of highest quality, the Hitachi Group also urges its suppliers to strive for continuous improvement in product quality and cost.

Guidelines for Procurement and Business Transactions



These guidelines provide the standards of conduct that must be observed by officers and employees of the Company for the external procurement of materials, products, services or information necessary for the operations of the Company

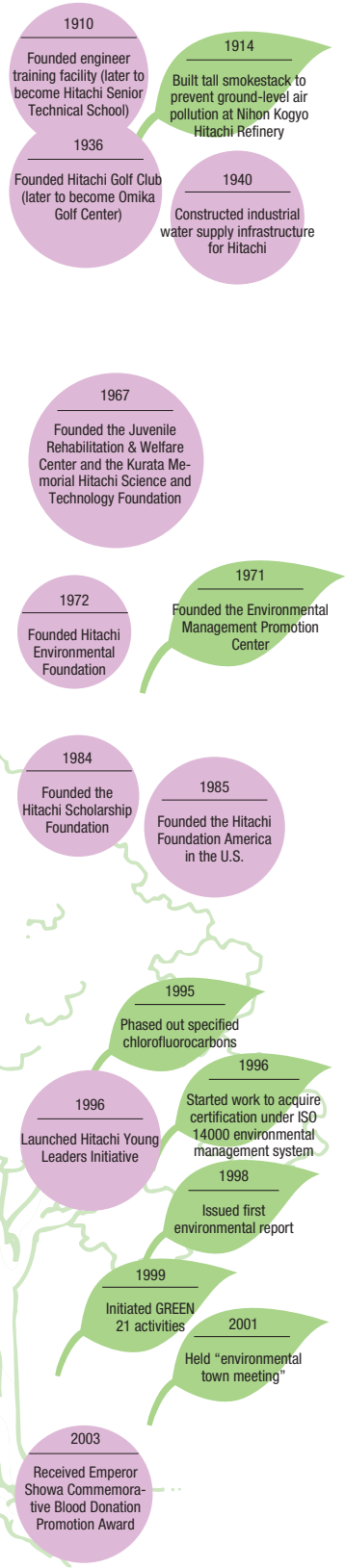
1. For procurement transactions, the entire Hitachi, Ltd. Corporate Code of Conduct (Regulation 2393) shall be the basis of all conduct.
2. Efforts shall be made from a long-term perspective to develop positive partnerships with suppliers, and to maintain and enhance mutual understanding and relationships of trust.

(continued)

History of Hitachi's Products and Technology, and Evolution of Environmental and Social Contribution Activities

Became a first manufacturer in Japan of three 5-hp (3.6775 kW) electric motors	1910
Manufactured Japan's first large DC electric locomotives	1924
Produced its first electric refrigerator	1932
Completed low-pressure 300 m ³ /h air separator	1953
Built Japan's first large cold strip mill	1954
Hitachi electron microscopes win grand prix at World Exposition in Brussels	1958
Produced electronic computers using transistors	1959
Developed fully automated clothes washer	1961
Built experimental nuclear reactor	1964
Built the first cars for Japan's Bullet Train (Shinkansen)	1964
Developed train seat reservation system	1964
Manufactured monorail, running between Haneda Airport and Hamamatsu-cho, Tokyo	1965
Began mass production of color television tubes using rare earth phosphor material	1965
Developed hybrid LSI (Large Scale Integration)	1968
Developed computer for controller's use	1968
Produced 300 m/min. elevators for high-rise buildings	1969
Developed on-line banking system	1969
Launched mass production of all-transistor color televisions	1970
Developed computer-aided traffic control system for Bullet Train	1970
Completed prototype of visual information processing robot	1971
Completed file storage device with 1GB capacity	1971
Commercial operation began at Japan's first 460,000 kW nuclear power station	1974
Succeeded in the world's first experiment of fiber optic communication systems	1976
Completed world's first field emission electron microscope with record-high resolution	1978
Completed 300 MW high-voltage direct current transmission between Hokkaido and Honshu	1980
Succeeded in world's first micro-level observation of magnetic field by the use of electron beam holography	1982
Completed Japan's first model of improved standard-type boiling water reactor	1984
Started mass production of 256-kilobit DRAMs	1984
Put "fuzzy logic" electronic controls to practical use	1987
Completed rear-projection large liquid crystal color display	1987
Developed 4-legged robot	1988
Developed world's fastest superconductive computer	1989
Developed MR imaging equipment using superconductive components	1989
Developed high-definition TFT color liquid crystal display	1990
Designed high-speed Bullet Train series 300	1993
Developed the original 32-bit RISC processor SuperH family	1994
Developed new ATM that presses and disinfects bills	1994
Developed Super TFT LCD module featuring ultra-wide viewing angles	1995
Developed rewritable, large-capacity DVD-RAM drive (4.7GB)	1997
Developed technical method of Magnetocardiogram for clinical application to heart disease	1997
Developed small proton accelerator for cancer treatment	1998
Developed 320 Gbit/s optical data transmission system	1998
Developed 128-megabit single-electron memory	1998
Developed PAM control refrigerator/air conditioner	1999
A lithium secondary battery is put into practical use by manganese-based cathode system	1999
Succeeded in application of digital watermarking technology	2000
Developed application processor for mobile phones	2001
Developed contactless IC chip "μ-chip"	2001
Developed world's first silent liquid-cooled notebook PC	2002
Developed compact DNA analysis system for SNP typing	2003
Improved power and energy density of high performance lithium secondary battery for hybrid electric vehicle by 50% compared to the conventional model	2003
Succeeded in test operation of a circuit which converts slight building vibrations to electricity for LSI operation	2004
Developed non-invasive blood sugar monitoring device	2004
Developed all-around three-dimensional display system	2004

 Social contribution activities
 Environmental activities



Data on hitachi green web

You can find details on hitachi green web.

<http://greenweb.hitachi.com/data>

Category	Activity	Related page	Data provided on hitachi green web		
Company Profile		3	Overview of Financial Results in Fiscal 2003		
		3	List of Companies Covered by Report (Environmental Impact Data Covered)		
Environmental Report	Basic Environmental Philosophy	41	History of Activities		
	Environmental Action Plan and Results	12 – 13	Environmental Action Plan and Results		
	Environmental Impact Data for Corporate Activities	11	Environmental Impact Data for Corporate Activities (FY2003)		
	Eco-mind & Management	GREEN 21	14	Green Point Average: Results and Targets	
		Environmental Education and Training	15	Current and required numbers of legally qualified personnel	
		Environmental Management System	15	Status of ISO 14001 Certification ISO14001 — accredited production site list	
		Environmental Accounting	17	Expenses, Investment, Effect, Efficiency of Environmental Impact Reduction Cost Breakdown Ratio by Industry Segment Investment Breakdown Ratio by Industry Segment Economic Effect Breakdown Ratio by Industry Segment Investment Breakdown Ratio by Countermeasure	
	Nature-friendly Products and Eco-factories	Eco-Products	18	Eco-Product Registration Trends List of Eco-Products and Data Sheets Environmental Efficiency of Products (Details and Examples)	
		Green Procurement	19	List of Goods Specified in the Green Purchasing Law	
		Effective Utilization of Resources	23	Commission Volumes for Containers and Packaging	
		Increasing Product Transportation Efficiency	23	CO ₂ Emissions from Transportation Ratio of Low-emission Vehicles for the Total Number of Company-owned Vehicles	
		Prevention of Global Warming	24 – 25	Trends in CO ₂ Emissions Per Unit of Production, and Total CO ₂ Emissions CO ₂ Emission by Industry Segment Trends in Composition of Energy Use Trends in Emissions and Composition of Greenhouse Gases Volume of New Energies	
		Chemical Substance Risk Management	26 – 27	Trends in Emissions for Substances Targeted for Reduction Survey Results for Substances Covered Under Japan's PRTR Law Survey Results for Substances Covered Under Japan's PRTR Law, by Substance Ratio of Volume Handled, by Industry Segment Ratio of Emission and Transfer Volume, by Industry Segment	
		Waste Reduction	28	Trends in Final Disposal Volume Reduction Breakdown of Final Disposal Volumes, by Industry Segment Breakdown of Final Disposal Volumes, by Type Trends in Waste Emissions Zero Emissions Sites Flowchart for the Treatment of Waste and Reusable Waste Products Breakdown of Recycling Methods	
		Worldwide Stakeholder Collaboration	Environmental Communication	29	Web Site Access Environmental Reports Published, by Site Information Disclosure via the Internet, by Site Issuance of Environmental Report & Contact Internet Links of Sites Awards
			Environmental Town Meetings	30	Status of Environmental Town Meetings
		Sustainable Business Models		31	Number of Household Electrical Appliances Recycled and Product Recycling Ratio PC Take-back Results and Resource Reuse Ratio
			32 – 33	Hitachi Environmental Group (Introducing Businesses such as Environmental Protection Equipments) Energy Saving Solutions Hitachi Environmental Information Solution (Introducing Environmental Solution System)	
			34 – 35	"Hitachi Kokodemo Hakken!" (You can find Hitachi's Products and Services here!) (Introducing Products and services that benefit people's work and life around the world)	
	Social Report	Contributing to Society through our Business Activities	34 – 35	"Hitachi Kokodemo Hakken!" (You can find Hitachi's Products and Services here!) (Introducing Products and services that benefit people's work and life around the world)	
		Information Disclosure and Corporate Ethics	36	Environment-related Complaints from Public Authorities and the Public (Results and Response)	
		Harmony with Local Communities	37 – 38	Global Community Relations and Activities Overseas Corporate Social Contribution Program	
		Creating a Good Working Environment	39 – 40	Occupational Accidents	

Terminology

Term	Explanation	See Page
A Gree'Net	An Internet-based information collection system developed by Hitachi, on environmental information, including environment activities of supplier corporations and chemical substances contained in products.	16, 19
Alternate Light Surfaces Method (ALIS)	A method to drive panel displays that was developed to achieve high definition and brightness for high definition televisions. The odd- and even-numbered lines of the lighting surface are brightened in an alternating sequence. It uses a high-definition broadcast with 1,080 effective vertical scanning lines, without converting down to 1,024 vertical pixels, giving a realistic-looking image. Hitachi has achieved the world's top brightness for this type of device, at 1,100 cd/m ² (with the W42-5000 model). The lighting duty time has been cut in half (the cumulative time that phosphors are lit-up), producing a longer-life product.	21
CEGNET	Short for Chemical Environmental Global Network. An integrated system used by the Hitachi Group to manage chemical substances.	16, 26
chemical substances covered under the PRTR Law	Short for Pollutant Release and Transfer Register. One of 354 chemical groups listed in Appendix 1 of the Law Concerning Reporting, etc., of Release of Specific Chemical Substances to the Environment and Promotion of Improvement of Their Management, which was enacted in Japan in 1999.	11
EAP	Short for Employee Assistance Program. A program that aims to provide support for the mental, physical, and social needs of employees.	40
ECO ASSIST	A system to build and maintain environmental management systems. A brand of Hitachi, Ltd.	16
Eco-Factory Value	An Eco-Factory indicator that integrates the CO ₂ -measures emissions, waste and chemical substances.	13
Eco-mind & Management	One theme of the Hitachi Group's environmental vision, involving environmental training and awareness-raising for employees and their families, and implementation of environmental management activities.	9, 12, 14
Eco-Products Value	An indicator of nature-friendly products that integrates current Eco Products indicators with an environmental efficiency indicator.	13
e-learning	A learning process that involves use of a computer and the Internet.	36, 39
EMS	Short for environmental management system.	16
environmental top-runner products	Products that are the top in a given industry, based on indicators such as meeting environmental standards, energy efficiency, etc.	13
Environmental Town Meetings	Our term for a meeting between stakeholders and the Hitachi Group to exchange views on environmental activities.	5, 12, 13, 30, 44
field data	Data obtained during actual use in the market.	35
final disposal volume	The volume that is buried in a landfill after treatment such as incineration, etc.	12, 13, 28
greenhouse gases	Six gases, including carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), perfluorocarbons (PFC), hydrofluorocarbons (HFCs, which are CFC alternatives), and sulfur hexafluoride (SF ₆). CFC alternatives have a global warming potential that is several hundred to several thousand tens times more powerful than CO ₂ .	12, 24
GWPt (tonnes GWP)	Global warming potential (global warming coefficient, in CO ₂ equivalent tonnes). Converted to amount of CO ₂ (t) by multiplying greenhouse gas emissions by the global warming coefficient. The global warming coefficient shows the extent of impact on global warming from a greenhouse gas, compared to the equivalent amount of CO ₂ .	11, 24
HCFC	Hydrochlorofluorocarbon	12, 13, 19
HFCs	Hydrofluorocarbon	11, 12, 13, 24
HNET	A monitoring system for electrical power transmission and utilities. A brand of Hitachi Industrial Equipment Systems, Co., Ltd.	16
human genome	The information programmed into every person to make us human.	34
inverter-controlled system	A control method aimed at conserving energy, by reducing the electrical consumption by changing the speed of revolution of a motor depending on the load.	21
Japan's Law on Promoting Green Purchasing	Japan's national law officially known as the Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities. It entered into force on 1 April 2001. Its aims are to promote procurement by governmental bodies that is exemplary, by selecting products that have low environmental impacts, to report the relevant information, and to promote sustainable society.	18
LCA	Short for life cycle assessment. A method of quantitatively evaluating the extent of environmental impacts in a multidimensional and comprehensive way, for the whole life cycle of a product, from the raw materials stage, to usage, to disposal. It could include, for example, calculations of the amount of resources consumed, the emissions of CO ₂ and other gases to the atmosphere, and quantification of environmental impacts by category, such as global warming.	16, 21
life cycle	All stages of a product from production, use, and disposal through to recycling (raw materials, production, transport, use, collection, disassembly, and proper disposal).	16, 18, 21
modal shift	Shifting the mode of transport from freight transport on arterial roads to the use of rail transport and ships, which both offer low-pollution mass transport systems, and combining this with the flexible use of truck transport at rail and marine terminals.	13, 23
nanoimprint	A molding process on the nano scale by which an imprint is made on the target material such as resin membranes using a metal mold containing miniscule bumps and depressions.	34
Nature-friendly Products & Eco-factories	One theme of the Hitachi Group's environmental vision, involving product manufacturing and production activities that take the environment into account.	2, 9, 12
normalization	The effort to improve the welfare of society by aiming to guarantee the right, to the greatest extent possible, for disabled persons to live a lifestyle the same as everyone else.	40
NOx	Nitrogen oxide	11, 12
ODPt	Ozone depletion potential (ozone depletion coefficient in CFC equivalent, in tonnes).	11

PBB	Polybrominated biphenyls, a type of specified brominated fire retardant.	12, 13
PBDE	Polybromodiphenyl ether, a type of specified brominated fire retardant.	12, 13
PCB	An oily substance for which manufacture and import is banned in Japan due to its toxicity. PCBs are in long-term storage, but have been disappearing or lost, leading to concerns about environmental pollution. A law that entered into force in July 2001 requires the proper disposal of these substances by June 2016.	12
PFCs	Perfluorocarbon	11, 12, 13, 24
PM	Particulate matter	12, 13
REM	Short for Recyclability Evaluation Method. A system of evaluating a product's ease of recycling.	16
RoHS Directive	The directive of the European Union on Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment. Targeting electrical or electronic equipment, it prohibits the use of 6 substances in any products sold in the EU on or after 1 July 2006. There are currently 25 member countries in the EU.	5, 12, 13, 15, 19
SF ₆	Sulfur hexafluoride	11, 12, 13, 24
six chemical substances	Lead, hexavalent chromium, cadmium, mercury, and two types of brominated fire retardants (PBB, BBDE).	19
SO _x	Sulfur oxides	11
stakeholders	All the parties interested in or affected by an organization, including consumers, governmental bodies, financial institutions, shareholders, suppliers, local communities, and employees, etc.	5, 9, 12, 29
Sustainable Business Models	One theme of the Hitachi Group's environmental vision. These are business models that will help build a sustainable society, for example, through products and services from businesses based on resource recycling, businesses that support recycling industries, and systems based on sound energy cycles.	2, 9, 31
substances in the "reduce" category	Substances that the Hitachi Group classifies as "prohibit" or "reduce" and substances selected by each facility.	12, 13, 27
transformer	Equipment that converts the high-voltage electricity from a power company to a voltage that can be used locally.	25
transportation efficiency	The amount of CO ₂ emissions from transport, divided by the weight of goods transported.	23
transportation factor	The transport efficiency during the year being evaluated, divided by the transport efficiency during the base year.	23
universal design	The concept of providing products and services that can be used by as many people as possible, regardless of age, gender, physical condition, or situation, etc.	3, 34
WEEE Directive	The European Union Directive on Waste Electrical and Electronic Equipment. It will require manufacturers to be responsible for collecting and recycling any electrical and electronic products sold in EU member countries on or after 13 August 2005.	31
Worldwide Stakeholder Collaboration	One theme of the Hitachi Group's environmental vision, involving the concept of working toward sustainable development by fostering a common sense of values through communication with various stakeholders.	9, 12, 29
zero emissions	To the greatest extent possible, achieving the state in which no emissions are discharged from the overall production process, by striving to ensure that resources are recycled. Exact definitions vary with each company. The Hitachi Group defines zero emissions as final disposal volume of 1% or less of the total, and equaling no more than 5 tonnes.	12, 13, 28

Postscript

Thank you for reading this 2004 edition of Hitachi Group's Environmental Sustainability Report.

With this edition, we did our best to reflect the comments received from readers of last year's report and from our "Environmental Town Meeting," many of which indicated a desire to know more about the actual processes behind activities, and to hear from the actual product developers. As a result, this year we included direct interviews with product developers and personnel responsible for environmental activities, as well as dialogue with stakeholders. We hope that these editorial changes have made it easier to see the human face of the Hitachi Group.

Regarding corporate social responsibility (CSR), we had many departments get actively involved in the preparation of this report, including the Global Business Division of Hitachi Group Headquarters, the Corporate Brand Management Office, the Corporate Planning and Development Office, the Employee Relations and Human Resources Department, the Legal Division, the Public Relations Department and the Social Contribution Department of the Corporate Communications Division, the Corporate Quality Assurance Division, the Compliance Division, the Customer Satisfaction Promotion Center of the Corporate Marketing Group, and the Group Procurement Division. We made it clear to all that this should be a report that readers outside the company can understand.

Throughout our editorial process, various requests arose, for example, with contributors indicating the kind of information they would like to present next year, and suggesting the kind of data that should be collected. Overall, I believe this process has strengthened our ability to prepare future reports.

I think there are still various aspects that need improvements in the future, like making these reports easier to read. We would be very happy to hear your comments about the type of world that the Hitachi Group is working toward, and how we can improve our reporting.



Chief Editor
Yoichi Takahashi,
Director, Corporate
Environmental Policy Division

Third-Party Comments on Hitachi Group's Environmental Sustainability Report 2004

Comments on Environmental Reporting

Valdez Society

- The report is very detailed overall and it contains a large amount of information. The reporting for the corporate group, with its wide range of business activities, has been made compact by providing links to Web pages that have more detailed information.
- We applaud the introduction of GREEN 21 here as a tool to accurately determine the environmental management situation on a consolidated reporting basis, and its use to evaluate the Group's performance. Since this is an important evaluation indicator, we urge you to dedicate more space to it in the future and to enhance your reporting on the analysis and future prospects.
- Regarding Eco-Products, by including content from customers and developers in the articles, instead of just listing the products, the report has benefited with greater depth and persuasiveness.
- Although information provision is an emphasis in your logistics initiatives, this report makes evident the inadequacy of current initiatives. We urge you to make stronger initiatives in the future, with modal shifting as a key strategy.
- The title of the Sustainable Business Models section draws the reader's interest, but the contents of the section do not really satisfy expectations. We hope to see Hitachi show the world a more innovative business model, as one of Japan's leading companies.
- Regarding CSR, the Message from the President conveys the desire to expand activities in this area, but the overall impression from this report is that the emphasis is placed on the Group's technological prowess and ability to present ideas, and this leaves the reader without a clear overall view of your

Comments on Social Contribution Reporting

Prof. Iwao Taka, Reitaku University

I commend your efforts to include CSR items in this report on environmental management, and your major progress in presenting information in a systematic way. CSR reporting styles have not yet become standardized, even at the global level. I sense that readers might not imagine the challenges you faced in preparing this part of the report.

You have introduced major activities in five areas, including the section on "Contributing to Society through Business Activities." From reading the report, I can understand the efforts you are making in the social realm, in terms of "harmony," "sincerity," and "innovation," which are part of the company's founding philosophy. These are evident in your efforts to carefully consider the local community and your employees, and your capacity building activities for future generations, etc.

The idea that permeates this report is to "contribute to society through our main business activities." I agree completely with this approach. But the fact is that corporations have a dimension that can lead to unintentional harm on society and the environment. For example, even if Hitachi Group companies are not directly involved, it is conceivable that various problems that could arise in developing countries due to the pressure on subcontractors to keep costs down—problems such as the exploitation of child labor or the use of materials because they have a low cost, even if they have a large impact



Discussion with the Valdez Society



CSR activities. The kind of CSR performance that is being expected of Japanese companies is a multidimensional effort that involves the environment, human rights, labor, and product responsibility. We do hope to see improvements in the Group's social contribution reporting in the future.

Reply from Hitachi, Ltd.

This time we included direct dialog with third parties right in the production process of this report. We believe that increasing the efficiency of logistics requires efforts with a long-term perspective, and includes rethinking the distribution system. Regarding sustainable business models, this time we introduced some specific examples, but in the future we will develop and introduce more forward-looking business models. Regarding CSR, this time we paid the most attention to technological ability and ability to present ideas, as they relate to our corporate philosophy. In the future, we will make a greater effort to provide information from the perspective of the CSR that the world expects to see.



on the environment.

I hope that your company will demonstrate leadership regarding issues like these, which go beyond the scope of the kinds of issues companies faced in the past. I close with one comment about the content of your report. I felt that this report will be easier to read if you make a greater effort to quantify things that can be quantified, such as the numbers of promotions of women to management-level positions. With such changes, I think that Hitachi will attract more and more admirers of its efforts.

Response from Hitachi, Ltd.

This is the first time we include the CSR perspective in our social contribution reporting. Because the scope of activities relating to CSR is wide, we will work to expand global and wide-reaching coverage in this area, based on our new group-wide structure. We will also work on our quantitative indicators, and make an effort to enhance our provision of information in reports.

We welcome your feedback on
Hitachi's environmental activities.

hitachi green web

<http://greenweb.hitachi.co.jp/en/>

Find out more about our environmental
activities at this Web site. Please visit
our survey page to provide your input.

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Hitachi Group—Environmental Sustainability Report 2004

Thank you for your interest in the Hitachi Group and its environmental activities.

It is our pleasure to send you the 2004 issue of the Hitachi Group Environmental Sustainability Report.

In this report, we describe our activities during the most recent fiscal year, from the perspective of corporate social responsibility (CSR). We have divided the report into two sections—one on environmental and other on social aspects of our activities. We have also made an effort to respond to feedback received on last year's report, and to give readers a clearer description of our activities. For example, we have provided more detail on initiatives around the world, an interview by employees with the president of Hitachi, Ltd., and a dialogue between customers and developers of products designed with the environment in mind.

For those who would like more details, besides this report we also provide detailed information on our Internet Web site.

The Hitachi Group will continue to enhance efforts to answer its responsibility to society, and to provide information about these activities.

We hope that you enjoy reading this latest report, and look forward to receiving your comments and suggestions.

Please send comments and suggestions to

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 6, Kanda-Surugadai 4-Chome, Chiyoda-ku, Tokyo 101-8010, Japan
 Tel: (81) 3-3258-1111
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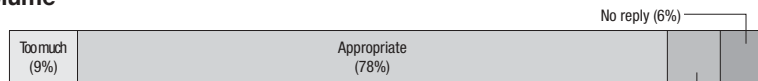
Feedback from Readers' Survey — Hitachi Group Environmental Sustainability Report 2003

Hitachi Group received 138 responses to the Readers' Survey in 2003. Below is a summary of the main points. We thank respondents for their valuable feedback.

Comprehensibility



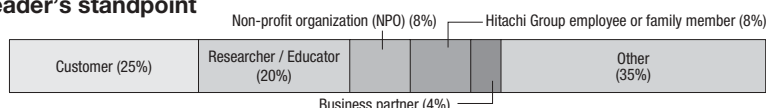
Volume



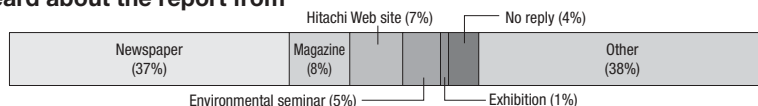
Content



Reader's standpoint



Heard about the report from



Requests and suggestions:

Praise

- I like the style of having the president's and directors' own words in the report.
- I think the report did a good job of summarizing the activities of the entire Hitachi Group.
- The Highlights section makes it easy to identify the key activities of the previous year.

Room for improvement

- The report focused too much on activities only in Japan.
- I would like to see more about the actual processes behind the activities.
- There are too many specialized terms, making the report difficult to read.

In response to comments, here are some of the changes we made in this year's report:

- Data from world-wide operations were included in the summaries of environmental impacts.
- We gave more details in the coverage of specific activities.
- We have provided a glossary of special terminology.

Readers' Survey

Hitachi Group—Environmental Sustainability Report 2004

Please answer the questions below and mail or fax the completed survey.

Hitachi, Ltd., Corporate Environmental Policy Division
6, Kanda-Surugadai 4-Chome, Chiyoda-ku, Tokyo 101-8010, Japan

Fax: (81) 3-3258-5810

Q1. What did you think of the Hitachi Environmental Sustainability Report? (Check one only.)

- | | | | |
|-----------------------|-----------------------------------|--------------------------------------|-------------------------------------|
| (1) Comprehensibility | <input type="checkbox"/> High | <input type="checkbox"/> Average | <input type="checkbox"/> Low |
| (2) Volume | <input type="checkbox"/> Too much | <input type="checkbox"/> Appropriate | <input type="checkbox"/> Too little |
| (3) Content | <input type="checkbox"/> Good | <input type="checkbox"/> Average | <input type="checkbox"/> Poor |

*Please explain the reason(s) for your selections.

Q2. Which sections of the Hitachi Environmental Sustainability Report did you find valuable? (You may select more than one.)

- Highlights of 2003 Message from the President

Environmental Report

- | | |
|---|--|
| <input type="checkbox"/> Environmental Initiatives | <input type="checkbox"/> Eco-mind & Management |
| <input type="checkbox"/> Nature-friendly Products & Eco-factories | <input type="checkbox"/> Worldwide Stakeholder Collaboration |
| <input type="checkbox"/> Sustainable Business Models | |

Social Report

- | | |
|--|--|
| <input type="checkbox"/> Contributing to Society through Business Activities | <input type="checkbox"/> Information Disclosure, Ethics and Human Rights |
| <input type="checkbox"/> Harmony with Local Communities | <input type="checkbox"/> Creating a Good Working Environment |
| <input type="checkbox"/> Expanding the Circle of Social Responsibility | |

*If any of the selections above particularly interested you, please explain why.

Q3. Given the chance, would you be interested in sharing your opinions as a participant in one of Hitachi's "environmental town meetings"?

- Yes No

Q4. From what standpoint did you read this report? (Check one only.)

- | | | |
|--|--|--|
| <input type="checkbox"/> Business partner | <input type="checkbox"/> Customer | <input type="checkbox"/> Environmental non-profit organization |
| <input type="checkbox"/> Government / public administrator | | <input type="checkbox"/> Hitachi Group employee or family member |
| <input type="checkbox"/> Media organization | <input type="checkbox"/> Researcher / educator | <input type="checkbox"/> Resident near a Hitachi Group facility |
| <input type="checkbox"/> Other | | |

Q5. How did you find out about the Hitachi Environmental Sustainability Report? (Check one only.)

- | | | | |
|--|-------------------------------------|---|-----------------------------------|
| <input type="checkbox"/> Environmental seminar | <input type="checkbox"/> Exhibition | <input type="checkbox"/> Hitachi Web site | <input type="checkbox"/> Magazine |
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Other | | |

Q6. If there are any environmental issues you would like the Hitachi Group to address, please let us know.

Thank you for your cooperation. Please tell us about yourself (optional).

Name	Age

Address	

E-mail	

Occupation: name of company	
